**DRAFT REPORT**

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**Risk Assessment Report**

*Prepared for:*

**Plains Midstream Canada**

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**Plains Midstream Canada**

**Risk Assessment Report**

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Executive Summary

INTRODUCTION

APPROACH

SUMMARY OF FINDINGS FOR SECTION 4

SUMMARY OF FINDINGS FOR SECTION 5.

Table of Contents

[1 Introduction 7](#_Toc26168863)

[2 Objective 8](#_Toc26168864)

[3 Approach 8](#_Toc26168865)

[4 Threat Driver Analysis 10](#_Toc26168866)

[4.1 Third Party Damage and Total Consequence 12](#_Toc26168867)

[4.2 Manufacturing Defects and Total Consequence 18](#_Toc26168868)

[4.3 Stress Corrosion Cracking and Total Consequence 18](#_Toc26168869)

[4.4 Internal Corrosion and Total Consequence 18](#_Toc26168870)

[4.5 External Corrosion and Total Consequence 23](#_Toc26168871)

[4.6 Construction Threat and Total Consequence 26](#_Toc26168872)

[4.7 Natural Forces and Total Consequence 28](#_Toc26168873)

[4.8 Resident Damage and Total Consequence 28](#_Toc26168874)

[4.9 Circumferential Stress Corrosion Cracking and Total Consequence 28](#_Toc26168875)

[4.10 Incorrect Operations and Total Consequence 28](#_Toc26168876)

[4.11 Total Likelihood and Safety Consequence 28](#_Toc26168877)

[4.12 Total Likelihood and Environmental Consequence 28](#_Toc26168878)

[4.13 Total Likelihood and Economic Loss Consequence 28](#_Toc26168879)

[5 Risk Algorithm Comparison 28](#_Toc26168880)

[5.1 Third Party Damage and Total Consequence 34](#_Toc26168881)

[5.2 Manufacturing Defects and Total Consequence 34](#_Toc26168882)

[5.3 Stress Corrosion Cracking and Total Consequence 34](#_Toc26168883)

[5.4 Internal Corrosion and Total Consequence 34](#_Toc26168884)

[5.5 External Corrosion and Total Consequence 34](#_Toc26168885)

[5.6 Construction Threat and Total Consequence 34](#_Toc26168886)

[5.7 Natural Forces and Total Consequence 34](#_Toc26168887)

[5.8 Incorrect Operations and Total Consequence 34](#_Toc26168888)

[5.9 Total Likelihood and Safety Consequence 34](#_Toc26168889)

[5.10 Total Likelihood and Environmental Consequence 34](#_Toc26168890)

[5.11 Total Likelihood and Economic Loss Consequence 34](#_Toc26168891)

[6 Summary of Findings 35](#_Toc26168892)

[7 Revision History 35](#_Toc26168893)

[Appendix A – 2019 quantitative algorithm outputs 1](#_Toc26168894)

[Appendix B – Steps to Map Risk Results to the Plains ORM 1](#_Toc26168895)

[Appendix C Dynamic Risk Outflow Model Methodology 1](#_Toc26168896)

**LIST OF TABLES PAGE NO.**

[Table 25 – Risk Rank Cumulative Lengths of Individual Threat Drivers 11](#_Toc26168996)

[Table 2 – Drivers for the Safety Risk Reportable Pipelines - Third Party Damage 12](#_Toc26168997)

[Table 3 – Drivers for the Safety Risk Reportable Pipelines – Internal Corrosion Method 1 19](#_Toc26168998)

[Table 4 – Drivers for the Safety Risk Reportable Pipelines – Internal Corrosion Method 2 22](#_Toc26168999)

[Table 2 – Drivers for the Safety Risk Reportable Pipelines - Third Party Damage 26](#_Toc26169000)

[Table 5 – Report Revision 35](#_Toc26169001)

[Table 6 – Failure Frequency Mapping 2](#_Toc26169002)

[Table 7 – Consequence Conversion 4](#_Toc26169003)

**LIST OF FIGURES PAGE NO.**

[Figure 1 – Plains ORM Risk Classification 9](#_Toc26169062)

[Figure 2 – Pipeline Risk Ranking Length Distribution – Safety Risk 10](#_Toc26169063)

[Figure 3 – Pipeline Risk Ranking Distribution by Threat Drivers – Safety Risk 11](#_Toc26169064)

[Figure 4 – Length Distribution of Reportable Pipeline segments – Safety Risk 12](#_Toc26169065)

[Figure 5 – 2018 Plains ORM (Pipeline Level) by Pipeline and Percentage of System Length 28](#_Toc26169066)

[Figure 6 – 2017 Plains ORM (Pipeline Level) by Pipeline and Percentage of System Length 29](#_Toc26169067)

[Figure 7 – 2018 Plains ORM (Dynamic Segment Level) by Segment Count and Percentage of System Length 29](#_Toc26169068)

[Figure 8 – 2017 Plains ORM (Dynamic Segment Level) by Segment Count and Percentage of System Length 30](#_Toc26169069)

[Figure 9 – Annual Trending Risk Distribution 31](#_Toc26169070)

[Figure 10 – Plains Operational Risk Matrix 1](#_Toc26169071)

[Figure 11 – Mapping Adjustment Factor for Likelihood 3](#_Toc26169072)

[Figure 12 – Seal Caused By Internal Diameter Difference 3](#_Toc26169073)

**Acronyms**

3PD Third Party Damage

AFD Axial Flaw Detection

API American Petroleum Institute

BGC BGC Engineering Inc.

CSA Canadian Standards Association

DOC Depth of Cover

DNV Det Norske Veritas

Dynamic Risk Dynamic Risk Assessment Systems, Inc.

EC External Corrosion

ECDA External Corrosion Direct Assessment

ERW Electric Resistance Welding

FBE Fusion Bonded Epoxy

FPR Failure Pressure Ratio

GE General Electric

GW Girth Weld

IC Internal Corrosion

ICDA Internal Corrosion Direct Assessment

ILI In-line inspection

IO Incorrect Operations

LPG Liquid Petroleum Gas

MD Manufacturing Defects

MIC Microbially Induced Corrosion

MFL Magnetic Flux Leakage

MOP Maximum Operating Pressure

NF Natural Force (Weather and Outside Force)

NGL Natural Gas Liquids

NDE Non-Destructive Examination

OD Outside Diameter

ORM Operational Risk Matrix

PHMSA US Department of Transportation Pipeline and Hazardous Materials Safety Administration

Plains Plains Midstream Canada

PPTC Plains Petroleum Transmission Company

RAD Risk Algorithm Document

SCC Stress Corrosion Cracking

SCCDA Stress Corrosion Cracking Direct Assessment

SME Subject Matter Expert

SMYS Specified Minimum Yield Strength

USCD Ultrasonic Crack Detection

WT Wall Thickness

# Introduction

This report describes how the Plains qualitative[[1]](#footnote-1) risk results, generated as part of its pipeline integrity management risk algorithm, have been converted to semi-quantitative[[2]](#footnote-2),[[3]](#footnote-3) risk results and mapped to the Plains Operational Risk Management Matrix (ORM)[[4]](#footnote-4). This report also provides considerations for Plains for improved assessment and risk mitigation for certain pipelines or pipeline segments.

The scope of the Plains Pipeline System that is addressed in this assessment includes approximately 7091 km of pipelines comprised of 25 pipeline systems [including but not limited to the following major systems: Manito (Saskatchewan), the Rainbow system (Alberta), South Saskatchewan (Saskatchewan), the Rangeland system (Alberta), and the Cochrane to Edmonton (Co-Ed) NGL system (Alberta)]. These pipeline systems transport crude oil, condensate (diluent), natural gas and natural gas liquids.

The 25 pipeline systems are comprised of 326 pipelines. From these pipelines, the processing of the data produced 106,961 dynamic segments[[5]](#footnote-5) where each dynamic segment is established based upon any change to the input variables between adjacent pipe sections.

This risk assessment report presents the system-wide risk results and provides an overview of the risk distribution as a function of percentage of the pipeline system at various risk levels. The current “reportable” thresholds for the Plains ORM have been established as the upper right 4 x 3 (Likelihood x Consequence) portion of the risk matrix. In particular, this report focuses on identifying those pipelines or pipelines with segments falling into these “reportable” portions of the matrix.

# Objective

The objectives of this report were to:

* Quantitative results driver analysis from 2019 dataset
* High level comparison between quantitative results translated to ORM, and qualitative results translated to ORM, using 2019 dataset

# Approach

The 2018 Plains risk assessment program evaluated the most recent available data and produced results for the likelihood, consequences, and total risk using the 2017 Plains Risk Algorithm Document (RAD) (version dated May 30, 2017) and Plains risk results from RiskAnalyst[[6]](#footnote-6) results run ID 580. These Plains relative risk assessment results (qualitative risk) have been mapped to the Plains ORM through a semi-quantitative bench marking exercise (see Plains ORM and mapping process in Appendix A). This process ensures that the results from the risk assessment can be compared to a defined risk acceptability criteria.

Using the guidance of CSA Z662-15 Annex H[[7]](#footnote-7) and API 1160[[8]](#footnote-8), threats to liquids pipelines can be classified in terms of “Time Dependent”, “Stable” and “Time Independent” categories. An overview of the threat categories and specific threats considered in the assessment is outlined below.

Time Dependent Threats include:

1. External Corrosion;
2. Internal Corrosion; and,
3. Stress Corrosion Cracking;

Stable Threats include:

1. Manufacturing Defects;
2. Construction Threat; and,
3. Equipment Failure;

Time Independent Threats include:

1. Third Party / Mechanical Damage;
2. Incorrect Operations; and,
3. Weather and Outside Force (Geotechnical and Hydrotechnical, Natural Force)

The Plains Risk Algorithm document considers three scenarios of a potential consequence:

* Safety Consequence;
* Environmental Consequence; and,
* Economic Loss

While the detailed, mapped risk results are retained and are viewable within a separate Excel file, this report presents a summary of the findings and provides an analysis of those pipelines or pipeline segments falling into the “reportable” portions of the Plains ORM. The reportable portion of the Plains ORM is defined as either:

* Very High Risk
* High Risk
* Medium Risk
  + “Remote” Likelihood with “Problematic” or “Critical” Consequences
  + “Occasional” Likelihood with “Problematic” Consequences

A visual representation of the reportable portion of the Plains ORM is shown in Figure 1.

For these pipelines, the RiskAnalyst application is utilized to conduct an analysis of driving factors within the likelihood and consequence scoring in order to aid in establishing appropriate risk reduction actions.

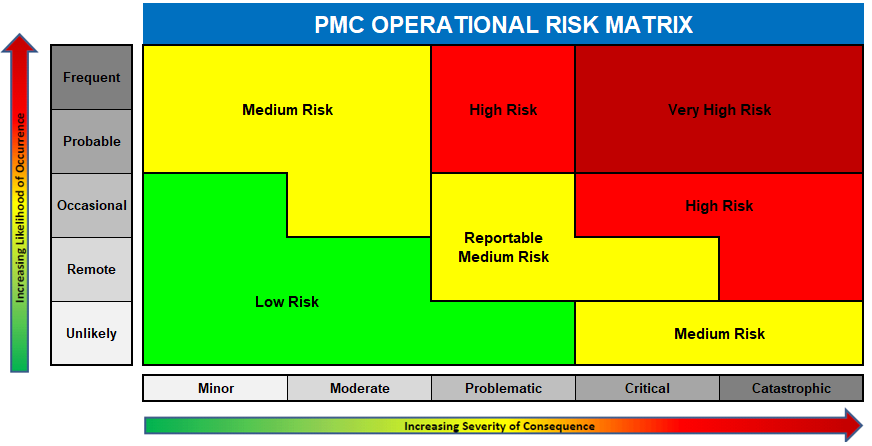


Figure 1 – Plains ORM Risk Classification

1. Total Risk Matrix (5 by 6 greyscale risk matrix)
   1. Overlap of SAF, ENV, and FIN ORM matrices
2. Reportable Sections
   1. Overlap of reportable sections from SAF, ENV, and FIN ORM matrices (HIGH, and VERY HIGH ranks)
3. Conversion of quantitative results to PMC ORM for risk algorithm comparison

# Threat Driver Analysis

An assessment of overall risk can be presented in a number of different ways, recognizing that the presentation of results is often dictated by the objective for performing the analysis. Within this presentation of the results, the overall risk considers the risk for each of the 326 pipelines and also considers the risk associated with dynamic segments along each pipeline.

As described in Section 3, the current “reportable” thresholds for the Plains ORM have been established as the upper right 4 x 3 (Likelihood x Consequence) portion of the risk matrix. In particular, this report focuses on identifying those pipelines or pipelines with segments falling into these “reportable” portions of the Plains ORM.

Ten pipelines have enough “Medium” risk segments to render the pipeline as reportable at the pipeline level[[9]](#footnote-9). Three pipelines have “High” risk segments, while 24 pipelines have “Reportable Medium” risk segments.

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

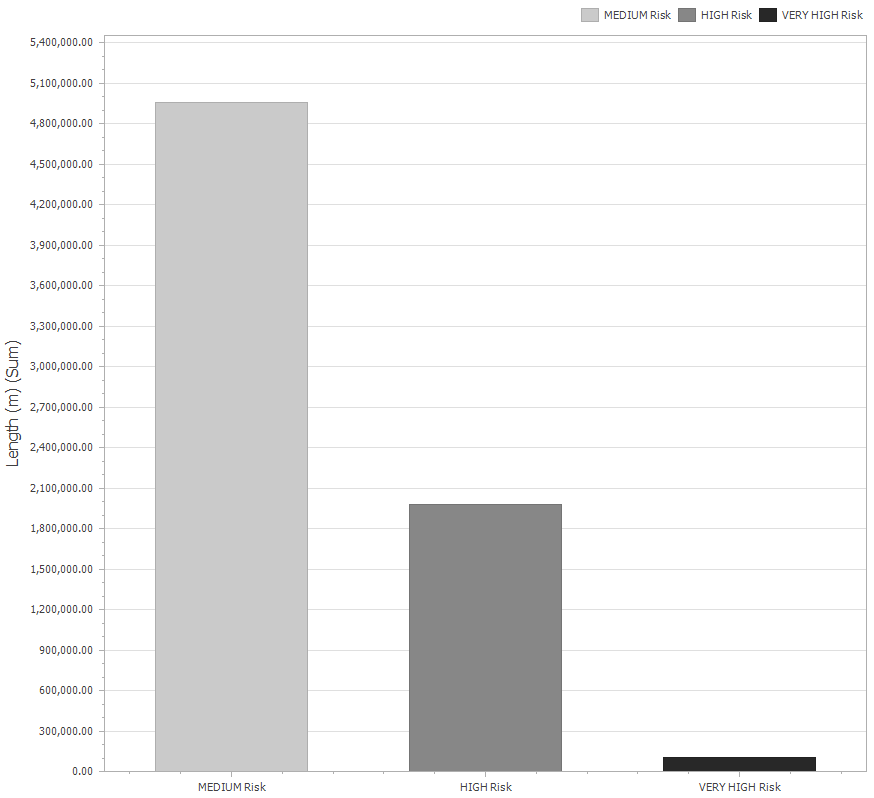


Figure 2 – Pipeline Risk Ranking Length Distribution – Safety Risk

The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK. The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.

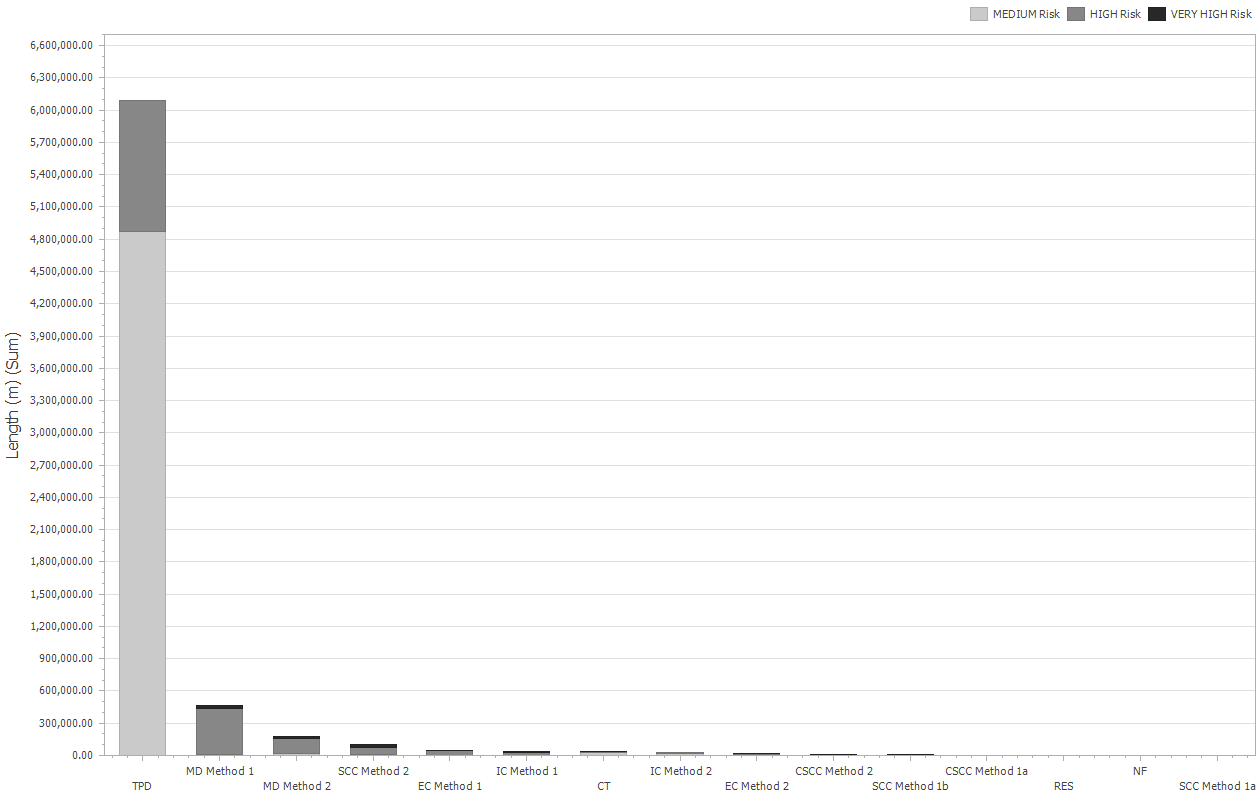


Figure 3 – Pipeline Risk Ranking Distribution by Threat Drivers

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

Table 25 – Risk Rank Cumulative Lengths of Individual Threat Drivers

| **Threat** | **Cumulative Length (m)** | | | | |
| --- | --- | --- | --- | --- | --- |
| **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| Third Party Damage | 0.00 | 4,870,121.85 | 1,224,099.18 | 0.00 | **6,094,221.04** |
| Manufacturing Defects | 0.00 | 23,623.69 | 567,049.05 | 52,323.01 | **642,995.75** |
| Stress Corrosion Cracking | 0.00 | 8,109.95 | 76,478.03 | 30,730.78 | **115,318.76** |
| Internal Corrosion | 0.00 | 17,864.35 | 35,379.24 | 14,350.53 | **67,594.11** |
| External Corrosion | 0.00 | 10,298.46 | 48,070.01 | 4,311.72 | **62,680.19** |
| Construction Threat | 0.00 | 25,922.01 | 7,715.91 | 149.98 | **33,787.90** |
| Circumferential Stress Corrosion Cracking | 0.00 | 800.89 | 16,005.53 | 227.95 | **17,034.36** |
| Resident Damage | 0.00 | 238.44 | 1,019.64 | 179.98 | **1,438.05** |
| Natural Forces | 0.00 | 220.81 | 78.91 | 0.00 | **299.71** |
| **Grand Total** | **0.00** | **4,957,200.43** | **1,975,895.50** | **102,273.94** | **7,035,369.87** |

Figure xxx shows the length distribution of the reportable pipeline segments for safety risk by threat driver, in descending order of cumulative lengths.

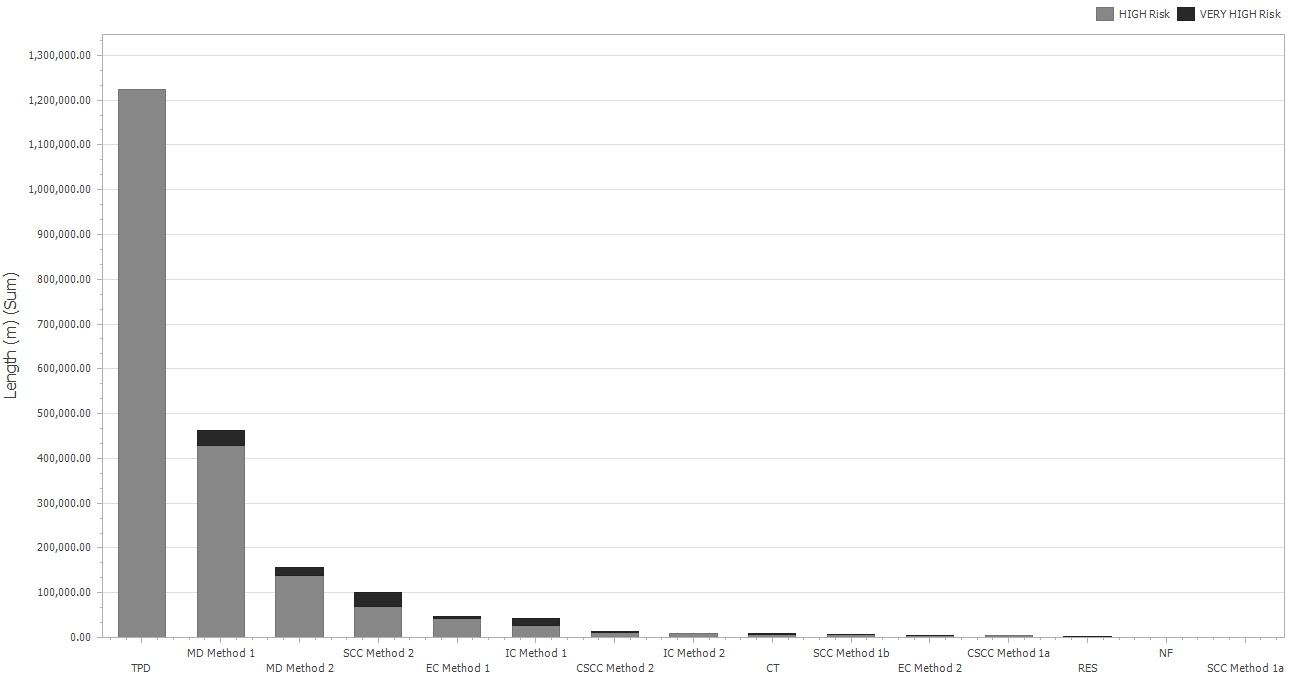


Figure 4 – Length Distribution of Reportable Pipeline segments

The analysis of the individual threat drivers within the reportable pipeline segments for safety risk is provided in the following sections.

## Third Party Damage and Total Consequence

### Assumptions of model

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  | **Cumulative Length (m)** | | | | |
| --- | --- | --- | --- | --- | --- |
|  | **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
|  |  |  |  |  | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.

### Reportable Pipeline Segments

Third Party Damage has 217 pipelines with segments that fall within the total risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below:

1. "SECT 2 CABRI TO HERBERT NPS 6
   1. Total Cumulative Length (m): 74062.22
   2. Likelihood of failure distributed between minimum of 1.009e-02 and maximum of 1.009e-02.
      1. Land use distributed as
         1. Agricultural: 74,062.22
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1963-07-01 and maximum of 1963-07-01
      4. Outside diameter of 6.625 in.
      5. Grade between minimum of 241.0 and maximum of 241.0 MPa
      6. Wall thickness between minimum of 4.83 and maximum of 4.83 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 2.423e-01 and maximum of 2.423e-01
      9. Class area location is/are 1.0.
   3. Consequence of failure distributed between minimum of $2.20 and maximum of $9.10MM
   4. Total length driven by Safety: 469.89 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $5.29MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 10.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
      5. Rupture scenario yielded 41.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
      8. Puncture scenario yielded 30.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
      9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
      10. Product type is NGL.
      11. Class area location is/are 1.0.
   6. Total length driven by Economic Loss: 73592.33 meters.
   7. Economic Loss Cost distributed between minimum of $2.20 and maximum of $3.81MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $0.30MM
      5. Leak scenario yielded 10.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $38.19MM
      8. Rupture scenario yielded 41.0 intersections with structures, with minimum of $25,000.00 and maximum of $20,349,375.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $2.31MM
      11. Puncture scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
      12. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
2. "SECT 7 MANSON TO RAPID CITY NPS 6
   1. Total Cumulative Length (m): 73509.85
   2. Likelihood of failure distributed between minimum of 2.427e-03 and maximum of 1.009e-02.
      1. Land use distributed as
         1. Agricultural: 73,386.30
         2. Bush/Creek: 123.55
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1963-07-01 and maximum of 1963-07-01
      4. Outside diameter of 6.625 in.
      5. Grade between minimum of 241.0 and maximum of 241.0 MPa
      6. Wall thickness between minimum of 4.83 and maximum of 4.83 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 2.423e-01 and maximum of 2.423e-01
      9. Class area location is/are 1.0.
   3. Consequence of failure distributed between minimum of $3.17 and maximum of $127.06MM
   4. Total length driven by Safety: 785.6 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 17.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
      5. Rupture scenario yielded 55.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
      8. Puncture scenario yielded 39.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
      10. Product type is NGL.
      11. Class area location is/are 1.0.
   6. Total length driven by Economic Loss: 72724.25 meters.
   7. Economic Loss Cost distributed between minimum of $3.17 and maximum of $6.00MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $2.96MM
      5. Leak scenario yielded 17.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $20.55MM
      8. Rupture scenario yielded 55.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $4.95MM
      11. Puncture scenario yielded 39.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
      12. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13
3. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5
   1. Total Cumulative Length (m): 58954.19
   2. Likelihood of failure distributed between minimum of 1.326e-03 and maximum of 6.947e-03.
      1. Land use distributed as
         1. Agricultural: 4,286.21
         2. Forested: 52,658.73
         3. Remote: 1,589.97
         4. Water Course: 419.27
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
      4. Outside diameter of 8.625 in.
      5. Grade between minimum of 290.0 and maximum of 290.0 MPa
      6. Wall thickness between minimum of 4.78 and maximum of 8.18 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 6.864e-02 and maximum of 1.669e-01
      9. Class area location is/are 1.0, 2.0.
   3. Consequence of failure distributed between minimum of $10.00 and maximum of $66.05MM
   4. Total length driven by Safety: 110.96 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $28.51MM:
      1. Leak cost between minimum of $0.00 and maximum of $28.51MM
      2. Leak scenario yielded 207.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.95 and maximum of 3.95 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $65.66MM
      5. Rupture scenario yielded 109.0 intersections with structures, with minimum of 0.0 and maximum of 6.84 of population impacted
      6. Rupture hazard radius distributed between minimum of 53.42 and maximum of 53.42 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $28.51MM
      8. Puncture scenario yielded 228.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted
      9. Puncture hazard radius distributed between minimum of 15.77 and maximum of 15.77 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 58843.23 meters.
   7. Environmental Cost distributed between minimum of $9.69 and maximum of $65.39MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.41MM
      2. Leak spill volume between a minimum of 1691.87 and maximum of 2302.51 gallons
      3. Rupture cost between minimum of $86.06 and maximum of $194.84MM
      4. Rupture spill volume is between a minimum of 811993.29 and maximum of 1105065.43 gallons
      5. Puncture cost between minimum of $5.89 and maximum of $13.34MM
      6. Puncture spill volume is between a minimum of 55590.98 and maximum of 75655.39 gallons
4. "KERROBERT TO CACTUS LAKE NPS 4
   1. Total Cumulative Length (m): 57641.88
   2. Likelihood of failure distributed between minimum of 3.308e-03 and maximum of 1.374e-02.
      1. Land use distributed as
         1. Agricultural: 54,462.33
         2. Remote: 3,148.89
         3. Water Course: 30.66
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
      4. Outside diameter of 4.5 in.
      5. Grade between minimum of 290.0 and maximum of 290.0 MPa
      6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 1.895e-01 and maximum of 3.302e-01
      9. Class area location is/are 1.0.
   3. Consequence of failure distributed between minimum of $7.99 and maximum of $17.51MM
   4. Total length driven by Environmental: 57641.88 meters.
   5. Environmental Cost distributed between minimum of $7.70 and maximum of $17.17MM:
      1. Leak cost between minimum of $0.21 and maximum of $0.48MM
      2. Leak spill volume between a minimum of 1973.18 and maximum of 2807.92 gallons
      3. Rupture cost between minimum of $27.32 and maximum of $62.22MM
      4. Rupture spill volume is between a minimum of 257786.21 and maximum of 366840.06 gallons
      5. Puncture cost between minimum of $6.87 and maximum of $15.65MM
      6. Puncture spill volume is between a minimum of 64834.29 and maximum of 92261.78 gallons
5. "NPS8 Red Earth to Rainbow P/L tie-in From 9-18-87-8-W5 To 15-29-81-9-W
   1. Total Cumulative Length (m): 55942.98
   2. Likelihood of failure distributed between minimum of 1.319e-03 and maximum of 6.911e-03.
      1. Land use distributed as
         1. Agricultural: 9,143.88
         2. Forested: 41,633.90
         3. Remote: 4,725.43
         4. Water Course: 439.78
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
      4. Outside diameter of 8.625 in.
      5. Grade between minimum of 290.0 and maximum of 290.0 MPa
      6. Wall thickness between minimum of 4.8 and maximum of 5.6 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 1.316e-01 and maximum of 1.660e-01
      9. Class area location is/are 1.0, 2.0.
   3. Consequence of failure distributed between minimum of $10.00 and maximum of $68.20MM
   4. Total length driven by Safety: 63.1 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $21.89MM:
      1. Leak cost between minimum of $0.00 and maximum of $21.89MM
      2. Leak scenario yielded 102.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.95 and maximum of 3.95 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $43.78MM
      5. Rupture scenario yielded 85.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
      6. Rupture hazard radius distributed between minimum of 53.42 and maximum of 53.42 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
      8. Puncture scenario yielded 154.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      9. Puncture hazard radius distributed between minimum of 15.77 and maximum of 15.77 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 55879.89 meters.
   7. Environmental Cost distributed between minimum of $9.68 and maximum of $67.53MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.50MM
      2. Leak spill volume between a minimum of 1696.4 and maximum of 2872.92 gallons
      3. Rupture cost between minimum of $86.30 and maximum of $241.45MM
      4. Rupture spill volume is between a minimum of 814170.01 and maximum of 1378824.67 gallons
      5. Puncture cost between minimum of $5.91 and maximum of $16.53MM
      6. Puncture spill volume is between a minimum of 55740.01 and maximum of 94397.6 gallons
6. "UNITY TO LONE ROCK NPS 4
   1. Total Cumulative Length (m): 51803.4
   2. Likelihood of failure distributed between minimum of 1.559e-03 and maximum of 1.376e-02.
      1. Land use distributed as
         1. Agricultural: 48,198.85
         2. Remote: 3,533.53
         3. Water Course: 71.02
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
      4. Outside diameter of 4.5 in.
      5. Grade between minimum of 290.0 and maximum of 290.0 MPa
      6. Wall thickness between minimum of 3.18 and maximum of 6.02 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 1.386e-01 and maximum of 3.305e-01
      9. Class area location is/are 1.0.
   3. Consequence of failure distributed between minimum of $7.98 and maximum of $21.08MM
   4. Total length driven by Safety: 699.63 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 10.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.02 and maximum of 12.02 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
      5. Rupture scenario yielded 17.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
      6. Rupture hazard radius distributed between minimum of 83.2 and maximum of 83.2 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
      8. Puncture scenario yielded 17.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 48.57 and maximum of 48.57 meters.
      10. Product type is Condensate.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 51103.76 meters.
   7. Environmental Cost distributed between minimum of $7.61 and maximum of $19.92MM:
      1. Leak cost between minimum of $0.21 and maximum of $0.48MM
      2. Leak spill volume between a minimum of 1972.39 and maximum of 2702.49 gallons
      3. Rupture cost between minimum of $27.31 and maximum of $62.82MM
      4. Rupture spill volume is between a minimum of 257682.32 and maximum of 353066.58 gallons
      5. Puncture cost between minimum of $6.87 and maximum of $15.80MM
      6. Puncture spill volume is between a minimum of 64808.16 and maximum of 88797.7 gallons
7. "MEDICINE RIVER JUNCTION TO RAVEN RIVER PUMP STATION NPS 8
   1. Total Cumulative Length (m): 38176.33
   2. Likelihood of failure distributed between minimum of 1.156e-03 and maximum of 2.129e-03.
      1. Land use distributed as
         1. Agricultural: 38,176.33
      2. Depth of cover distributed as
         1. >= 0.91 to < 1.22m: 38,176.33
      3. Installation date between minimum of 1990-01-01 and maximum of 1990-01-01
      4. Outside diameter of 8.625 in.
      5. Grade between minimum of 359.0 and maximum of 359.0 MPa
      6. Wall thickness between minimum of 4.78 and maximum of 7.04 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 8.676e-02 and maximum of 1.598e-01
      9. Class area location is/are 1.0.
   3. Consequence of failure distributed between minimum of $11.52 and maximum of $33.07MM
   4. Total length driven by Safety: 97.27 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $20.27MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 11.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $43.78MM
      5. Rupture scenario yielded 71.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
      6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
      8. Puncture scenario yielded 35.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
      10. Product type is LVP Products.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 38079.06 meters.
   7. Environmental Cost distributed between minimum of $11.19 and maximum of $24.23MM:
      1. Leak cost between minimum of $0.21 and maximum of $0.45MM
      2. Leak spill volume between a minimum of 1973.49 and maximum of 2539.14 gallons
      3. Rupture cost between minimum of $100.39 and maximum of $216.59MM
      4. Rupture spill volume is between a minimum of 947155.24 and maximum of 1218631.01 gallons
      5. Puncture cost between minimum of $6.87 and maximum of $14.83MM
      6. Puncture spill volume is between a minimum of 64844.49 and maximum of 83430.36 gallons
8. "UTIKUMA TO EDMONTON NPS 24
   1. Total Cumulative Length (m): 36740.4
   2. Likelihood of failure distributed between minimum of 1.129e-03 and maximum of 1.618e-02.
      1. Land use distributed as
         1. Agricultural: 35,891.49
         2. Forested: 755.99
         3. High Density Residential: 4.54
         4. Remote: 81.29
         5. Water Course: 7.10
      2. Depth of cover distributed as
         1. < 0.24m: 22.81, >= 0.24 to < 0.30m: 7.01, >= 0.30 to < 0.37m: 38.72, >= 0.37 to < 0.43m: 86.22, >= 0.43 to < 0.49m: 212.65, >= 0.49 to < 0.55m: 301.79, >= 0.55 to < 0.61m: 261.29, >= 0.61 to < 0.67m: 293.19, >= 0.67 to < 0.76m: 699.85, >= 0.76 to < 0.91m: 1,250.26, >= 0.91 to < 1.22m: 19,960.71, >= 1.22 to < 1.83m: 13,605.91
      3. Installation date between minimum of 1967-01-01 and maximum of 1994-01-01
      4. Outside diameter of 24.0 in.
      5. Grade between minimum of 359.0 and maximum of 414.0 MPa
      6. Wall thickness between minimum of 6.35 and maximum of 12.7 mm
      7. Toughness between minimum of 12.4 and maximum of 12.4 J
      8. Probability of failure given a hit between minimum of 1.999e-02 and maximum of 9.716e-02
      9. Class area location is/are 1.0, 2.0.
   3. Consequence of failure distributed between minimum of $7.57 and maximum of $89.87MM
   4. Total length driven by Safety: 1912.53 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $77.24MM:
      1. Leak cost between minimum of $0.00 and maximum of $21.89MM
      2. Leak scenario yielded 644.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.59 and maximum of 3.59 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $919.30MM
      5. Rupture scenario yielded 346.0 intersections with structures, with minimum of 0.0 and maximum of 95.76 of population impacted
      6. Rupture hazard radius distributed between minimum of 122.95 and maximum of 122.95 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $43.78MM
      8. Puncture scenario yielded 730.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
      9. Puncture hazard radius distributed between minimum of 14.3 and maximum of 14.3 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 34827.87 meters.
   7. Environmental Cost distributed between minimum of $3.13 and maximum of $62.69MM:
      1. Leak cost between minimum of $0.11 and maximum of $43.51MM
      2. Leak spill volume between a minimum of 1370.56 and maximum of 410514.68 gallons
      3. Rupture cost between minimum of $7.05 and maximum of $92.96MM
      4. Rupture spill volume is between a minimum of 66487.52 and maximum of 877018.37 gallons
      5. Puncture cost between minimum of $2.00 and maximum of $43.51MM
      6. Puncture spill volume is between a minimum of 18846.95 and maximum of 410514.68 gallons
9. "NORTH UNITY TO BELTON NPS 12
   1. Total Cumulative Length (m): 33655.43
   2. Likelihood of failure distributed between minimum of 1.186e-03 and maximum of 4.927e-03.
      1. Land use distributed as
         1. Agricultural: 24,737.74
         2. Remote: 8,887.79
         3. Water Course: 29.90
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1998-01-01 and maximum of 1998-01-01
      4. Outside diameter of 12.75 in.
      5. Grade between minimum of 359.0 and maximum of 359.0 MPa
      6. Wall thickness between minimum of 5.56 and maximum of 9.52 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 4.276e-02 and maximum of 1.183e-01
      9. Class area location is/are 1.0.
   3. Consequence of failure distributed between minimum of $15.83 and maximum of $36.14MM
   4. Total length driven by Environmental: 33655.43 meters.
   5. Environmental Cost distributed between minimum of $14.83 and maximum of $34.94MM:
      1. Leak cost between minimum of $0.19 and maximum of $0.40MM
      2. Leak spill volume between a minimum of 1763.98 and maximum of 2234.57 gallons
      3. Rupture cost between minimum of $196.09 and maximum of $416.46MM
      4. Rupture spill volume is between a minimum of 1850042.45 and maximum of 2343595.14 gallons
      5. Puncture cost between minimum of $6.14 and maximum of $13.05MM
      6. Puncture spill volume is between a minimum of 57960.41 and maximum of 73423.03 gallons
10. "KERROBERT TO NORTH UNITY NPS 6
    1. Total Cumulative Length (m): 31781.99
    2. Likelihood of failure distributed between minimum of 1.061e-03 and maximum of 2.093e-02.
       1. Land use distributed as
          1. Agricultural: 24,064.22
          2. Remote: 7,023.34
          3. Water Course: 694.43
       2. Depth of cover distributed as
          1. >= 0.55 to < 0.61m: 28.77, >= 0.67 to < 0.76m: 407.29, >= 0.76 to < 0.91m: 11,402.49, >= 0.91 to < 1.22m: 7,181.09, >= 1.22 to < 1.83m: 10,506.06, >= 1.83m : 2,256.29
       3. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 7.11 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 9.098e-02 and maximum of 2.130e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $9.69 and maximum of $28.69MM
    4. Total length driven by Safety: 921.58 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 22.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
       5. Rupture scenario yielded 27.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 112.52 and maximum of 112.52 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 32.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 30860.42 meters.
    7. Environmental Cost distributed between minimum of $9.03 and maximum of $17.74MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.41MM
       2. Leak spill volume between a minimum of 1973.38 and maximum of 2648.15 gallons
       3. Rupture cost between minimum of $59.23 and maximum of $115.53MM
       4. Rupture spill volume is between a minimum of 558791.97 and maximum of 749863.57 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $13.41MM
       6. Puncture spill volume is between a minimum of 64840.82 and maximum of 87012.29 gallons
11. "NPS4 Harmattan to Sundre From 1-34-31-4W5 To 16-8-34-5W5
    1. Total Cumulative Length (m): 31099.3
    2. Likelihood of failure distributed between minimum of 1.777e-03 and maximum of 9.609e-03.
       1. Land use distributed as
          1. Agricultural: 29,967.50
          2. Forested: 403.13
          3. Remote: 34.18
          4. Water Course: 694.49
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2009-01-01 and maximum of 2009-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 8.56 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 7.781e-02 and maximum of 2.308e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $10.31 and maximum of $33.81MM
    4. Total length driven by Safety: 609.79 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $22.44MM:
       1. Leak cost between minimum of $0.00 and maximum of $21.89MM
       2. Leak scenario yielded 9.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.76 and maximum of 12.76 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $43.78MM
       5. Rupture scenario yielded 26.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
       6. Rupture hazard radius distributed between minimum of 102.22 and maximum of 102.22 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
       8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 60.91 and maximum of 60.91 meters.
       10. Product type is Butane.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 30489.51 meters.
    7. Economic Loss Cost distributed between minimum of $10.31 and maximum of $15.50MM:
       1. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is Butane.
       4. Leak cost between minimum of $0.51 and maximum of $0.78MM
       5. Leak scenario yielded 9.0 intersections with structures, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $297,296.59 and maximum of $297,296.59
       7. Rupture cost between minimum of $39.05 and maximum of $39.59MM
       8. Rupture scenario yielded 26.0 intersections with structures, with minimum of $25,000.00 and maximum of $539,736.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $38,840,282.94 and maximum of $38,840,282.94
       10. Puncture cost between minimum of $9.98 and maximum of $10.25MM
       11. Puncture scenario yielded 19.0 intersections with structures, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted
       12. Product Loss costs between minimum of $9,768,490.70 and maximum of $9,768,490.70"
12. "BONAVISTA 10-28 TO 10-7 NPS 4
    1. Total Cumulative Length (m): 28199.35
    2. Likelihood of failure distributed between minimum of 1.008e-02 and maximum of 1.614e-02.
       1. Land use distributed as
          1. Agricultural: 28,199.35
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.420e-01 and maximum of 3.877e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $1.12 and maximum of $23.54MM
    4. Total length driven by Safety: 85.12 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $21.89MM:
       1. Leak cost between minimum of $0.00 and maximum of $21.89MM
       2. Leak scenario yielded 5.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 3.7 and maximum of 3.79 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
       5. Rupture scenario yielded 29.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       6. Rupture hazard radius distributed between minimum of 27.68 and maximum of 28.36 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
       8. Puncture scenario yielded 27.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 14.77 and maximum of 15.13 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 28114.23 meters.
    7. Environmental Cost distributed between minimum of $0.90 and maximum of $4.63MM:
       1. Leak cost between minimum of $0.16 and maximum of $0.31MM
       2. Leak spill volume between a minimum of 1464.91 and maximum of 1852.07 gallons
       3. Rupture cost between minimum of $0.04 and maximum of $2.73MM
       4. Rupture spill volume is between a minimum of 379.55 and maximum of 15469.9 gallons
       5. Puncture cost between minimum of $5.10 and maximum of $10.09MM
       6. Puncture spill volume is between a minimum of 48133.5 and maximum of 60854.75 gallons
13. "SSPL MAINLINE NPS 16
    1. Total Cumulative Length (m): 27229.24
    2. Likelihood of failure distributed between minimum of 1.031e-03 and maximum of 7.769e-03.
       1. Land use distributed as
          1. Agricultural: 23,587.14
          2. Remote: 1,815.50
          3. Water Course: 1,826.61
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1954-01-01 and maximum of 1954-01-01
       4. Outside diameter of 16.0 in.
       5. Grade between minimum of 317.0 and maximum of 317.0 MPa
       6. Wall thickness between minimum of 6.35 and maximum of 9.52 mm
       7. Toughness between minimum of 4.0 and maximum of 4.0 J
       8. Probability of failure given a hit between minimum of 1.029e-01 and maximum of 1.866e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $10.00 and maximum of $31.24MM
    4. Total length driven by Environmental: 27229.24 meters.
    5. Environmental Cost distributed between minimum of $8.97 and maximum of $30.08MM:
       1. Leak cost between minimum of $0.27 and maximum of $0.51MM
       2. Leak spill volume between a minimum of 1567.63 and maximum of 2880.08 gallons
       3. Rupture cost between minimum of $7.53 and maximum of $479.51MM
       4. Rupture spill volume is between a minimum of 42331.09 and maximum of 4524011.12 gallons
       5. Puncture cost between minimum of $8.85 and maximum of $16.84MM
       6. Puncture spill volume is between a minimum of 51508.72 and maximum of 94633.0 gallons
14. "WASCANA MAINLINE NPS 12
    1. Total Cumulative Length (m): 24582.75
    2. Likelihood of failure distributed between minimum of 1.002e-03 and maximum of 1.665e-02.
       1. Land use distributed as
          1. Agricultural: 24,319.49
          2. Commercial/Industrial: 1.62
          3. Remote: 0.20
          4. Water Course: 261.45
       2. Depth of cover distributed as
          1. < 0.24m: 5.58, >= 0.24 to < 0.30m: 10.97, >= 0.30 to < 0.37m: 11.43, >= 0.37 to < 0.43m: 21.48, >= 0.43 to < 0.49m: 33.67, >= 0.49 to < 0.55m: 16.92, >= 0.61 to < 0.67m: 73.63, >= 0.67 to < 0.76m: 2,371.48, >= 0.76 to < 0.91m: 18,643.87, >= 0.91 to < 1.22m: 2,899.48, >= 1.22 to < 1.83m: 494.23
       3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 7.39 mm
       7. Toughness between minimum of 42.0 and maximum of 42.0 J
       8. Probability of failure given a hit between minimum of 4.046e-02 and maximum of 9.999e-02
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $6.27 and maximum of $134.67MM
    4. Total length driven by Safety: 68.26 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $111.37MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 9.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 3.79 and maximum of 3.83 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 34.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 73.17 and maximum of 73.88 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 18.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 15.13 and maximum of 15.28 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 24514.49 meters.
    7. Environmental Cost distributed between minimum of $3.53 and maximum of $15.20MM:
       1. Leak cost between minimum of $0.12 and maximum of $0.43MM
       2. Leak spill volume between a minimum of 1578.63 and maximum of 2458.71 gallons
       3. Rupture cost between minimum of $2.70 and maximum of $69.83MM
       4. Rupture spill volume is between a minimum of 26485.37 and maximum of 658780.33 gallons
       5. Puncture cost between minimum of $3.89 and maximum of $14.17MM
       6. Puncture spill volume is between a minimum of 51870.19 and maximum of 80787.46 gallons
15. "BELTON TO MARIPOSA NPS 10
    1. Total Cumulative Length (m): 24523.24
    2. Likelihood of failure distributed between minimum of 1.583e-03 and maximum of 6.579e-03.
       1. Land use distributed as
          1. Agricultural: 24,092.38
          2. Remote: 421.83
          3. Water Course: 9.03
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
       4. Outside diameter of 10.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 9.27 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 4.910e-02 and maximum of 1.580e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $13.07 and maximum of $36.58MM
    4. Total length driven by Environmental: 24523.25 meters.
    5. Environmental Cost distributed between minimum of $12.72 and maximum of $23.77MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 2146.56 gallons
       3. Rupture cost between minimum of $146.50 and maximum of $258.09MM
       4. Rupture spill volume is between a minimum of 1382206.82 and maximum of 1600393.72 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $11.37MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 70531.0 gallons
16. "SYLVAN LAKE EAST LATERAL NPS 8
    1. Total Cumulative Length (m): 23743.21
    2. Likelihood of failure distributed between minimum of 1.198e-03 and maximum of 4.979e-03.
       1. Land use distributed as
          1. Agricultural: 21,877.61
          2. Forested: 1,074.37
          3. Remote: 791.22
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2019-04-23 and maximum of 2019-04-23
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 5.59 and maximum of 8.18 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 6.235e-02 and maximum of 1.196e-01
       9. Class area location is/are nan.
    3. Consequence of failure distributed between minimum of $10.00 and maximum of $11.67MM
    4. Total length driven by Environmental: 23743.21 meters.
    5. Environmental Cost distributed between minimum of $9.62 and maximum of $11.27MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1692.06 and maximum of 1997.55 gallons
       3. Rupture cost between minimum of $86.07 and maximum of $101.61MM
       4. Rupture spill volume is between a minimum of 812082.65 and maximum of 958699.41 gallons
       5. Puncture cost between minimum of $5.89 and maximum of $6.96MM
       6. Puncture spill volume is between a minimum of 55597.1 and maximum of 65634.83 gallons
17. "OLDS TO HARMATTAN NPS 3
    1. Total Cumulative Length (m): 23430.35
    2. Likelihood of failure distributed between minimum of 2.587e-03 and maximum of 1.647e-02.
       1. Land use distributed as
          1. Agricultural: 23,421.31
          2. Water Course: 9.04
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.582e-01 and maximum of 3.956e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $1.15 and maximum of $10.55MM
    4. Total length driven by Safety: 127.74 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $3.27MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 7.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.09 and maximum of 11.09 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
       5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       6. Rupture hazard radius distributed between minimum of 63.72 and maximum of 63.72 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
       8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
       9. Puncture hazard radius distributed between minimum of 45.25 and maximum of 45.25 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 23302.62 meters.
    7. Environmental Cost distributed between minimum of $0.93 and maximum of $10.26MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1644.98 and maximum of 1961.43 gallons
       3. Rupture cost between minimum of $0.21 and maximum of $1.29MM
       4. Rupture spill volume is between a minimum of 1939.31 and maximum of 8828.65 gallons
       5. Puncture cost between minimum of $5.73 and maximum of $11.47MM
       6. Puncture spill volume is between a minimum of 54050.34 and maximum of 64447.97 gallons
18. "RAINBOW LAKE TO CADOTTE NPS 20
    1. Total Cumulative Length (m): 23262.33
    2. Likelihood of failure distributed between minimum of 1.084e-03 and maximum of 3.617e-03.
       1. Land use distributed as
          1. Agricultural: 23,262.33
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
       4. Outside diameter of 20.0 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 7.14 and maximum of 12.7 mm
       7. Toughness between minimum of 12.4 and maximum of 12.4 J
       8. Probability of failure given a hit between minimum of 2.604e-02 and maximum of 8.688e-02
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.00 and maximum of $40.82MM
    4. Total length driven by Environmental: 23262.33 meters.
    5. Environmental Cost distributed between minimum of $9.05 and maximum of $39.71MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.43MM
       2. Leak spill volume between a minimum of 1585.19 and maximum of 2570.42 gallons
       3. Rupture cost between minimum of $13.58 and maximum of $198.33MM
       4. Rupture spill volume is between a minimum of 76353.58 and maximum of 1166021.01 gallons
       5. Puncture cost between minimum of $5.52 and maximum of $14.13MM
       6. Puncture spill volume is between a minimum of 52085.87 and maximum of 84458.14 gallons
19. "UNITY TO WEST SENLAC NPS 3
    1. Total Cumulative Length (m): 22339.6
    2. Likelihood of failure distributed between minimum of 3.394e-03 and maximum of 1.410e-02.
       1. Land use distributed as
          1. Agricultural: 22,331.00
          2. Remote: 0.10
          3. Water Course: 8.50
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1991-01-01 and maximum of 1991-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 5.49 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.669e-01 and maximum of 3.388e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $7.50 and maximum of $19.87MM
    4. Total length driven by Safety: 194.6 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 4.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.02 and maximum of 12.02 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
       5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 68.39 and maximum of 68.39 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 6.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.57 and maximum of 48.57 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 22144.99 meters.
    7. Environmental Cost distributed between minimum of $7.15 and maximum of $13.29MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.40MM
       2. Leak spill volume between a minimum of 1972.39 and maximum of 2302.15 gallons
       3. Rupture cost between minimum of $16.52 and maximum of $31.29MM
       4. Rupture spill volume is between a minimum of 155881.9 and maximum of 181943.64 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $13.01MM
       6. Puncture spill volume is between a minimum of 64808.16 and maximum of 75643.38 gallons
20. "NORTH MARSDEN TIE IN TO WINTER TIE IN NPS 12
    1. Total Cumulative Length (m): 20484.51
    2. Likelihood of failure distributed between minimum of 1.856e-03 and maximum of 4.055e-03.
       1. Land use distributed as
          1. Agricultural: 20,467.68
          2. Remote: 16.83
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2002-01-01 and maximum of 2002-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.19 and maximum of 9.52 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 4.458e-02 and maximum of 1.883e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $16.73 and maximum of $30.17MM
    4. Total length driven by Environmental: 20484.51 meters.
    5. Environmental Cost distributed between minimum of $15.70 and maximum of $18.85MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.23MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 2139.45 gallons
       3. Rupture cost between minimum of $206.09 and maximum of $237.83MM
       4. Rupture spill volume is between a minimum of 1944359.08 and maximum of 2243826.85 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $7.45MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 70297.37 gallons
21. "NPS6 Bentley to Silver Springs
    1. Total Cumulative Length (m): 19618.4
    2. Likelihood of failure distributed between minimum of 1.581e-03 and maximum of 1.185e-02.
       1. Land use distributed as
          1. Agricultural: 19,567.98
          2. Forested: 5.14
          3. Water Course: 45.29
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1977-01-01 and maximum of 1977-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 386.0 and maximum of 386.0 MPa
       6. Wall thickness between minimum of 3.2 and maximum of 4.78 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 1.578e-01 and maximum of 2.846e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $2.74 and maximum of $14.03MM
    4. Total length driven by Environmental: 19618.4 meters.
    5. Environmental Cost distributed between minimum of $2.50 and maximum of $13.73MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.44MM
       2. Leak spill volume between a minimum of 1892.29 and maximum of 2486.61 gallons
       3. Rupture cost between minimum of $2.00 and maximum of $7.08MM
       4. Rupture spill volume is between a minimum of 15101.14 and maximum of 44412.36 gallons
       5. Puncture cost between minimum of $6.59 and maximum of $14.54MM
       6. Puncture spill volume is between a minimum of 62176.21 and maximum of 81704.39 gallons
22. "NPS8 SS-1 From 10-21-18-17-W3 To 2-27-16-17-W3
    1. Total Cumulative Length (m): 18879.11
    2. Likelihood of failure distributed between minimum of 1.204e-03 and maximum of 5.003e-03.
       1. Land use distributed as
          1. Agricultural: 14,061.35
          2. Remote: 4,794.79
          3. Water Course: 22.98
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 6.4 and maximum of 8.2 mm
       7. Toughness between minimum of 17.6 and maximum of 17.6 J
       8. Probability of failure given a hit between minimum of 7.848e-02 and maximum of 1.202e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.29 and maximum of $20.02MM
    4. Total length driven by Environmental: 18879.11 meters.
    5. Environmental Cost distributed between minimum of $9.97 and maximum of $19.64MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.36MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 2245.82 gallons
       3. Rupture cost between minimum of $94.31 and maximum of $173.73MM
       4. Rupture spill volume is between a minimum of 889763.83 and maximum of 1077854.47 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $11.89MM
       6. Puncture spill volume is between a minimum of 60915.34 and maximum of 73792.47 gallons
23. "BUCK LAKE TO WINFIELD NPS 4
    1. Total Cumulative Length (m): 17448.06
    2. Likelihood of failure distributed between minimum of 3.112e-03 and maximum of 1.293e-02.
       1. Land use distributed as
          1. Agricultural: 17,369.80
          2. Forested: 0.20
          3. Water Course: 78.07
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1977-01-01 and maximum of 1977-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.17 and maximum of 8.6 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 7.773e-02 and maximum of 3.107e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $8.10 and maximum of $135.64MM
    4. Total length driven by Safety: 388.74 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $124.86MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 2.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $242.11MM
       5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 25.22 of population impacted
       6. Rupture hazard radius distributed between minimum of 83.22 and maximum of 83.22 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 15.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 17059.33 meters.
    7. Environmental Cost distributed between minimum of $7.57 and maximum of $15.73MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.42MM
       2. Leak spill volume between a minimum of 1973.51 and maximum of 2386.68 gallons
       3. Rupture cost between minimum of $27.33 and maximum of $55.10MM
       4. Rupture spill volume is between a minimum of 257828.51 and maximum of 311807.6 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $13.86MM
       6. Puncture spill volume is between a minimum of 64844.93 and maximum of 78420.89 gallons
24. "BUCK LAKE TO WINFIELD NPS 3
    1. Total Cumulative Length (m): 17353.78
    2. Likelihood of failure distributed between minimum of 1.044e-02 and maximum of 1.045e-02.
       1. Land use distributed as
          1. Agricultural: 17,353.78
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1977-01-01 and maximum of 1977-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 2.507e-01 and maximum of 2.510e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $1.31 and maximum of $125.08MM
    4. Total length driven by Safety: 411.64 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 3.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 9.97 and maximum of 9.97 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 17.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 63.82 and maximum of 63.82 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 12.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 45.92 and maximum of 45.92 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 16942.14 meters.
    7. Economic Loss Cost distributed between minimum of $1.31 and maximum of $4.03MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.24 and maximum of $2.93MM
       5. Leak scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $32,885.37 and maximum of $32,885.37
       7. Rupture cost between minimum of $2.80 and maximum of $5.49MM
       8. Rupture scenario yielded 17.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $2,598,999.73 and maximum of $2,598,999.73
       10. Puncture cost between minimum of $1.29 and maximum of $3.97MM
       11. Puncture scenario yielded 12.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,080,538.52 and maximum of $1,080,538.52"
25. "NPS12 Milk River mainline From 8-21-2-16-W4 To 1-6-1-16-W4 (border)
    1. Total Cumulative Length (m): 16377.09
    2. Likelihood of failure distributed between minimum of 1.554e-03 and maximum of 4.122e-03.
       1. Land use distributed as
          1. Agricultural: 16,377.09
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 6.3 and maximum of 10.3 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.733e-02 and maximum of 9.902e-02
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $16.69 and maximum of $76.00MM
    4. Total length driven by Environmental: 16377.09 meters.
    5. Environmental Cost distributed between minimum of $15.69 and maximum of $74.69MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.38MM
       2. Leak spill volume between a minimum of 1852.98 and maximum of 2193.14 gallons
       3. Rupture cost between minimum of $205.98 and maximum of $402.84MM
       4. Rupture spill volume is between a minimum of 1943379.8 and maximum of 2300136.85 gallons
       5. Puncture cost between minimum of $6.45 and maximum of $12.62MM
       6. Puncture spill volume is between a minimum of 60884.6 and maximum of 72061.52 gallons

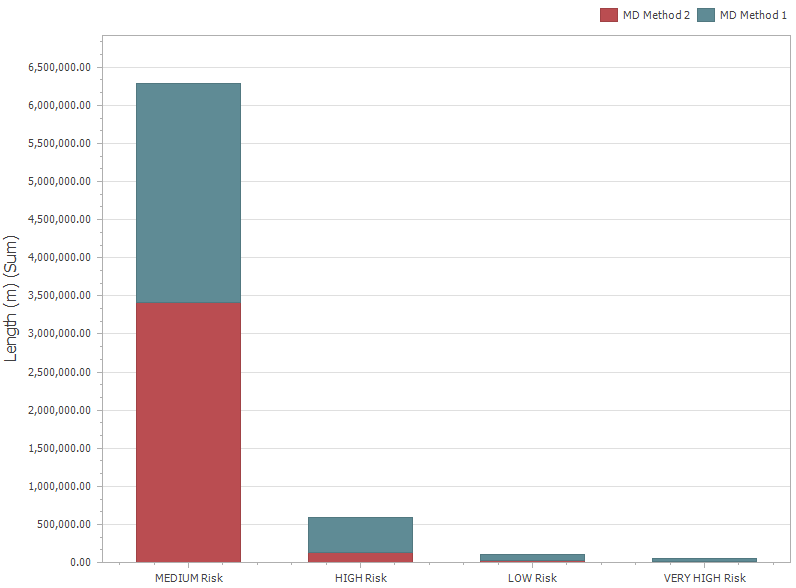
## Manufacturing Defects and Total Consequence

### Assumptions of model

* Latest ILI of each technology type is used.
* Repair and excavation data has already been applied to the database.
* Pipelines with no ILI data use Method 1 approach to estimate LOF.
* Pipelines with no pipe seam type data are assessed as high LOF pipelines.

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

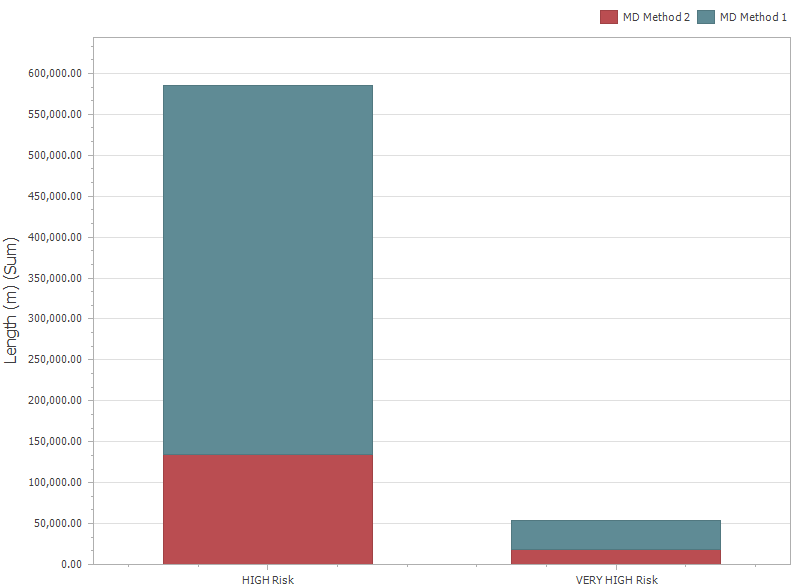


The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MD Method Used** | **Cumulative Length (m)** | | | | |
| **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| Method 1 | 78,380.93 | 2,874,705.01 | 451,477.38 | 35,782.25 | **3,440,345.56** |
| Method 2 | 29,799.38 | 3,413,003.48 | 133,808.44 | 18,413.00 | **3,595,024.31** |
| **Grand Total** | **108,180.31** | **6,287,708.49** | **585,285.82** | **54,195.25** | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.



### Reportable Pipeline Segments: MD Method 1

MC Method 1 has 36 pipelines with segments that fall within the total risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below:

1. "SECT 7 MANSON TO RAPID CITY NPS 6
   1. Total Cumulative Length (m): 106821.69
   2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
      1. Installation date between minimum of 1963-07-01 and maximum of 1963-07-01
      2. Pipe seam type of ERW
      3. Maximum Operating Stress percentage between minimum of 71.83 and maximum of 71.83% SMYS
   3. Consequence of failure distributed between minimum of $3.17 and maximum of $127.06MM
   4. Total length driven by Safety: 785.6 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 17.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
      5. Rupture scenario yielded 55.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
      8. Puncture scenario yielded 39.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
      10. Product type is NGL.
      11. Class area location is/are 1.0.
   6. Total length driven by Economic Loss: 106036.1 meters.
   7. Economic Loss Cost distributed between minimum of $3.17 and maximum of $6.00MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $2.96MM
      5. Leak scenario yielded 17.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $20.55MM
      8. Rupture scenario yielded 55.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $4.95MM
      11. Puncture scenario yielded 39.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
      12. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
2. "SECT 1 EMPRESS TO CABRI NPS 6
   1. Total Cumulative Length (m): 93694.11
   2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
      1. Installation date between minimum of 1963-01-01 and maximum of 1963-01-01
      2. Pipe seam type of ERW
      3. Maximum Operating Stress percentage between minimum of 48.74 and maximum of 59.7% SMYS
   3. Consequence of failure distributed between minimum of $3.18 and maximum of $144.59MM
   4. Total length driven by Safety: 2225.61 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 18.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
      5. Rupture scenario yielded 45.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
      8. Puncture scenario yielded 41.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
      10. Product type is NGL.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Economic Loss: 91468.5 meters.
   7. Economic Loss Cost distributed between minimum of $3.18 and maximum of $23.54MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $20.62MM
      5. Leak scenario yielded 18.0 intersections with structures, with minimum of $25,000.00 and maximum of $20,349,375.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $38.21MM
      8. Rupture scenario yielded 45.0 intersections with structures, with minimum of $25,000.00 and maximum of $20,374,375.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $22.63MM
      11. Puncture scenario yielded 41.0 intersections with structures, with minimum of $25,000.00 and maximum of $20,374,375.00 in cost of structures impacted
      12. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
3. "MADDEN 13-30 TO SUNDRE 16-8 NPS 8
   1. Total Cumulative Length (m): 61506.43
   2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1956-01-01 and maximum of 2017-09-19
      2. Pipe seam type of ERW
      3. Maximum Operating Stress percentage between minimum of 40.11 and maximum of 68.71% SMYS
   3. Consequence of failure distributed between minimum of $0.52 and maximum of $348.89MM
   4. Total length driven by Safety: 1000.92 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $345.43MM:
      1. Leak cost between minimum of $0.00 and maximum of $345.43MM
      2. Leak scenario yielded 53.0 intersections with structures, with minimum of 0.0 and maximum of 35.98 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.7 and maximum of 3.7 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $345.43MM
      5. Rupture scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 35.98 of population impacted
      6. Rupture hazard radius distributed between minimum of 50.04 and maximum of 50.04 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $345.43MM
      8. Puncture scenario yielded 70.0 intersections with structures, with minimum of 0.0 and maximum of 35.98 of population impacted
      9. Puncture hazard radius distributed between minimum of 14.77 and maximum of 14.77 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 60505.51 meters.
   7. Environmental Cost distributed between minimum of $0.30 and maximum of $3.24MM:
      1. Leak cost between minimum of $0.16 and maximum of $0.33MM
      2. Leak spill volume between a minimum of 1464.91 and maximum of 1831.89 gallons
      3. Rupture cost between minimum of $0.37 and maximum of $13.52MM
      4. Rupture spill volume is between a minimum of 3484.36 and maximum of 86523.49 gallons
      5. Puncture cost between minimum of $5.10 and maximum of $10.70MM
      6. Puncture spill volume is between a minimum of 48133.5 and maximum of 60191.76 gallons
      7. Land use distributed as
         1. Agricultural: 58,895.59
         2. Forested: 1,099.91
         3. Water Course: 1,510.93
4. "BUCK CREEK FRAC PLANT TO BRETON NPS 6
   1. Total Cumulative Length (m): 30302.96
   2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
      1. Installation date between minimum of 1958-01-01 and maximum of 1958-01-01
      2. Pipe seam type of ERW
      3. Maximum Operating Stress percentage between minimum of 42.22 and maximum of 42.22% SMYS
   3. Consequence of failure distributed between minimum of $1.66 and maximum of $125.41MM
   4. Total length driven by Safety: 1981.26 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 6.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 9.71 and maximum of 9.71 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
      5. Rupture scenario yielded 33.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      6. Rupture hazard radius distributed between minimum of 99.99 and maximum of 99.99 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
      8. Puncture scenario yielded 15.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 44.58 and maximum of 44.58 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Economic Loss: 28321.69 meters.
   7. Economic Loss Cost distributed between minimum of $1.66 and maximum of $4.35MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.24 and maximum of $2.93MM
      5. Leak scenario yielded 6.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $30,397.21 and maximum of $30,397.21
      7. Rupture cost between minimum of $8.82 and maximum of $15.40MM
      8. Rupture scenario yielded 33.0 intersections with structures, with minimum of $18,600.00 and maximum of $6,579,225.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $8,607,418.48 and maximum of $8,607,418.48
      10. Puncture cost between minimum of $1.21 and maximum of $3.90MM
      11. Puncture scenario yielded 15.0 intersections with structures, with minimum of $18,600.00 and maximum of $2,688,250.00 in cost of structures impacted
      12. Product Loss costs between minimum of $998,783.28 and maximum of $998,783.28"
5. "BONAVISTA 10-28 TO 10-7 NPS 4
   1. Total Cumulative Length (m): 29200.75
   2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
      1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
      2. Pipe seam type of ERW
      3. Maximum Operating Stress percentage between minimum of 30.79 and maximum of 51.5% SMYS
   3. Consequence of failure distributed between minimum of $0.71 and maximum of $23.54MM
   4. Total length driven by Safety: 85.12 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $21.89MM:
      1. Leak cost between minimum of $0.00 and maximum of $21.89MM
      2. Leak scenario yielded 5.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.7 and maximum of 3.79 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
      5. Rupture scenario yielded 29.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      6. Rupture hazard radius distributed between minimum of 27.68 and maximum of 28.36 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
      8. Puncture scenario yielded 27.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      9. Puncture hazard radius distributed between minimum of 14.77 and maximum of 15.13 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 29115.63 meters.
   7. Environmental Cost distributed between minimum of $0.49 and maximum of $4.63MM:
      1. Leak cost between minimum of $0.16 and maximum of $0.33MM
      2. Leak spill volume between a minimum of 1464.91 and maximum of 1852.07 gallons
      3. Rupture cost between minimum of $0.04 and maximum of $2.73MM
      4. Rupture spill volume is between a minimum of 379.55 and maximum of 15469.9 gallons
      5. Puncture cost between minimum of $5.10 and maximum of $10.80MM
      6. Puncture spill volume is between a minimum of 48133.5 and maximum of 60854.75 gallons
      7. Land use distributed as
         1. Agricultural: 28,199.35
         2. Forested: 920.77
         3. Water Course: 80.64
6. "OLDS TO HARMATTAN NPS 3
   1. Total Cumulative Length (m): 23864.29
   2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
      1. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
      2. Pipe seam type of ERW
      3. Maximum Operating Stress percentage between minimum of 40.08 and maximum of 40.08% SMYS
   3. Consequence of failure distributed between minimum of $0.63 and maximum of $4.65MM
   4. Total length driven by Safety: 127.74 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $3.27MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 7.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.09 and maximum of 11.09 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
      5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      6. Rupture hazard radius distributed between minimum of 63.72 and maximum of 63.72 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
      8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
      9. Puncture hazard radius distributed between minimum of 45.25 and maximum of 45.25 meters.
      10. Product type is Condensate.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 23736.55 meters.
   7. Environmental Cost distributed between minimum of $0.42 and maximum of $1.98MM:
      1. Leak cost between minimum of $0.17 and maximum of $0.35MM
      2. Leak spill volume between a minimum of 1644.98 and maximum of 1961.34 gallons
      3. Rupture cost between minimum of $0.21 and maximum of $1.29MM
      4. Rupture spill volume is between a minimum of 1968.37 and maximum of 8828.65 gallons
      5. Puncture cost between minimum of $5.73 and maximum of $11.47MM
      6. Puncture spill volume is between a minimum of 54050.34 and maximum of 64445.07 gallons
      7. Land use distributed as
         1. Agricultural: 22,809.60
         2. Forested: 216.28
         3. Remote: 582.76
         4. Water Course: 255.65
7. "CROOKED LAKE TO GILBY LATERAL NPS 6
   1. Total Cumulative Length (m): 20761.47
   2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
      1. Installation date between minimum of 1965-01-01 and maximum of 1965-01-01
      2. Pipe seam type of ERW
      3. Maximum Operating Stress percentage between minimum of 30.86 and maximum of 55.4% SMYS
   3. Consequence of failure distributed between minimum of $0.53 and maximum of $4.86MM
   4. Total length driven by Safety: 84.12 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $3.51MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 1.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.95 and maximum of 3.95 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
      5. Rupture scenario yielded 11.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      6. Rupture hazard radius distributed between minimum of 42.02 and maximum of 42.02 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
      8. Puncture scenario yielded 2.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
      9. Puncture hazard radius distributed between minimum of 15.77 and maximum of 15.77 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 20677.35 meters.
   7. Environmental Cost distributed between minimum of $0.32 and maximum of $2.22MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.38MM
      2. Leak spill volume between a minimum of 1691.87 and maximum of 2146.46 gallons
      3. Rupture cost between minimum of $0.48 and maximum of $6.15MM
      4. Rupture spill volume is between a minimum of 4509.16 and maximum of 34560.63 gallons
      5. Puncture cost between minimum of $5.89 and maximum of $12.55MM
      6. Puncture spill volume is between a minimum of 55590.98 and maximum of 70527.72 gallons
      7. Land use distributed as
         1. Agricultural: 19,716.60
         2. Forested: 945.01
         3. Water Course: 99.85
8. "ZN-70/ZN-89/ZN-90 NPS 8
   1. Total Cumulative Length (m): 16094.08
   2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
      1. Installation date between minimum of 1968-01-01 and maximum of 1968-01-01
      2. Pipe seam type of ERW
      3. Maximum Operating Stress percentage between minimum of 30.33 and maximum of 44.69% SMYS
   3. Consequence of failure distributed between minimum of $12.00 and maximum of $21.10MM
   4. Total length driven by Environmental: 16094.08 meters.
   5. Environmental Cost distributed between minimum of $11.67 and maximum of $20.72MM:
      1. Leak cost between minimum of $0.15 and maximum of $0.26MM
      2. Leak spill volume between a minimum of 1398.53 and maximum of 1606.02 gallons
      3. Rupture cost between minimum of $71.14 and maximum of $123.62MM
      4. Rupture spill volume is between a minimum of 671208.81 and maximum of 770790.15 gallons
      5. Puncture cost between minimum of $4.87 and maximum of $8.46MM
      6. Puncture spill volume is between a minimum of 45952.54 and maximum of 52770.12 gallons
      7. Land use distributed as
         1. Forested: 7,263.99
         2. Remote: 8,790.23
         3. Water Course: 39.86
9. "SYLVAN LAKE 01-21 TO 13-32 NPS 4
   1. Total Cumulative Length (m): 13938.58
   2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
      1. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
      2. Pipe seam type of ERW
      3. Maximum Operating Stress percentage between minimum of 41.07 and maximum of 61.77% SMYS
   3. Consequence of failure distributed between minimum of $0.37 and maximum of $4.81MM
   4. Total length driven by Safety: 85.52 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $4.27MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 13.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
      3. Leak hazard radius distributed between minimum of 19.59 and maximum of 19.59 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
      5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      6. Rupture hazard radius distributed between minimum of 85.15 and maximum of 85.15 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
      8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
      9. Puncture hazard radius distributed between minimum of 53.75 and maximum of 53.75 meters.
      10. Product type is Butane/Condensate.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 13315.37 meters.
   7. Environmental Cost distributed between minimum of $0.16 and maximum of $0.54MM:
      1. Leak cost between minimum of $0.09 and maximum of $0.18MM
      2. Leak spill volume between a minimum of 1883.71 and maximum of 2157.03 gallons
      3. Rupture cost between minimum of $0.06 and maximum of $0.74MM
      4. Rupture spill volume is between a minimum of 1251.39 and maximum of 8935.04 gallons
      5. Puncture cost between minimum of $3.05 and maximum of $5.89MM
      6. Puncture spill volume is between a minimum of 61894.42 and maximum of 70875.09 gallons
      7. Land use distributed as
         1. Agricultural: 13,434.48
         2. Forested: 308.69
         3. Remote: 110.57
         4. Water Course: 84.85
   8. Total length driven by Economic Loss: 537.69 meters.
   9. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.28MM:
      1. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is Butane/Condensate.
      4. Leak cost between minimum of $0.21 and maximum of $0.24MM
      5. Leak scenario yielded 13.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $2,825.56 and maximum of $3,235.54
      7. Rupture cost between minimum of $0.21 and maximum of $0.51MM
      8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $1,877.09 and maximum of $13,402.56
      10. Puncture cost between minimum of $0.30 and maximum of $0.36MM
      11. Puncture scenario yielded 19.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
      12. Product Loss costs between minimum of $92,841.62 and maximum of $106,312.63"
10. "AMERADA FERRIER 1-6 TO 10-33 JUNCTION NPS 4
    1. Total Cumulative Length (m): 12612.56
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
       1. Installation date between minimum of 1961-01-01 and maximum of 1961-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 36.32 and maximum of 61.87% SMYS
    3. Consequence of failure distributed between minimum of $4.63 and maximum of $142.13MM
    4. Total length driven by Safety: 1679.99 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $133.69MM:
       1. Leak cost between minimum of $0.00 and maximum of $21.89MM
       2. Leak scenario yielded 4.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.55 and maximum of 11.55 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $306.46MM
       5. Rupture scenario yielded 38.0 intersections with structures, with minimum of 0.0 and maximum of 31.92 of population impacted
       6. Rupture hazard radius distributed between minimum of 80.3 and maximum of 80.3 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $284.57MM
       8. Puncture scenario yielded 28.0 intersections with structures, with minimum of 0.0 and maximum of 29.64 of population impacted
       9. Puncture hazard radius distributed between minimum of 46.87 and maximum of 46.87 meters.
       10. Product type is LVP Products.
       11. Class area location is/are 1.0, 2.0, 3.0.
    6. Total length driven by Environmental: 10932.57 meters.
    7. Environmental Cost distributed between minimum of $4.38 and maximum of $8.87MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.37MM
       2. Leak spill volume between a minimum of 1801.03 and maximum of 2062.65 gallons
       3. Rupture cost between minimum of $24.94 and maximum of $47.89MM
       4. Rupture spill volume is between a minimum of 235295.0 and maximum of 269474.56 gallons
       5. Puncture cost between minimum of $6.27 and maximum of $12.04MM
       6. Puncture spill volume is between a minimum of 59177.66 and maximum of 67773.96 gallons
       7. Land use distributed as
          1. Agricultural: 5,876.31
          2. Forested: 6,682.16
          3. Water Course: 54.09
11. "SUNDRE TO HARTELL NPS 12
    1. Total Cumulative Length (m): 9808.45
    2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
       1. Installation date between minimum of 1966-01-01 and maximum of 1966-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 60.51 and maximum of 71.07% SMYS
    3. Consequence of failure distributed between minimum of $1.27 and maximum of $5.22MM
    4. Total length driven by Safety: 399.97 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $3.61MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 2697.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
       3. Leak hazard radius distributed between minimum of 4.11 and maximum of 4.11 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
       5. Rupture scenario yielded 293.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       6. Rupture hazard radius distributed between minimum of 79.49 and maximum of 79.49 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
       8. Puncture scenario yielded 752.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
       9. Puncture hazard radius distributed between minimum of 16.44 and maximum of 16.44 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 1649.74 meters.
    7. Environmental Cost distributed between minimum of $0.42 and maximum of $1.22MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.22MM
       2. Leak spill volume between a minimum of 1853.95 and maximum of 2050.84 gallons
       3. Rupture cost between minimum of $0.94 and maximum of $5.67MM
       4. Rupture spill volume is between a minimum of 8834.32 and maximum of 53499.14 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $7.14MM
       6. Puncture spill volume is between a minimum of 60916.68 and maximum of 67385.89 gallons
       7. Land use distributed as
          1. Agricultural: 9,808.45
    8. Total length driven by Economic Loss: 7758.74 meters.
    9. Economic Loss Cost distributed between minimum of $0.85 and maximum of $0.90MM:
       1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is Crude Oil.
       4. Leak cost between minimum of $0.85 and maximum of $0.87MM
       5. Leak scenario yielded 2697.0 intersections with structures, with minimum of $0.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $2,057.00 and maximum of $2,275.45
       7. Rupture cost between minimum of $0.85 and maximum of $1.14MM
       8. Rupture scenario yielded 293.0 intersections with structures, with minimum of $0.00 and maximum of $269,868.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $9,801.89 and maximum of $59,358.57
       10. Puncture cost between minimum of $0.91 and maximum of $0.94MM
       11. Puncture scenario yielded 752.0 intersections with structures, with minimum of $0.00 and maximum of $25,000.00 in cost of structures impacted
       12. Product Loss costs between minimum of $67,588.50 and maximum of $74,766.25"
12. "UTILITY NPS 8
    1. Total Cumulative Length (m): 7825.84
    2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
       1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 51.76 and maximum of 51.76% SMYS
    3. Consequence of failure distributed between minimum of $3.08 and maximum of $99.17MM
    4. Total length driven by Safety: 3432.4 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $95.33MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 10.66 and maximum of 10.66 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $568.51MM
       5. Rupture scenario yielded 40.0 intersections with structures, with minimum of 0.0 and maximum of 59.22 of population impacted
       6. Rupture hazard radius distributed between minimum of 135.26 and maximum of 135.26 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $320.46MM
       8. Puncture scenario yielded 45.0 intersections with structures, with minimum of 0.0 and maximum of 33.38 of population impacted
       9. Puncture hazard radius distributed between minimum of 49.48 and maximum of 49.48 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 4393.44 meters.
    7. Economic Loss Cost distributed between minimum of $2.97 and maximum of $4.66MM:
       1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.25 and maximum of $0.52MM
       5. Leak scenario yielded 16.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $40,141.48 and maximum of $40,141.48
       7. Rupture cost between minimum of $19.48 and maximum of $25.75MM
       8. Rupture scenario yielded 40.0 intersections with structures, with minimum of $25,000.00 and maximum of $6,266,540.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $19,265,442.30 and maximum of $19,265,442.30
       10. Puncture cost between minimum of $1.53 and maximum of $5.33MM
       11. Puncture scenario yielded 45.0 intersections with structures, with minimum of $25,000.00 and maximum of $3,792,943.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,318,957.76 and maximum of $1,318,957.76"
13. "NPS8 SARNIA CONDENSATE TO SUNCOR
    1. Total Cumulative Length (m): 7802.27
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
       1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 36.07 and maximum of 71.91% SMYS
    3. Consequence of failure distributed between minimum of $16.21 and maximum of $107.98MM
    4. Total length driven by Safety: 2199.25 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $90.93MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.8 and maximum of 11.8 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $546.62MM
       5. Rupture scenario yielded 38.0 intersections with structures, with minimum of 0.0 and maximum of 56.94 of population impacted
       6. Rupture hazard radius distributed between minimum of 135.89 and maximum of 135.89 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $221.29MM
       8. Puncture scenario yielded 49.0 intersections with structures, with minimum of 0.0 and maximum of 23.05 of population impacted
       9. Puncture hazard radius distributed between minimum of 47.76 and maximum of 47.76 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 5603.03 meters.
    7. Environmental Cost distributed between minimum of $15.82 and maximum of $29.41MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1889.11 and maximum of 1989.97 gallons
       3. Rupture cost between minimum of $96.10 and maximum of $169.14MM
       4. Rupture spill volume is between a minimum of 906656.27 and maximum of 955064.68 gallons
       5. Puncture cost between minimum of $6.58 and maximum of $11.58MM
       6. Puncture spill volume is between a minimum of 62071.83 and maximum of 65385.99 gallons
       7. Land use distributed as
          1. Agricultural: 1,826.34
          2. Forested: 1,528.89
          3. Utility Corridor: 4,445.74
          4. Water Course: 1.30
14. "SS-09/SS-08 NPS 4
    1. Total Cumulative Length (m): 7319.88
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
       1. Installation date between minimum of 1966-01-01 and maximum of 1966-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 39.18 and maximum of 39.18% SMYS
    3. Consequence of failure distributed between minimum of $5.38 and maximum of $6.14MM
    4. Total length driven by Environmental: 7319.88 meters.
    5. Environmental Cost distributed between minimum of $5.12 and maximum of $5.87MM:
       1. Leak cost between minimum of $0.16 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1545.39 and maximum of 1772.8 gallons
       3. Rupture cost between minimum of $21.40 and maximum of $24.55MM
       4. Rupture spill volume is between a minimum of 201897.55 and maximum of 231607.68 gallons
       5. Puncture cost between minimum of $5.38 and maximum of $6.17MM
       6. Puncture spill volume is between a minimum of 50778.06 and maximum of 58250.28 gallons
       7. Land use distributed as
          1. Agricultural: 7,319.88
15. "SS-69/SS-34 NPS 4
    1. Total Cumulative Length (m): 5765.38
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
       1. Installation date between minimum of 1966-01-01 and maximum of 1966-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 31.34 and maximum of 47.13% SMYS
    3. Consequence of failure distributed between minimum of $4.66 and maximum of $7.29MM
    4. Total length driven by Environmental: 5765.38 meters.
    5. Environmental Cost distributed between minimum of $4.41 and maximum of $7.01MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.30MM
       2. Leak spill volume between a minimum of 1695.14 and maximum of 1822.72 gallons
       3. Rupture cost between minimum of $23.47 and maximum of $39.57MM
       4. Rupture spill volume is between a minimum of 221461.88 and maximum of 238128.96 gallons
       5. Puncture cost between minimum of $5.90 and maximum of $9.95MM
       6. Puncture spill volume is between a minimum of 55698.57 and maximum of 59890.41 gallons
       7. Land use distributed as
          1. Agricultural: 5,764.36
          2. Water Course: 1.02
16. "BONAVISTA LATERAL 14-24 TO 3-27 NPS 4
    1. Total Cumulative Length (m): 5496.62
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
       1. Installation date between minimum of 1960-01-01 and maximum of 1960-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 37.34 and maximum of 56.17% SMYS
    3. Consequence of failure distributed between minimum of $4.55 and maximum of $36.93MM
    4. Total length driven by Safety: 578.92 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $31.48MM:
       1. Leak cost between minimum of $0.00 and maximum of $28.51MM
       2. Leak scenario yielded 39.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted.
       3. Leak hazard radius distributed between minimum of 3.86 and maximum of 3.94 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $57.02MM
       5. Rupture scenario yielded 25.0 intersections with structures, with minimum of 0.0 and maximum of 5.94 of population impacted
       6. Rupture hazard radius distributed between minimum of 28.92 and maximum of 29.5 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $28.51MM
       8. Puncture scenario yielded 42.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted
       9. Puncture hazard radius distributed between minimum of 15.43 and maximum of 15.74 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 4917.7 meters.
    7. Environmental Cost distributed between minimum of $4.30 and maximum of $7.88MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.32MM
       2. Leak spill volume between a minimum of 1613.33 and maximum of 1799.07 gallons
       3. Rupture cost between minimum of $22.34 and maximum of $41.66MM
       4. Rupture spill volume is between a minimum of 210773.22 and maximum of 235039.37 gallons
       5. Puncture cost between minimum of $5.62 and maximum of $10.48MM
       6. Puncture spill volume is between a minimum of 53010.33 and maximum of 59113.37 gallons
       7. Land use distributed as
          1. Agricultural: 5,448.29
          2. Water Course: 48.33
17. "SS-15 NPS 6
    1. Total Cumulative Length (m): 5229.36
    2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
       1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 40.51 and maximum of 55.87% SMYS
    3. Consequence of failure distributed between minimum of $1.63 and maximum of $1.83MM
    4. Total length driven by Environmental: 5229.36 meters.
    5. Environmental Cost distributed between minimum of $1.39 and maximum of $1.59MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 1962.4 gallons
       3. Rupture cost between minimum of $55.64 and maximum of $58.90MM
       4. Rupture spill volume is between a minimum of 524962.0 and maximum of 555682.93 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.83MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 64480.05 gallons
       7. Land use distributed as
          1. Agricultural: 5,229.36
18. "MONTEREY 5-24 TO 4-31 NPS 4
    1. Total Cumulative Length (m): 3370.21
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
       1. Installation date between minimum of 1959-01-01 and maximum of 1959-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 32.51 and maximum of 61.63% SMYS
    3. Consequence of failure distributed between minimum of $4.98 and maximum of $6.18MM
    4. Total length driven by Environmental: 3370.21 meters.
    5. Environmental Cost distributed between minimum of $4.72 and maximum of $5.88MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 1923.83 gallons
       3. Rupture cost between minimum of $25.67 and maximum of $26.64MM
       4. Rupture spill volume is between a minimum of 242204.18 and maximum of 251338.07 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.70MM
       6. Puncture spill volume is between a minimum of 60915.35 and maximum of 63212.56 gallons
       7. Land use distributed as
          1. Agricultural: 3,370.21
19. "NPS6 RL-17 From 13-6-111-6-W6M To 12-32-110-6-W6M
    1. Total Cumulative Length (m): 3072.36
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
       1. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 31.37 and maximum of 31.37% SMYS
    3. Consequence of failure distributed between minimum of $7.34 and maximum of $7.66MM
    4. Total length driven by Environmental: 3072.36 meters.
    5. Environmental Cost distributed between minimum of $7.01 and maximum of $7.32MM:
       1. Leak cost between minimum of $0.15 and maximum of $0.15MM
       2. Leak spill volume between a minimum of 1398.76 and maximum of 1462.2 gallons
       3. Rupture cost between minimum of $41.98 and maximum of $43.89MM
       4. Rupture spill volume is between a minimum of 396079.23 and maximum of 414044.27 gallons
       5. Puncture cost between minimum of $4.87 and maximum of $5.09MM
       6. Puncture spill volume is between a minimum of 45960.04 and maximum of 48044.66 gallons
       7. Land use distributed as
          1. Forested: 1,486.03
          2. Remote: 1,586.33
20. "SYLVAN LAKE SOUTH 10-21 TO 16-19 NPS 4
    1. Total Cumulative Length (m): 3035.69
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
       1. Installation date between minimum of 1961-01-01 and maximum of 1961-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 34.1 and maximum of 51.25% SMYS
    3. Consequence of failure distributed between minimum of $4.68 and maximum of $5.78MM
    4. Total length driven by Environmental: 3035.69 meters.
    5. Environmental Cost distributed between minimum of $4.43 and maximum of $5.49MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1691.87 and maximum of 1745.74 gallons
       3. Rupture cost between minimum of $23.43 and maximum of $24.17MM
       4. Rupture spill volume is between a minimum of 221034.09 and maximum of 228072.45 gallons
       5. Puncture cost between minimum of $5.89 and maximum of $6.08MM
       6. Puncture spill volume is between a minimum of 55590.98 and maximum of 57361.16 gallons
       7. Land use distributed as
          1. Agricultural: 3,035.69
21. "SUNDRE LATERAL 10-4 TO 16-8 NPS 4
    1. Total Cumulative Length (m): 2987.16
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
       1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 32.58 and maximum of 61.77% SMYS
    3. Consequence of failure distributed between minimum of $4.87 and maximum of $8.21MM
    4. Total length driven by Environmental: 2987.16 meters.
    5. Environmental Cost distributed between minimum of $4.58 and maximum of $7.94MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.33MM
       2. Leak spill volume between a minimum of 1801.18 and maximum of 1862.87 gallons
       3. Rupture cost between minimum of $24.94 and maximum of $43.27MM
       4. Rupture spill volume is between a minimum of 235315.52 and maximum of 243374.63 gallons
       5. Puncture cost between minimum of $6.27 and maximum of $10.88MM
       6. Puncture spill volume is between a minimum of 59182.82 and maximum of 61209.72 gallons
       7. Land use distributed as
          1. Agricultural: 2,983.25
          2. Water Course: 3.91
22. "SS-24 NPS 4
    1. Total Cumulative Length (m): 2797.85
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
       1. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 32.7 and maximum of 61.99% SMYS
    3. Consequence of failure distributed between minimum of $4.65 and maximum of $5.58MM
    4. Total length driven by Environmental: 2797.85 meters.
    5. Environmental Cost distributed between minimum of $4.37 and maximum of $5.28MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1694.94 and maximum of 1752.98 gallons
       3. Rupture cost between minimum of $23.47 and maximum of $24.27MM
       4. Rupture spill volume is between a minimum of 221434.64 and maximum of 229017.59 gallons
       5. Puncture cost between minimum of $5.90 and maximum of $6.10MM
       6. Puncture spill volume is between a minimum of 55691.72 and maximum of 57598.87 gallons
       7. Land use distributed as
          1. Agricultural: 2,797.85
23. "SS-13 NPS 4
    1. Total Cumulative Length (m): 2691.52
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
       1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 32.51 and maximum of 32.51% SMYS
    3. Consequence of failure distributed between minimum of $5.23 and maximum of $6.15MM
    4. Total length driven by Environmental: 2691.52 meters.
    5. Environmental Cost distributed between minimum of $4.94 and maximum of $5.84MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 1909.74 gallons
       3. Rupture cost between minimum of $25.67 and maximum of $26.44MM
       4. Rupture spill volume is between a minimum of 242203.9 and maximum of 249498.09 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.65MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 62749.79 gallons
       7. Land use distributed as
          1. Agricultural: 2,474.07
          2. Remote: 217.45
24. "NPS6 Station 8 to Buck Creek Frac Plant From 4-5-49-9W5 To 13-24-48-7W
    1. Total Cumulative Length (m): 2688.02
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
       1. Installation date between minimum of 1958-01-01 and maximum of 1958-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 31.51 and maximum of 31.51% SMYS
    3. Consequence of failure distributed between minimum of $2.20 and maximum of $125.94MM
    4. Total length driven by Safety: 454.07 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 6.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 10.87 and maximum of 10.87 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 29.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 113.48 and maximum of 113.48 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 15.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 50.6 and maximum of 50.6 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 2233.94 meters.
    7. Economic Loss Cost distributed between minimum of $2.20 and maximum of $4.89MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.25 and maximum of $2.94MM
       5. Leak scenario yielded 6.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $42,598.99 and maximum of $42,598.99
       7. Rupture cost between minimum of $12.27 and maximum of $14.96MM
       8. Rupture scenario yielded 29.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $12,062,533.44 and maximum of $12,062,533.44
       10. Puncture cost between minimum of $1.61 and maximum of $4.30MM
       11. Puncture scenario yielded 15.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,399,706.16 and maximum of $1,399,706.16"
25. "COED BV 203 TO EST NPS 8
    1. Total Cumulative Length (m): 2259.9
    2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
       1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       2. Pipe seam type of ERW
       3. Maximum Operating Stress percentage between minimum of 63.39 and maximum of 63.39% SMYS
    3. Consequence of failure distributed between minimum of $5.08 and maximum of $158.72MM
    4. Total length driven by Safety: 1694.93 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $150.03MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $513.60MM
       5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 53.5 of population impacted
       6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $392.54MM
       8. Puncture scenario yielded 46.0 intersections with structures, with minimum of 0.0 and maximum of 40.89 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 2.0.
    6. Total length driven by Environmental: 564.97 meters.
    7. Environmental Cost distributed between minimum of $4.66 and maximum of $13.35MM:
       1. Leak cost between minimum of $0.13 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1973.38 and maximum of 2019.77 gallons
       3. Rupture cost between minimum of $64.53 and maximum of $169.76MM
       4. Rupture spill volume is between a minimum of 947101.66 and maximum of 969363.57 gallons
       5. Puncture cost between minimum of $4.42 and maximum of $11.62MM
       6. Puncture spill volume is between a minimum of 64840.82 and maximum of 66364.92 gallons
       7. Land use distributed as
          1. Commercial/Industrial: 2,256.78
          2. Water Course: 3.12

### Reportable Pipeline Segments: MD Method 2

MD Method 2 has 23 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below:

1. "SSPL TRUNK LINE NPS 12
   1. Total Cumulative Length (m): 71773.15
   2. Likelihood of failure distributed between minimum of 1.002e-02 and maximum of 1.000e+00.
      1. ILI Date of 2018-06-12 00:00:00
      2. ILI tool of USCD
      3. Cracks identified 39826.0
      4. Depth fraction between 0.14 and 0.79
      5. Length between 14.955 mm and 2685.828 mm
   3. Consequence of failure distributed between minimum of $1.67 and maximum of $24.14MM
   4. Total length driven by Safety: 504.77 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $21.89MM:
      1. Leak cost between minimum of $0.00 and maximum of $21.89MM
      2. Leak scenario yielded 53.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.97 and maximum of 3.97 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
      5. Rupture scenario yielded 77.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      6. Rupture hazard radius distributed between minimum of 76.72 and maximum of 76.72 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
      8. Puncture scenario yielded 84.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      9. Puncture hazard radius distributed between minimum of 15.87 and maximum of 15.87 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 70998.44 meters.
   7. Environmental Cost distributed between minimum of $0.82 and maximum of $4.18MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.39MM
      2. Leak spill volume between a minimum of 1715.23 and maximum of 2217.74 gallons
      3. Rupture cost between minimum of $3.74 and maximum of $21.37MM
      4. Rupture spill volume is between a minimum of 35239.39 and maximum of 130588.38 gallons
      5. Puncture cost between minimum of $5.97 and maximum of $12.87MM
      6. Puncture spill volume is between a minimum of 56358.71 and maximum of 72869.87 gallons
      7. Land use distributed as
         1. Agricultural: 53,184.16
         2. Remote: 18,071.70
         3. Water Course: 517.29
   8. Total length driven by Economic Loss: 269.94 meters.
   9. Economic Loss Cost distributed between minimum of $0.85 and maximum of $1.13MM:
      1. Repair costs between minimum of $44,000.00 and maximum of $187,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.85 and maximum of $1.12MM
      5. Leak scenario yielded 53.0 intersections with structures, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,903.09 and maximum of $2,460.63
      7. Rupture cost between minimum of $0.88 and maximum of $1.24MM
      8. Rupture scenario yielded 77.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $39,098.94 and maximum of $144,890.91
      10. Puncture cost between minimum of $0.91 and maximum of $1.19MM
      11. Puncture scenario yielded 84.0 intersections with structures, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $62,531.33 and maximum of $80,850.86"
2. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
   1. Total Cumulative Length (m): 50577.99
   2. Likelihood of failure distributed between minimum of 1.001e-02 and maximum of 1.000e+00.
      1. ILI Date of 2017-10-16 00:00:00
      2. ILI tool of USCD
      3. Cracks identified 3207.0
      4. Depth fraction between 0.15 and 0.79
      5. Length between 14.0 mm and 8542.0 mm
   3. Consequence of failure distributed between minimum of $1.48 and maximum of $53.75MM
   4. Total length driven by Safety: 921.82 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $50.93MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 24.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.64 and maximum of 4.11 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $307.20MM
      5. Rupture scenario yielded 60.0 intersections with structures, with minimum of 0.0 and maximum of 32.0 of population impacted
      6. Rupture hazard radius distributed between minimum of 70.19 and maximum of 79.49 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
      8. Puncture scenario yielded 56.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      9. Puncture hazard radius distributed between minimum of 14.52 and maximum of 16.44 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 48012.0 meters.
   7. Environmental Cost distributed between minimum of $0.63 and maximum of $7.82MM:
      1. Leak cost between minimum of $0.16 and maximum of $0.43MM
      2. Leak spill volume between a minimum of 1529.63 and maximum of 2443.61 gallons
      3. Rupture cost between minimum of $2.88 and maximum of $44.26MM
      4. Rupture spill volume is between a minimum of 27141.03 and maximum of 249037.58 gallons
      5. Puncture cost between minimum of $5.33 and maximum of $14.28MM
      6. Puncture spill volume is between a minimum of 50260.28 and maximum of 80291.33 gallons
      7. Land use distributed as
         1. Agricultural: 47,233.73
         2. Forested: 2,334.16
         3. Remote: 813.25
         4. Water Course: 196.85
   8. Total length driven by Economic Loss: 1644.17 meters.
   9. Economic Loss Cost distributed between minimum of $0.85 and maximum of $1.11MM:
      1. Repair costs between minimum of $44,000.00 and maximum of $187,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.85 and maximum of $0.99MM
      5. Leak scenario yielded 24.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,697.16 and maximum of $2,711.24
      7. Rupture cost between minimum of $0.87 and maximum of $2.44MM
      8. Rupture scenario yielded 60.0 intersections with structures, with minimum of $25,000.00 and maximum of $1,500,000.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $30,113.62 and maximum of $276,313.12
      10. Puncture cost between minimum of $0.90 and maximum of $1.20MM
      11. Puncture scenario yielded 56.0 intersections with structures, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $55,764.98 and maximum of $89,085.14"
3. "RAINBOW LAKE TO CADOTTE NPS 20
   1. Total Cumulative Length (m): 6269.73
   2. Likelihood of failure distributed between minimum of 1.170e-03 and maximum of 3.933e-01.
      1. ILI Date of 2012-12-08 00:00:00
      2. ILI tool of USCD
      3. Cracks identified 576.0
      4. Depth fraction between 0.08 and 0.31
      5. Length between 25.0 mm and 495.0 mm
   3. Consequence of failure distributed between minimum of $1.66 and maximum of $32.02MM
   4. Total length driven by Environmental: 6239.74 meters.
   5. Environmental Cost distributed between minimum of $0.80 and maximum of $30.70MM:
      1. Leak cost between minimum of $0.17 and maximum of $0.45MM
      2. Leak spill volume between a minimum of 1585.19 and maximum of 2568.01 gallons
      3. Rupture cost between minimum of $2.20 and maximum of $182.33MM
      4. Rupture spill volume is between a minimum of 20714.32 and maximum of 1162375.41 gallons
      5. Puncture cost between minimum of $5.52 and maximum of $14.67MM
      6. Puncture spill volume is between a minimum of 52085.87 and maximum of 84379.09 gallons
      7. Land use distributed as
         1. Agricultural: 2,025.81
         2. Forested: 2,559.97
         3. Remote: 1,634.63
         4. Water Course: 49.31
   6. Total length driven by Economic Loss: 30.0 meters.
   7. Economic Loss Cost distributed between minimum of $0.87 and maximum of $1.32MM:
      1. Repair costs between minimum of $57,000.00 and maximum of $330,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.86 and maximum of $1.13MM
      5. Leak scenario yielded 90.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,758.81 and maximum of $2,849.27
      7. Rupture cost between minimum of $0.88 and maximum of $2.27MM
      8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $22,983.03 and maximum of $1,289,683.19
      10. Puncture cost between minimum of $0.91 and maximum of $1.22MM
      11. Puncture scenario yielded 96.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $57,790.51 and maximum of $93,620.61"
4. "WASCANA MAINLINE NPS 12
   1. Total Cumulative Length (m): 3869.66
   2. Likelihood of failure distributed between minimum of 1.456e-03 and maximum of 7.847e-01.
      1. ILI Date of 2015-02-21 00:00:00
      2. ILI tool of MFL/Geometry/AFD/USCD
      3. Cracks identified 178.0
      4. Depth fraction between 0.21 and 0.48
      5. Length between 26.0 mm and 268.0 mm
   3. Consequence of failure distributed between minimum of $1.24 and maximum of $12.77MM
   4. Total length driven by Environmental: 3481.71 meters.
   5. Environmental Cost distributed between minimum of $0.39 and maximum of $11.80MM:
      1. Leak cost between minimum of $0.16 and maximum of $0.36MM
      2. Leak spill volume between a minimum of 1547.99 and maximum of 2423.88 gallons
      3. Rupture cost between minimum of $1.44 and maximum of $69.79MM
      4. Rupture spill volume is between a minimum of 13572.13 and maximum of 658455.5 gallons
      5. Puncture cost between minimum of $5.39 and maximum of $11.75MM
      6. Puncture spill volume is between a minimum of 50863.54 and maximum of 79643.13 gallons
      7. Land use distributed as
         1. Agricultural: 2,395.80
         2. Remote: 1,405.58
         3. Water Course: 68.28
   6. Total length driven by Economic Loss: 387.95 meters.
   7. Economic Loss Cost distributed between minimum of $0.85 and maximum of $1.05MM:
      1. Repair costs between minimum of $44,000.00 and maximum of $187,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.85 and maximum of $0.99MM
      5. Leak scenario yielded 9.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,717.54 and maximum of $2,689.35
      7. Rupture cost between minimum of $0.86 and maximum of $1.57MM
      8. Rupture scenario yielded 34.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $15,058.60 and maximum of $730,572.06
      10. Puncture cost between minimum of $0.90 and maximum of $1.06MM
      11. Puncture scenario yielded 18.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $56,434.30 and maximum of $88,365.95"
5. "BRETON TO EDMONTON NPS 8
   1. Total Cumulative Length (m): 3568.99
   2. Likelihood of failure distributed between minimum of 2.356e-02 and maximum of 9.414e-01.
      1. ILI Date of 2014-12-08 00:00:00
      2. ILI tool of USCD
      3. Cracks identified 100.0
      4. Depth fraction between 0.4124 and 0.90
      5. Length between 44.0 mm and 1713.0 mm
   3. Consequence of failure distributed between minimum of $0.56 and maximum of $1,143.10MM
   4. Total length driven by Safety: 918.92 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $1,120.53MM:
      1. Leak cost between minimum of $0.00 and maximum of $165.41MM
      2. Leak scenario yielded 117.0 intersections with structures, with minimum of 0.0 and maximum of 17.23 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.13 and maximum of 12.03 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $6,697.73MM
      5. Rupture scenario yielded 236.0 intersections with structures, with minimum of 0.0 and maximum of 697.68 of population impacted
      6. Rupture hazard radius distributed between minimum of 129.12 and maximum of 138.23 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $1,816.70MM
      8. Puncture scenario yielded 355.0 intersections with structures, with minimum of 0.0 and maximum of 189.24 of population impacted
      9. Puncture hazard radius distributed between minimum of 45.37 and maximum of 48.58 meters.
      10. Product type is Condensate.
      11. Class area location is/are 1.0, 2.0, 3.0, 4.0.
   6. Total length driven by Environmental: 2650.07 meters.
   7. Environmental Cost distributed between minimum of $0.30 and maximum of $2.34MM:
      1. Leak cost between minimum of $0.11 and maximum of $0.34MM
      2. Leak spill volume between a minimum of 1661.87 and maximum of 2652.88 gallons
      3. Rupture cost between minimum of $1.15 and maximum of $11.43MM
      4. Rupture spill volume is between a minimum of 13808.26 and maximum of 85309.31 gallons
      5. Puncture cost between minimum of $3.72 and maximum of $11.25MM
      6. Puncture spill volume is between a minimum of 54605.31 and maximum of 87167.48 gallons
      7. Land use distributed as
         1. Agricultural: 2,838.00
         2. Commercial/Industrial: 209.94
         3. Forested: 119.97
         4. High Density Residential: 179.95
         5. Low Density Residential: 209.94
         6. Water Course: 11.19
6. "SSPL MAINLINE NPS 16
   1. Total Cumulative Length (m): 3166.22
   2. Likelihood of failure distributed between minimum of 1.010e-03 and maximum of 4.721e-01.
      1. ILI Date of 2017-09-07 00:00:00
      2. ILI tool of USCD
      3. Cracks identified 2368.0
      4. Depth fraction between nan and nan
      5. Length between 14.957 mm and 664.091 mm
   3. Consequence of failure distributed between minimum of $1.81 and maximum of $16.86MM
   4. Total length driven by Environmental: 3166.22 meters.
   5. Environmental Cost distributed between minimum of $0.95 and maximum of $15.92MM:
      1. Leak cost between minimum of $0.17 and maximum of $0.51MM
      2. Leak spill volume between a minimum of 1567.63 and maximum of 2880.08 gallons
      3. Rupture cost between minimum of $4.23 and maximum of $57.50MM
      4. Rupture spill volume is between a minimum of 39871.11 and maximum of 341764.47 gallons
      5. Puncture cost between minimum of $5.46 and maximum of $16.84MM
      6. Puncture spill volume is between a minimum of 51508.72 and maximum of 94633.0 gallons
      7. Land use distributed as
         1. Agricultural: 2,932.09
         2. Remote: 168.92
         3. Water Course: 65.22
7. "PINCHER CREEK TO CARWAY NPS 12
   1. Total Cumulative Length (m): 3000.93
   2. Likelihood of failure distributed between minimum of 1.219e-03 and maximum of 8.371e-01.
      1. ILI Date of 2018-11-05 00:00:00
      2. ILI tool of USCD
      3. Cracks identified 393.0
      4. Depth fraction between 0.05 and 0.63
      5. Length between 26.0 mm and 5029.0 mm
   3. Consequence of failure distributed between minimum of $2.16 and maximum of $11.23MM
   4. Total length driven by Safety: 29.99 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $5.48MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 1.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
      3. Leak hazard radius distributed between minimum of 4.01 and maximum of 4.11 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $43.78MM
      5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
      6. Rupture hazard radius distributed between minimum of 77.55 and maximum of 79.49 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
      8. Puncture scenario yielded 2.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
      9. Puncture hazard radius distributed between minimum of 16.04 and maximum of 16.44 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 2970.94 meters.
   7. Environmental Cost distributed between minimum of $1.30 and maximum of $9.09MM:
      1. Leak cost between minimum of $0.19 and maximum of $0.42MM
      2. Leak spill volume between a minimum of 1775.31 and maximum of 2498.81 gallons
      3. Rupture cost between minimum of $4.08 and maximum of $23.13MM
      4. Rupture spill volume is between a minimum of 38488.0 and maximum of 161303.32 gallons
      5. Puncture cost between minimum of $6.18 and maximum of $13.95MM
      6. Puncture spill volume is between a minimum of 58332.52 and maximum of 82105.32 gallons
      7. Land use distributed as
         1. Agricultural: 2,436.56
         2. Forested: 101.98
         3. Remote: 179.95
         4. Water Course: 282.44
8. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
   1. Total Cumulative Length (m): 2459.66
   2. Likelihood of failure distributed between minimum of 1.026e-02 and maximum of 8.707e-01.
      1. ILI Date of 2014-11-26 00:00:00
      2. ILI tool of USCD
      3. Cracks identified 92.0
      4. Depth fraction between 0.38 and 0.4
      5. Length between 28.0 mm and 230.0 mm
   3. Consequence of failure distributed between minimum of $3.84 and maximum of $78.67MM
   4. Total length driven by Safety: 165.0 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $66.59MM:
      1. Leak cost between minimum of $0.00 and maximum of $38.23MM
      2. Leak scenario yielded 16.0 intersections with structures, with minimum of 3.98 and maximum of 3.98 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.39 and maximum of 12.16 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $213.04MM
      5. Rupture scenario yielded 105.0 intersections with structures, with minimum of 0.0 and maximum of 22.19 of population impacted
      6. Rupture hazard radius distributed between minimum of 171.98 and maximum of 185.15 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $38.23MM
      8. Puncture scenario yielded 60.0 intersections with structures, with minimum of 0.0 and maximum of 3.98 of population impacted
      9. Puncture hazard radius distributed between minimum of 53.34 and maximum of 57.42 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Economic Loss: 2294.66 meters.
   7. Economic Loss Cost distributed between minimum of $3.84 and maximum of $12.09MM:
      1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.27 and maximum of $0.62MM
      5. Leak scenario yielded 16.0 intersections with structures, with minimum of $339,600.00 and maximum of $339,600.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $49,027.76 and maximum of $59,691.29
      7. Rupture cost between minimum of $36.77 and maximum of $70.88MM
      8. Rupture scenario yielded 105.0 intersections with structures, with minimum of $25,000.00 and maximum of $26,164,100.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $36,553,283.29 and maximum of $44,503,622.40
      10. Puncture cost between minimum of $1.83 and maximum of $2.52MM
      11. Puncture scenario yielded 60.0 intersections with structures, with minimum of $25,000.00 and maximum of $339,600.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $1,610,940.77 and maximum of $1,961,320.39"
9. "CADOTTE LAKE TO UTIKUMA STATION NPS 20
   1. Total Cumulative Length (m): 2189.58
   2. Likelihood of failure distributed between minimum of 6.137e-03 and maximum of 9.895e-01.
      1. ILI Date of 2011-04-15 00:00:00
      2. ILI tool of USCD
      3. Cracks identified 121.0
      4. Depth fraction between 0.13 and 0.4
      5. Length between 31.0 mm and 1167.0 mm
   3. Consequence of failure distributed between minimum of $1.80 and maximum of $13.22MM
   4. Total length driven by Environmental: 2189.58 meters.
   5. Environmental Cost distributed between minimum of $0.93 and maximum of $12.24MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.39MM
      2. Leak spill volume between a minimum of 1719.07 and maximum of 3088.01 gallons
      3. Rupture cost between minimum of $4.33 and maximum of $72.64MM
      4. Rupture spill volume is between a minimum of 40886.71 and maximum of 685362.89 gallons
      5. Puncture cost between minimum of $5.99 and maximum of $12.83MM
      6. Puncture spill volume is between a minimum of 56484.69 and maximum of 101464.97 gallons
      7. Land use distributed as
         1. Agricultural: 834.11
         2. Forested: 1,271.04
         3. Remote: 49.84
         4. Water Course: 34.59
10. "BRETON TO EDMONTON NPS 10
    1. Total Cumulative Length (m): 1709.56
    2. Likelihood of failure distributed between minimum of 1.357e-03 and maximum of 9.273e-01.
       1. ILI Date of 2014-11-27 00:00:00
       2. ILI tool of USCD
       3. Cracks identified 122.0
       4. Depth fraction between 0.1996 and 0.5293
       5. Length between 21.0 mm and 9434.0 mm
    3. Consequence of failure distributed between minimum of $0.26 and maximum of $2,633.90MM
    4. Total length driven by Safety: 1309.09 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $2,611.84MM:
       1. Leak cost between minimum of $0.00 and maximum of $57.02MM
       2. Leak scenario yielded 105.0 intersections with structures, with minimum of 0.0 and maximum of 5.94 of population impacted.
       3. Leak hazard radius distributed between minimum of 10.9 and maximum of 12.16 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $10,189.79MM
       5. Rupture scenario yielded 220.0 intersections with structures, with minimum of 0.0 and maximum of 1061.44 of population impacted
       6. Rupture hazard radius distributed between minimum of 163.58 and maximum of 185.15 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $3,392.64MM
       8. Puncture scenario yielded 318.0 intersections with structures, with minimum of 0.0 and maximum of 353.4 of population impacted
       9. Puncture hazard radius distributed between minimum of 50.73 and maximum of 57.42 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0, 3.0, 4.0.
    6. Total length driven by Economic Loss: 400.46 meters.
    7. Economic Loss Cost distributed between minimum of $0.26 and maximum of $35.95MM:
       1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.26 and maximum of $0.59MM
       5. Leak scenario yielded 105.0 intersections with structures, with minimum of $18,600.00 and maximum of $269,868.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $42,899.29 and maximum of $59,691.29
       7. Rupture cost between minimum of $0.24 and maximum of $132.84MM
       8. Rupture scenario yielded 220.0 intersections with structures, with minimum of $25,000.00 and maximum of $132,539,005.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $20,711.50 and maximum of $45,766.01
       10. Puncture cost between minimum of $1.63 and maximum of $98.76MM
       11. Puncture scenario yielded 318.0 intersections with structures, with minimum of $18,600.00 and maximum of $97,071,340.00 in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,409,573.18 and maximum of $1,961,320.39"
11. "UTIKUMA TO EDMONTON NPS 24
    1. Total Cumulative Length (m): 1049.93
    2. Likelihood of failure distributed between minimum of 1.082e-03 and maximum of 4.883e-01.
       1. ILI Date of 2018-01-25 00:00:00
       2. ILI tool of USCD
       3. Cracks identified 37.0
       4. Depth fraction between 0.07 and 0.33
       5. Length between 98.0 mm and 6925.0 mm
    3. Consequence of failure distributed between minimum of $4.40 and maximum of $51.17MM
    4. Total length driven by Safety: 60.0 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $43.82MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 644.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
       3. Leak hazard radius distributed between minimum of 3.59 and maximum of 3.59 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $262.66MM
       5. Rupture scenario yielded 346.0 intersections with structures, with minimum of 0.0 and maximum of 27.36 of population impacted
       6. Rupture hazard radius distributed between minimum of 122.95 and maximum of 122.95 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
       8. Puncture scenario yielded 730.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
       9. Puncture hazard radius distributed between minimum of 14.3 and maximum of 14.3 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0, 3.0.
    6. Total length driven by Environmental: 959.94 meters.
    7. Environmental Cost distributed between minimum of $1.90 and maximum of $38.09MM:
       1. Leak cost between minimum of $0.11 and maximum of $36.20MM
       2. Leak spill volume between a minimum of 1378.15 and maximum of 341534.72 gallons
       3. Rupture cost between minimum of $9.19 and maximum of $91.84MM
       4. Rupture spill volume is between a minimum of 86722.08 and maximum of 750536.27 gallons
       5. Puncture cost between minimum of $3.70 and maximum of $36.20MM
       6. Puncture spill volume is between a minimum of 37381.34 and maximum of 341534.72 gallons
       7. Land use distributed as
          1. Agricultural: 236.70
          2. Forested: 419.42
          3. High Density Residential: 30.00
          4. Remote: 351.62
          5. Water Course: 12.19
    8. Total length driven by Economic Loss: 30.0 meters.
    9. Economic Loss Cost distributed between minimum of $2.49 and maximum of $3.41MM:
       1. Repair costs between minimum of $73,000.00 and maximum of $404,000.00.
       2. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
       3. Product type is Crude Oil.
       4. Leak cost between minimum of $2.47 and maximum of $2.85MM
       5. Leak scenario yielded 644.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $1,529.09 and maximum of $378,940.90
       7. Rupture cost between minimum of $2.57 and maximum of $6.42MM
       8. Rupture scenario yielded 346.0 intersections with structures, with minimum of $25,000.00 and maximum of $3,238,416.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $96,220.21 and maximum of $832,737.86
       10. Puncture cost between minimum of $2.51 and maximum of $2.87MM
       11. Puncture scenario yielded 730.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
       12. Puncture product Loss costs between minimum of $41,475.49 and maximum of $378,940.90"
12. "ROCKY MOUNTAIN HOUSE TO SILVER SPRINGS NPS 8
    1. Total Cumulative Length (m): 689.85
    2. Likelihood of failure distributed between minimum of 5.367e-02 and maximum of 7.209e-01.
       1. ILI Date of 2014-12-08 00:00:00
       2. ILI tool of USCD
       3. Cracks identified 26.0
       4. Depth fraction between 0.42 and 0.84
       5. Length between 49.0 mm and 438.0 mm
    3. Consequence of failure distributed between minimum of $0.74 and maximum of $124.85MM
    4. Total length driven by Safety: 149.97 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.46 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 40.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 132.52 and maximum of 138.23 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 46.57 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 539.88 meters.
    7. Environmental Cost distributed between minimum of $0.47 and maximum of $1.38MM:
       1. Leak cost between minimum of $0.12 and maximum of $0.23MM
       2. Leak spill volume between a minimum of 1777.93 and maximum of 2127.03 gallons
       3. Rupture cost between minimum of $2.17 and maximum of $4.45MM
       4. Rupture spill volume is between a minimum of 27665.49 and maximum of 41993.29 gallons
       5. Puncture cost between minimum of $4.02 and maximum of $7.41MM
       6. Puncture spill volume is between a minimum of 58418.89 and maximum of 69889.48 gallons
       7. Land use distributed as
          1. Agricultural: 419.83
          2. Forested: 142.13
          3. Low Density Residential: 127.89
13. "COCHRANE TO ROCKY MOUNTAIN HOUSE NPS 8
    1. Total Cumulative Length (m): 479.99
    2. Likelihood of failure distributed between minimum of 6.025e-03 and maximum of 9.574e-01.
       1. ILI Date of 2017-06-03 00:00:00
       2. ILI tool of USCD
       3. Cracks identified 18.0
       4. Depth fraction between 0.15 and 0.66
       5. Length between 96.0 mm and 2972.0 mm
    3. Consequence of failure distributed between minimum of $4.33 and maximum of $23.59MM
    4. Total length driven by Safety: 90.0 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $19.73MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 52.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 11.58 and maximum of 12.24 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $87.55MM
       5. Rupture scenario yielded 225.0 intersections with structures, with minimum of 2.28 and maximum of 9.12 of population impacted
       6. Rupture hazard radius distributed between minimum of 148.55 and maximum of 158.1 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
       8. Puncture scenario yielded 133.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 54.35 and maximum of 57.84 meters.
       10. Product type is NGL.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 389.99 meters.
    7. Economic Loss Cost distributed between minimum of $3.73 and maximum of $5.12MM:
       1. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $0.28MM
       5. Leak scenario yielded 52.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $51,540.43 and maximum of $60,855.70
       7. Rupture cost between minimum of $24.95 and maximum of $29.96MM
       8. Rupture scenario yielded 225.0 intersections with structures, with minimum of $269,868.00 and maximum of $1,079,472.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $24,736,239.66 and maximum of $29,206,998.79
       10. Puncture cost between minimum of $1.91 and maximum of $2.21MM
       11. Puncture scenario yielded 133.0 intersections with structures, with minimum of $269,868.00 and maximum of $269,868.00 in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,693,501.49 and maximum of $1,999,580.23"
14. "SILVER SPRINGS TO BRETON NPS 8
    1. Total Cumulative Length (m): 359.87
    2. Likelihood of failure distributed between minimum of 3.842e-01 and maximum of 9.233e-01.
       1. ILI Date of 2014-12-08 00:00:00
       2. ILI tool of USCD
       3. Cracks identified 13.0
       4. Depth fraction between 0.42 and 0.43
       5. Length between 82.0 mm and 2504.0 mm
    3. Consequence of failure distributed between minimum of $0.82 and maximum of $1.76MM
    4. Total length driven by Environmental: 359.87 meters.
    5. Environmental Cost distributed between minimum of $0.60 and maximum of $1.53MM:
       1. Leak cost between minimum of $0.23 and maximum of $0.25MM
       2. Leak spill volume between a minimum of 2131.11 and maximum of 2402.65 gallons
       3. Rupture cost between minimum of $2.33 and maximum of $7.77MM
       4. Rupture spill volume is between a minimum of 21953.91 and maximum of 73297.41 gallons
       5. Puncture cost between minimum of $7.42 and maximum of $8.37MM
       6. Puncture spill volume is between a minimum of 70023.3 and maximum of 78945.75 gallons
       7. Land use distributed as
          1. Agricultural: 149.95
          2. Forested: 209.92
15. "NPS12 Medicine River Jct to Sundre From 9-27-39-3-W5 To 16-8-34-5-W5
    1. Total Cumulative Length (m): 329.91
    2. Likelihood of failure distributed between minimum of 1.157e-02 and maximum of 8.003e-02.
       1. ILI Date of 2016-02-19 00:00:00
       2. ILI tool of AFD
       3. Cracks identified 26.0
       4. Depth fraction between 0.12 and 0.46
       5. Length between 6.0 mm and 482.0 mm
    3. Consequence of failure distributed between minimum of $1.91 and maximum of $4.83MM
    4. Total length driven by Environmental: 329.91 meters.
    5. Environmental Cost distributed between minimum of $1.05 and maximum of $3.96MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1700.52 and maximum of 2207.66 gallons
       3. Rupture cost between minimum of $3.63 and maximum of $15.32MM
       4. Rupture spill volume is between a minimum of 34220.05 and maximum of 120125.73 gallons
       5. Puncture cost between minimum of $5.92 and maximum of $11.48MM
       6. Puncture spill volume is between a minimum of 55875.35 and maximum of 72538.67 gallons
       7. Land use distributed as
          1. Agricultural: 312.88
          2. Water Course: 17.03
16. "SUNDRE TO HARTELL NPS 12
    1. Total Cumulative Length (m): 247.7
    2. Likelihood of failure distributed between minimum of 1.250e-03 and maximum of 1.483e-02.
       1. ILI Date of 2018-07-18 00:00:00
       2. ILI tool of USCD
       3. Cracks identified 61.0
       4. Depth fraction between nan and nan
       5. Length between 26.0 mm and 291.0 mm
    3. Consequence of failure distributed between minimum of $3.18 and maximum of $34.13MM
    4. Total length driven by Safety: 157.72 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $28.51MM:
       1. Leak cost between minimum of $0.00 and maximum of $28.51MM
       2. Leak scenario yielded 2697.0 intersections with structures, with minimum of 2.97 and maximum of 2.97 of population impacted.
       3. Leak hazard radius distributed between minimum of 4.11 and maximum of 4.11 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $28.51MM
       5. Rupture scenario yielded 293.0 intersections with structures, with minimum of 2.97 and maximum of 2.97 of population impacted
       6. Rupture hazard radius distributed between minimum of 79.49 and maximum of 79.49 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $28.51MM
       8. Puncture scenario yielded 752.0 intersections with structures, with minimum of 2.97 and maximum of 2.97 of population impacted
       9. Puncture hazard radius distributed between minimum of 16.44 and maximum of 16.44 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 89.99 meters.
    7. Environmental Cost distributed between minimum of $2.02 and maximum of $4.71MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.22MM
       2. Leak spill volume between a minimum of 2025.92 and maximum of 2113.83 gallons
       3. Rupture cost between minimum of $6.99 and maximum of $8.35MM
       4. Rupture spill volume is between a minimum of 65946.02 and maximum of 78816.12 gallons
       5. Puncture cost between minimum of $7.06 and maximum of $7.36MM
       6. Puncture spill volume is between a minimum of 66567.2 and maximum of 69455.65 gallons
       7. Land use distributed as
          1. Agricultural: 247.70
17. "NPS12 Rimbey to Medicine River Jct From 13-23-42-2-W5 To 9-27-39-3-W5
    1. Total Cumulative Length (m): 180.0
    2. Likelihood of failure distributed between minimum of 1.001e-02 and maximum of 9.111e-02.
       1. ILI Date of 2016-02-16 00:00:00
       2. ILI tool of AFD
       3. Cracks identified 12.0
       4. Depth fraction between 0.17 and 0.29
       5. Length between 22.0 mm and 67.0 mm
    3. Consequence of failure distributed between minimum of $3.12 and maximum of $7.07MM
    4. Total length driven by Environmental: 180.0 meters.
    5. Environmental Cost distributed between minimum of $2.25 and maximum of $6.16MM:
       1. Leak cost between minimum of $2.08 and maximum of $6.00MM
       2. Leak spill volume between a minimum of 19582.04 and maximum of 56629.36 gallons
       3. Rupture cost between minimum of $3.24 and maximum of $6.99MM
       4. Rupture spill volume is between a minimum of 30584.41 and maximum of 65915.32 gallons
       5. Puncture cost between minimum of $2.08 and maximum of $6.00MM
       6. Puncture spill volume is between a minimum of 19582.04 and maximum of 56629.36 gallons
       7. Land use distributed as
          1. Agricultural: 180.00
18. "ELLERSLIE TO STRATHCONA NPS 12
    1. Total Cumulative Length (m): 119.91
    2. Likelihood of failure distributed between minimum of 1.362e-03 and maximum of 4.670e-03.
       1. ILI Date of 2016-05-25 00:00:00
       2. ILI tool of AFD
       3. Cracks identified 7.0
       4. Depth fraction between 0.1 and 0.16
       5. Length between 30.0 mm and 122.0 mm
    3. Consequence of failure distributed between minimum of $58.54 and maximum of $171.96MM
    4. Total length driven by Safety: 119.91 meters.
    5. Safety Cost distributed between minimum of $55.78 and maximum of $168.05MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 90.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 3.83 and maximum of 3.83 meters.
       4. Rupture cost between minimum of $393.98 and maximum of $1,094.40MM
       5. Rupture scenario yielded 163.0 intersections with structures, with minimum of 41.04 and maximum of 114.0 of population impacted
       6. Rupture hazard radius distributed between minimum of 74.05 and maximum of 74.05 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
       8. Puncture scenario yielded 187.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
       9. Puncture hazard radius distributed between minimum of 15.32 and maximum of 15.32 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 4.0.
19. "SECT 2 CABRI TO HERBERT NPS 6
    1. Total Cumulative Length (m): 60.0
    2. Likelihood of failure distributed between minimum of 3.568e-02 and maximum of 5.179e-02.
       1. ILI Date of 2017-07-10 00:00:00
       2. ILI tool of SpirAll MFL/Geometry
       3. Cracks identified 2.0
       4. Depth fraction between 0.2 and 0.26
       5. Length between 68.589 mm and 90.742 mm
    3. Consequence of failure distributed between minimum of $3.14 and maximum of $3.16MM
    4. Total length driven by Economic Loss: 60.0 meters.
    5. Economic Loss Cost distributed between minimum of $3.14 and maximum of $3.16MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $0.27MM
       5. Leak scenario yielded 10.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
       7. Rupture cost between minimum of $17.84 and maximum of $17.84MM
       8. Rupture scenario yielded 41.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
       10. Puncture cost between minimum of $2.26 and maximum of $2.26MM
       11. Puncture scenario yielded 30.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
20. "SECT 8 RAPID CITY TO PORTAGE NPS 6
    1. Total Cumulative Length (m): 30.0
    2. Likelihood of failure distributed between minimum of 1.986e-02 and maximum of 1.986e-02.
       1. ILI Date of 2019-02-11 00:00:00
       2. ILI tool of SpirAll MFL/Geometry
       3. Cracks identified 1.0
       4. Depth fraction between 0.43 and 0.43
       5. Length between 38.482 mm and 38.482 mm
    3. Consequence of failure distributed between minimum of $3.11 and maximum of $3.11MM
    4. Total length driven by Economic Loss: 30.0 meters.
    5. Economic Loss Cost distributed between minimum of $3.11 and maximum of $3.11MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $0.27MM
       5. Leak scenario yielded 22.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
       7. Rupture cost between minimum of $17.84 and maximum of $17.84MM
       8. Rupture scenario yielded 75.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
       10. Puncture cost between minimum of $2.26 and maximum of $2.26MM
       11. Puncture scenario yielded 45.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
21. "SECT 3 HERBERT TO CARON NPS 6
    1. Total Cumulative Length (m): 29.99
    2. Likelihood of failure distributed between minimum of 1.103e-02 and maximum of 1.103e-02.
       1. ILI Date of 2018-03-07 00:00:00
       2. ILI tool of SpirAll MFL/Geometry
       3. Cracks identified 1.0
       4. Depth fraction between 0.2 and 0.2
       5. Length between 122.29 mm and 122.29 mm
    3. Consequence of failure distributed between minimum of $3.07 and maximum of $3.07MM
    4. Total length driven by Economic Loss: 29.99 meters.
    5. Economic Loss Cost distributed between minimum of $3.07 and maximum of $3.07MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $0.27MM
       5. Leak scenario yielded 9.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
       7. Rupture cost between minimum of $17.84 and maximum of $17.84MM
       8. Rupture scenario yielded 45.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
       10. Puncture cost between minimum of $2.26 and maximum of $2.26MM
       11. Puncture scenario yielded 41.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
22. "FORT SASKATCHEWAN TO EST (YO-YO) NPS 16
    1. Total Cumulative Length (m): 29.98
    2. Likelihood of failure distributed between minimum of 3.360e-02 and maximum of 3.360e-02.
       1. ILI Date of 2014-10-24 00:00:00
       2. ILI tool of EMAT
       3. Cracks identified 1.0
       4. Depth fraction between 0.25 and 0.25
       5. Length between 160.0 mm and 160.0 mm
    3. Consequence of failure distributed between minimum of $10.69 and maximum of $10.69MM
    4. Total length driven by Economic Loss: 29.98 meters.
    5. Economic Loss Cost distributed between minimum of $10.69 and maximum of $10.69MM:
       1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $1.02 and maximum of $1.02MM
       5. Leak scenario yielded 32.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $35,177.42 and maximum of $35,177.42
       7. Rupture cost between minimum of $59.16 and maximum of $59.16MM
       8. Rupture scenario yielded 73.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $58,099,358.13 and maximum of $58,099,358.13
       10. Puncture cost between minimum of $2.14 and maximum of $2.14MM
       11. Puncture scenario yielded 92.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,155,850.00 and maximum of $1,155,850.00"
23. "WINDSOR TO SARNIA NPS 12
    1. Total Cumulative Length (m): 28.56
    2. Likelihood of failure distributed between minimum of 1.466e-03 and maximum of 1.466e-03.
       1. ILI Date of 2013-12-11 00:00:00
       2. ILI tool of USCD
       3. Cracks identified 1.0
       4. Depth fraction between nan and nan
       5. Length between 196.0 mm and 196.0 mm
    3. Consequence of failure distributed between minimum of $11.28 and maximum of $11.28MM
    4. Total length driven by Economic Loss: 28.56 meters.
    5. Economic Loss Cost distributed between minimum of $8.50 and maximum of $8.50MM:
       1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.90 and maximum of $0.90MM
       5. Leak scenario yielded 18.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $53,244.14 and maximum of $53,244.14
       7. Rupture cost between minimum of $56.96 and maximum of $56.96MM
       8. Rupture scenario yielded 300.0 intersections with structures, with minimum of $269,868.00 and maximum of $269,868.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $55,841,832.10 and maximum of $55,841,832.10
       10. Puncture cost between minimum of $2.59 and maximum of $2.59MM
       11. Puncture scenario yielded 157.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,749,481.68 and maximum of $1,749,481.68"

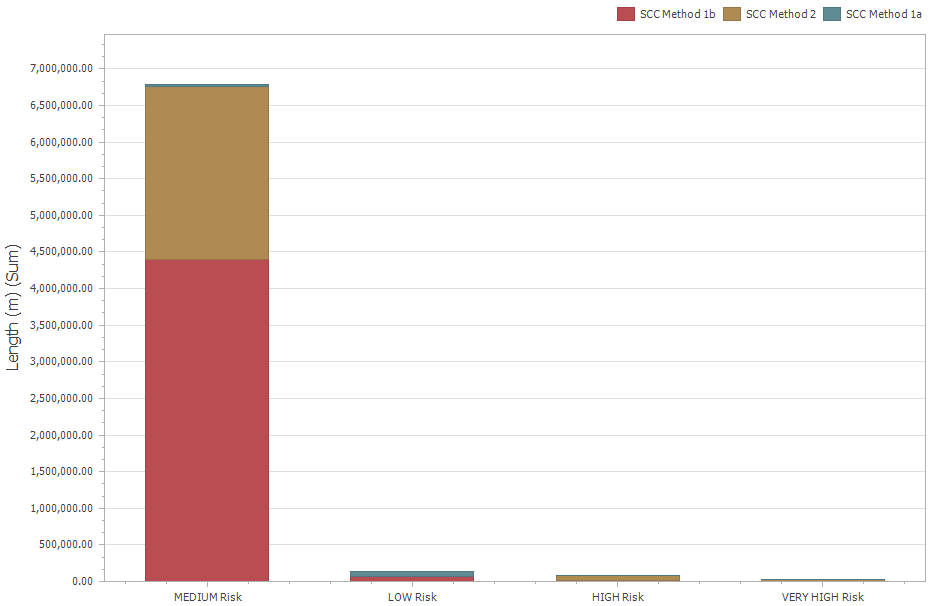
## Stress Corrosion Cracking and Total Consequence

### Assumptions of model

* Three separate approaches will be used to characterize the likelihood of failure due to SCC
* Where ultrasonic crack detection (USCD)[[10]](#footnote-10) or electromagnetic acoustic transducer (EMAT)[[11]](#footnote-11) in-line inspection data exists, failure likelihood will be derived from these inspection results (Method 2).
* Where crack in-line inspection data such as USCD or EMAT does not exist, but any metal loss detection in-line inspection data such as of MFL, TFL, AFD, or UTWT survey data exist, likelihood of failure will be inferred by applying the Method 2 methodology to any metal loss imperfection detected using the latest survey among these technologies instead of crack imperfections. The objective of Method 1b is to conduct a conservative assessment to pipelines without a suitable crack ILI survey (or pipelines where a crack ILI technology is not yet available), by assuming any metal loss detected is a potential crack (also addressed as an inferred crack), and highlight areas of potential susceptibility to SCC. The resulting POE of inferred cracks will be multiplied by a susceptibility factor to screen sections having data attributes that don’t indicate a susceptibility to SCC.
* Otherwise, where inspection data does not exist, failure likelihood estimates will be based on excavation data, pipe design data, and maintenance activities implemented (Method 1a).

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

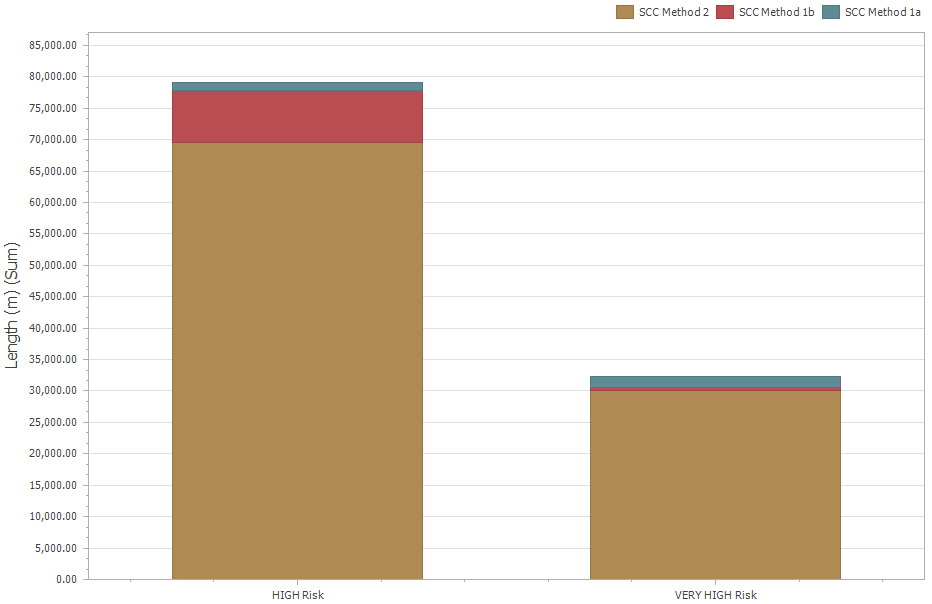


The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SCC Method Used** | **Cumulative Length (m)** | | | | |
| **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| Method 1a | 68,914.58 | 31,984.71 | 1,392.85 | 1,722.29 | **104,014.43** |
| Method 1b | 62,298.08 | 4,390,040.97 | 8,190.34 | 604.40 | **4,461,133.79** |
| Method 2 | 2,507.38 | 2,368,162.16 | 69,548.16 | 30,003.96 | **2,470,221.65** |
| **Grand Total** | **133,720.03** | **6,790,187.84** | **79,131.35** | **32,330.65** | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.



### Reportable Pipeline Segments: SCC Method 1a

SCC Method 1a has 4 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below.

1. "COED BV 203 TO EST NPS 8
   1. Total Cumulative Length (m): 2259.9
   2. Likelihood of failure distributed between minimum of 1.668e-01 and maximum of 1.668e-01.
      1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
      2. Mainline coating type of Tape
      3. Joint coating type of Shrink Sleeves
      4. Maximum Operating Stress percentage between minimum of 63.39 and maximum of 63.39% SMYS
      5. Proximity to station of nan
   3. Consequence of failure distributed between minimum of $5.08 and maximum of $158.72MM
   4. Total length driven by Safety: 1694.93 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $150.03MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $513.60MM
      5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 53.5 of population impacted
      6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $392.54MM
      8. Puncture scenario yielded 46.0 intersections with structures, with minimum of 0.0 and maximum of 40.89 of population impacted
      9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
      10. Product type is Condensate.
      11. Class area location is/are 2.0.
   6. Total length driven by Environmental: 564.97 meters.
   7. Environmental Cost distributed between minimum of $4.66 and maximum of $13.35MM:
      1. Leak cost between minimum of $0.13 and maximum of $0.35MM
      2. Leak spill volume between a minimum of 1973.38 and maximum of 2019.77 gallons
      3. Rupture cost between minimum of $64.53 and maximum of $169.76MM
      4. Rupture spill volume is between a minimum of 947101.66 and maximum of 969363.57 gallons
      5. Puncture cost between minimum of $4.42 and maximum of $11.62MM
      6. Puncture spill volume is between a minimum of 64840.82 and maximum of 66364.92 gallons
      7. Land use distributed as
         1. Commercial/Industrial: 2,256.78
         2. Water Course: 3.12
2. "16-19-037-03W5 TO 10-19-037-03W5 NPS 4
   1. Total Cumulative Length (m): 761.03
   2. Likelihood of failure distributed between minimum of 9.822e-02 and maximum of 9.822e-02.
      1. Installation date between minimum of 1991-01-01 and maximum of 1991-01-01
      2. Mainline coating type of Unknown
      3. Joint coating type of Unknown
      4. Maximum Operating Stress percentage between minimum of 61.63 and maximum of 61.63% SMYS
      5. Proximity to station of 0 - 5 miles
   3. Consequence of failure distributed between minimum of $1.65 and maximum of $1.66MM
   4. Total length driven by Environmental: 761.03 meters.
   5. Environmental Cost distributed between minimum of $1.41 and maximum of $1.43MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.20MM
      2. Leak spill volume between a minimum of 1854.82 and maximum of 1869.87 gallons
      3. Rupture cost between minimum of $25.68 and maximum of $25.89MM
      4. Rupture spill volume is between a minimum of 242322.23 and maximum of 244289.53 gallons
      5. Puncture cost between minimum of $6.46 and maximum of $6.51MM
      6. Puncture spill volume is between a minimum of 60945.04 and maximum of 61439.82 gallons
      7. Land use distributed as
         1. Agricultural: 761.03
3. "SS-71 NPS 4
   1. Total Cumulative Length (m): 66.85
   2. Likelihood of failure distributed between minimum of 6.245e-02 and maximum of 6.245e-02.
      1. Installation date between minimum of 2004-01-01 and maximum of 2004-01-01
      2. Mainline coating type of Extruded Polyethylene
      3. Joint coating type of Unknown
      4. Maximum Operating Stress percentage between minimum of 73.96 and maximum of 73.96% SMYS
      5. Proximity to station of nan
   3. Consequence of failure distributed between minimum of $8.81 and maximum of $9.25MM
   4. Total length driven by Environmental: 66.85 meters.
   5. Environmental Cost distributed between minimum of $8.48 and maximum of $8.92MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.20MM
      2. Leak spill volume between a minimum of 1853.91 and maximum of 1855.3 gallons
      3. Rupture cost between minimum of $25.67 and maximum of $25.69MM
      4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242385.09 gallons
      5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
      6. Puncture spill volume is between a minimum of 60915.28 and maximum of 60960.85 gallons
      7. Land use distributed as
         1. Agricultural: 66.85
4. "CROMER DELIVERY LATERAL NPS 8
   1. Total Cumulative Length (m): 27.36
   2. Likelihood of failure distributed between minimum of 2.106e-01 and maximum of 2.106e-01.
      1. Installation date between minimum of 1900-01-01 and maximum of 1900-01-01
      2. Mainline coating type of Unknown
      3. Joint coating type of Unknown
      4. Maximum Operating Stress percentage between minimum of 63.45 and maximum of 63.45% SMYS
      5. Proximity to station of 0 - 5 miles
   3. Consequence of failure distributed between minimum of $12.64 and maximum of $12.66MM
   4. Total length driven by Environmental: 27.36 meters.
   5. Environmental Cost distributed between minimum of $12.33 and maximum of $12.34MM:
      1. Leak cost between minimum of $0.33 and maximum of $0.33MM
      2. Leak spill volume between a minimum of 1856.18 and maximum of 1858.45 gallons
      3. Rupture cost between minimum of $158.50 and maximum of $158.69MM
      4. Rupture spill volume is between a minimum of 890852.69 and maximum of 891942.44 gallons
      5. Puncture cost between minimum of $10.85 and maximum of $10.86MM
      6. Puncture spill volume is between a minimum of 60989.88 and maximum of 61064.49 gallons
      7. Land use distributed as
         1. Bush/Creek: 27.36

### Reportable Pipeline Segments: SCC Method 1b

SCC Method 1b has 31 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below.

1. "LONE ROCK TO DULWICH NPS 6
   1. Total Cumulative Length (m): 1965.71
   2. Likelihood of failure distributed between minimum of 1.013e-02 and maximum of 2.726e-01.
      1. ILI Date of 2017-04-10
      2. ILI tool of MFL/Geometry
      3. Anomalies identified 1963.0
      4. Depth fraction between 0.1 and 0.36
      5. Length between 4.0 mm and 10682.0
   3. Consequence of failure distributed between minimum of $1.02 and maximum of $13.41MM
   4. Total length driven by Safety: 202.41 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 3.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.41 and maximum of 11.41 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
      5. Rupture scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
      6. Rupture hazard radius distributed between minimum of 107.45 and maximum of 107.45 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
      8. Puncture scenario yielded 5.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 46.39 and maximum of 46.39 meters.
      10. Product type is Condensate.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 1763.31 meters.
   7. Environmental Cost distributed between minimum of $0.80 and maximum of $1.46MM:
      1. Leak cost between minimum of $0.69 and maximum of $1.36MM
      2. Leak spill volume between a minimum of 6507.56 and maximum of 12852.25 gallons
      3. Rupture cost between minimum of $0.98 and maximum of $1.65MM
      4. Rupture spill volume is between a minimum of 9239.46 and maximum of 15545.55 gallons
      5. Puncture cost between minimum of $0.69 and maximum of $1.36MM
      6. Puncture spill volume is between a minimum of 6507.56 and maximum of 12852.25 gallons
      7. Land use distributed as
         1. Agricultural: 1,120.80
         2. Remote: 844.91
2. "UNITY TO LONE ROCK NPS 4
   1. Total Cumulative Length (m): 1439.69
   2. Likelihood of failure distributed between minimum of 1.399e-03 and maximum of 4.713e-01.
      1. ILI Date of 2017-04-25
      2. ILI tool of MFL/Geometry
      3. Anomalies identified 1575.0
      4. Depth fraction between 0.11 and 0.49
      5. Length between 4.0 mm and 3196.0
   3. Consequence of failure distributed between minimum of $10.01 and maximum of $20.28MM
   4. Total length driven by Environmental: 1439.69 meters.
   5. Environmental Cost distributed between minimum of $9.70 and maximum of $19.92MM:
      1. Leak cost between minimum of $0.21 and maximum of $0.37MM
      2. Leak spill volume between a minimum of 1972.39 and maximum of 2569.18 gallons
      3. Rupture cost between minimum of $27.31 and maximum of $47.98MM
      4. Rupture spill volume is between a minimum of 257682.32 and maximum of 335650.0 gallons
      5. Puncture cost between minimum of $6.87 and maximum of $12.07MM
      6. Puncture spill volume is between a minimum of 64808.16 and maximum of 84417.35 gallons
      7. Land use distributed as
         1. Agricultural: 897.92
         2. Remote: 537.36
         3. Water Course: 4.41
3. "CACTUS LAKE TO KERROBERT NPS 10
   1. Total Cumulative Length (m): 1347.24
   2. Likelihood of failure distributed between minimum of 1.050e-02 and maximum of 9.468e-01.
      1. ILI Date of 2017-07-27
      2. ILI tool of MFL/Geometry
      3. Anomalies identified 4182.0
      4. Depth fraction between 0.12 and 0.47
      5. Length between 4.0 mm and 3256.0
   3. Consequence of failure distributed between minimum of $0.61 and maximum of $4.39MM
   4. Total length driven by Environmental: 1347.24 meters.
   5. Environmental Cost distributed between minimum of $0.38 and maximum of $4.13MM:
      1. Leak cost between minimum of $0.22 and maximum of $0.28MM
      2. Leak spill volume between a minimum of 2039.55 and maximum of 2686.48 gallons
      3. Rupture cost between minimum of $0.43 and maximum of $6.08MM
      4. Rupture spill volume is between a minimum of 4071.35 and maximum of 57372.97 gallons
      5. Puncture cost between minimum of $7.10 and maximum of $9.36MM
      6. Puncture spill volume is between a minimum of 67015.13 and maximum of 88271.77 gallons
      7. Land use distributed as
         1. Agricultural: 1,017.32
         2. Remote: 329.92
4. "NORTH FERRIER 08-20 TO 09-27 NPS 8
   1. Total Cumulative Length (m): 599.86
   2. Likelihood of failure distributed between minimum of 1.150e-02 and maximum of 7.381e-01.
      1. ILI Date of 2019-05-01
      2. ILI tool of MFL/AFD/Geometry
      3. Anomalies identified 2051.0
      4. Depth fraction between 0.1 and 0.5
      5. Length between 4.8 mm and 371.7
   3. Consequence of failure distributed between minimum of $0.86 and maximum of $5.31MM
   4. Total length driven by Safety: 29.99 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $4.12MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 43.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
      3. Leak hazard radius distributed between minimum of 3.99 and maximum of 4.11 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
      5. Rupture scenario yielded 85.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
      6. Rupture hazard radius distributed between minimum of 53.97 and maximum of 55.69 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
      8. Puncture scenario yielded 67.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
      9. Puncture hazard radius distributed between minimum of 15.93 and maximum of 16.44 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 569.87 meters.
   7. Environmental Cost distributed between minimum of $0.64 and maximum of $2.25MM:
      1. Leak cost between minimum of $0.19 and maximum of $0.34MM
      2. Leak spill volume between a minimum of 1757.69 and maximum of 2019.68 gallons
      3. Rupture cost between minimum of $1.43 and maximum of $4.79MM
      4. Rupture spill volume is between a minimum of 13457.31 and maximum of 40103.54 gallons
      5. Puncture cost between minimum of $6.12 and maximum of $11.22MM
      6. Puncture spill volume is between a minimum of 57753.54 and maximum of 66362.06 gallons
      7. Land use distributed as
         1. Agricultural: 329.92
         2. Forested: 239.94
         3. Water Course: 29.99
5. "DULWICH TO LONE ROCK BLEND NPS 10
   1. Total Cumulative Length (m): 468.19
   2. Likelihood of failure distributed between minimum of 1.589e-02 and maximum of 3.277e-01.
      1. ILI Date of 2016-09-23
      2. ILI tool of MFL/Geometry
      3. Anomalies identified 1212.0
      4. Depth fraction between 0.1 and 0.43
      5. Length between 4.0 mm and 966.0
   3. Consequence of failure distributed between minimum of $1.13 and maximum of $3.04MM
   4. Total length driven by Environmental: 468.19 meters.
   5. Environmental Cost distributed between minimum of $0.91 and maximum of $2.80MM:
      1. Leak cost between minimum of $0.19 and maximum of $0.22MM
      2. Leak spill volume between a minimum of 1783.07 and maximum of 2107.15 gallons
      3. Rupture cost between minimum of $0.88 and maximum of $2.63MM
      4. Rupture spill volume is between a minimum of 8343.34 and maximum of 24771.68 gallons
      5. Puncture cost between minimum of $6.21 and maximum of $7.34MM
      6. Puncture spill volume is between a minimum of 58587.74 and maximum of 69236.2 gallons
      7. Land use distributed as
         1. Agricultural: 339.25
         2. Remote: 128.95
6. "NPS8 SARNIA CONDENSATE TO SUNCOR
   1. Total Cumulative Length (m): 418.85
   2. Likelihood of failure distributed between minimum of 1.336e-03 and maximum of 8.748e-02.
      1. ILI Date of 2016-02-19
      2. ILI tool of MFL/Geometry
      3. Anomalies identified 549.0
      4. Depth fraction between 0.11 and 0.38
      5. Length between 8.0 mm and 3026.0
   3. Consequence of failure distributed between minimum of $17.05 and maximum of $57.07MM
   4. Total length driven by Safety: 39.57 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $38.44MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 21.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.8 and maximum of 11.8 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $167.16MM
      5. Rupture scenario yielded 38.0 intersections with structures, with minimum of 0.0 and maximum of 17.41 of population impacted
      6. Rupture hazard radius distributed between minimum of 135.89 and maximum of 135.89 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
      8. Puncture scenario yielded 49.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 47.76 and maximum of 47.76 meters.
      10. Product type is Condensate.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 379.28 meters.
   7. Environmental Cost distributed between minimum of $16.66 and maximum of $29.41MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.21MM
      2. Leak spill volume between a minimum of 1891.4 and maximum of 1989.97 gallons
      3. Rupture cost between minimum of $96.21 and maximum of $101.23MM
      4. Rupture spill volume is between a minimum of 907756.46 and maximum of 955064.68 gallons
      5. Puncture cost between minimum of $6.59 and maximum of $6.93MM
      6. Puncture spill volume is between a minimum of 62147.16 and maximum of 65385.99 gallons
      7. Land use distributed as
         1. Agricultural: 179.38
         2. Forested: 89.80
         3. Utility Corridor: 149.67
7. "SUNDRE TO BENTLEY NPS 8
   1. Total Cumulative Length (m): 267.65
   2. Likelihood of failure distributed between minimum of 1.908e-02 and maximum of 9.797e-01.
      1. ILI Date of 2016-09-14
      2. ILI tool of AFD
      3. Anomalies identified 60.0
      4. Depth fraction between 0.1 and 0.54
      5. Length between 12.0 mm and 469.0
   3. Consequence of failure distributed between minimum of $0.79 and maximum of $2.25MM
   4. Total length driven by Environmental: 267.65 meters.
   5. Environmental Cost distributed between minimum of $0.56 and maximum of $1.97MM:
      1. Leak cost between minimum of $0.11 and maximum of $0.11MM
      2. Leak spill volume between a minimum of 2144.81 and maximum of 2302.93 gallons
      3. Rupture cost between minimum of $1.08 and maximum of $2.70MM
      4. Rupture spill volume is between a minimum of 21857.14 and maximum of 54951.93 gallons
      5. Puncture cost between minimum of $3.47 and maximum of $3.72MM
      6. Puncture spill volume is between a minimum of 70473.43 and maximum of 75669.01 gallons
      7. Land use distributed as
         1. Agricultural: 267.65
8. "NPS6 Brookfield to Joffre From 15-20-38-25W4 To 15-17-39-26W4
   1. Total Cumulative Length (m): 261.35
   2. Likelihood of failure distributed between minimum of 1.348e-03 and maximum of 1.576e-01.
      1. ILI Date of 2016-04-21
      2. ILI tool of MFL/Geometry
      3. Anomalies identified 133.0
      4. Depth fraction between 0.1 and 0.44
      5. Length between 6.0 mm and 72.0
   3. Consequence of failure distributed between minimum of $14.05 and maximum of $26.77MM
   4. Total length driven by Environmental: 261.35 meters.
   5. Environmental Cost distributed between minimum of $13.70 and maximum of $26.28MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.22MM
      2. Leak spill volume between a minimum of 1919.14 and maximum of 2102.02 gallons
      3. Rupture cost between minimum of $57.60 and maximum of $63.09MM
      4. Rupture spill volume is between a minimum of 543432.51 and maximum of 595218.48 gallons
      5. Puncture cost between minimum of $6.68 and maximum of $7.32MM
      6. Puncture spill volume is between a minimum of 63058.55 and maximum of 69067.66 gallons
      7. Land use distributed as
         1. Agricultural: 261.35
9. "SS-49 NPS 6
   1. Total Cumulative Length (m): 239.92
   2. Likelihood of failure distributed between minimum of 1.247e-03 and maximum of 2.915e-02.
      1. ILI Date of 2017-05-26
      2. ILI tool of MFL/Geometry
      3. Anomalies identified 1612.0
      4. Depth fraction between 0.1 and 0.36
      5. Length between 4.0 mm and 100.0
   3. Consequence of failure distributed between minimum of $11.39 and maximum of $39.74MM
   4. Total length driven by Environmental: 239.92 meters.
   5. Environmental Cost distributed between minimum of $11.06 and maximum of $39.25MM:
      1. Leak cost between minimum of $0.19 and maximum of $0.33MM
      2. Leak spill volume between a minimum of 1770.33 and maximum of 1831.09 gallons
      3. Rupture cost between minimum of $53.13 and maximum of $92.10MM
      4. Rupture spill volume is between a minimum of 501293.88 and maximum of 518498.98 gallons
      5. Puncture cost between minimum of $6.17 and maximum of $10.69MM
      6. Puncture spill volume is between a minimum of 58168.89 and maximum of 60165.32 gallons
      7. Land use distributed as
         1. Agricultural: 85.31
         2. Remote: 144.42
         3. Water Course: 10.19
10. "SS-11 NPS 6
    1. Total Cumulative Length (m): 239.92
    2. Likelihood of failure distributed between minimum of 1.023e-03 and maximum of 5.485e-01.
       1. ILI Date of 2017-05-24
       2. ILI tool of MFL/Geometry
       3. Anomalies identified 686.0
       4. Depth fraction between 0.1 and 0.48
       5. Length between 4.0 mm and 352.0
    3. Consequence of failure distributed between minimum of $14.32 and maximum of $26.59MM
    4. Total length driven by Environmental: 239.92 meters.
    5. Environmental Cost distributed between minimum of $13.96 and maximum of $26.10MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1933.12 and maximum of 1958.94 gallons
       3. Rupture cost between minimum of $58.02 and maximum of $58.79MM
       4. Rupture spill volume is between a minimum of 547391.09 and maximum of 554702.8 gallons
       5. Puncture cost between minimum of $6.73 and maximum of $6.82MM
       6. Puncture spill volume is between a minimum of 63517.89 and maximum of 64366.32 gallons
       7. Land use distributed as
          1. Remote: 239.92
11. "NI-95 NPS 8
    1. Total Cumulative Length (m): 217.94
    2. Likelihood of failure distributed between minimum of 3.843e-03 and maximum of 6.921e-01.
       1. ILI Date of 2018-03-01
       2. ILI tool of MFL/Geometry
       3. Anomalies identified 813.0
       4. Depth fraction between 0.1 and 0.49
       5. Length between 4.0 mm and 256.0
    3. Consequence of failure distributed between minimum of $20.02 and maximum of $41.35MM
    4. Total length driven by Environmental: 217.94 meters.
    5. Environmental Cost distributed between minimum of $19.57 and maximum of $40.69MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1797.99 and maximum of 1810.77 gallons
       3. Rupture cost between minimum of $91.46 and maximum of $92.11MM
       4. Rupture spill volume is between a minimum of 862925.14 and maximum of 869059.11 gallons
       5. Puncture cost between minimum of $6.26 and maximum of $6.31MM
       6. Puncture spill volume is between a minimum of 59077.9 and maximum of 59497.84 gallons
       7. Land use distributed as
          1. Agricultural: 217.94
12. "CRIMSON LAKE TO 10-33 NPS 4
    1. Total Cumulative Length (m): 125.79
    2. Likelihood of failure distributed between minimum of 1.393e-03 and maximum of 7.005e-02.
       1. ILI Date of 2016-02-23
       2. ILI tool of MFL/Geometry
       3. Anomalies identified 144.0
       4. Depth fraction between 0.11 and 0.45
       5. Length between 4.0 mm and 80.0
    3. Consequence of failure distributed between minimum of $5.84 and maximum of $13.95MM
    4. Total length driven by Environmental: 125.79 meters.
    5. Environmental Cost distributed between minimum of $5.57 and maximum of $11.61MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.32MM
       2. Leak spill volume between a minimum of 1705.83 and maximum of 1909.12 gallons
       3. Rupture cost between minimum of $23.62 and maximum of $41.39MM
       4. Rupture spill volume is between a minimum of 222858.4 and maximum of 249416.5 gallons
       5. Puncture cost between minimum of $5.94 and maximum of $10.41MM
       6. Puncture spill volume is between a minimum of 56049.8 and maximum of 62729.27 gallons
       7. Land use distributed as
          1. Forested: 122.19
          2. Water Course: 3.61
13. "SECT 7 MANSON TO RAPID CITY NPS 6
    1. Total Cumulative Length (m): 119.99
    2. Likelihood of failure distributed between minimum of 1.063e-02 and maximum of 7.817e-02.
       1. ILI Date of 2016-03-01
       2. ILI tool of MFL
       3. Anomalies identified 8.0
       4. Depth fraction between 0.13 and 0.48
       5. Length between 13.46 mm and 115.94
    3. Consequence of failure distributed between minimum of $3.52 and maximum of $5.21MM
    4. Total length driven by Economic Loss: 119.99 meters.
    5. Economic Loss Cost distributed between minimum of $3.52 and maximum of $5.21MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $0.27MM
       5. Leak scenario yielded 17.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
       7. Rupture cost between minimum of $17.84 and maximum of $17.86MM
       8. Rupture scenario yielded 55.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
       10. Puncture cost between minimum of $2.26 and maximum of $2.26MM
       11. Puncture scenario yielded 39.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
14. "NPS6 Bentley to Silver Springs
    1. Total Cumulative Length (m): 119.92
    2. Likelihood of failure distributed between minimum of 1.385e-02 and maximum of 3.905e-02.
       1. ILI Date of 2016-03-28
       2. ILI tool of MFL/Geometry
       3. Anomalies identified 124.0
       4. Depth fraction between 0.1 and 0.33
       5. Length between 4.0 mm and 106.0
    3. Consequence of failure distributed between minimum of $2.74 and maximum of $4.87MM
    4. Total length driven by Environmental: 119.92 meters.
    5. Environmental Cost distributed between minimum of $2.50 and maximum of $4.61MM:
       1. Leak cost between minimum of $0.22 and maximum of $0.25MM
       2. Leak spill volume between a minimum of 2063.09 and maximum of 2356.88 gallons
       3. Rupture cost between minimum of $2.21 and maximum of $4.42MM
       4. Rupture spill volume is between a minimum of 20852.29 and maximum of 41695.34 gallons
       5. Puncture cost between minimum of $7.19 and maximum of $8.21MM
       6. Puncture spill volume is between a minimum of 67788.53 and maximum of 77441.8 gallons
       7. Land use distributed as
          1. Agricultural: 89.94
          2. Forested: 29.98
15. "GIFT LATERAL NPS 8
    1. Total Cumulative Length (m): 119.83
    2. Likelihood of failure distributed between minimum of 1.882e-02 and maximum of 1.286e-01.
       1. ILI Date of 2017-02-23
       2. ILI tool of AFD
       3. Anomalies identified 22.0
       4. Depth fraction between 0.1 and 0.39
       5. Length between 11.0 mm and 169.0
    3. Consequence of failure distributed between minimum of $0.81 and maximum of $1.26MM
    4. Total length driven by Environmental: 119.83 meters.
    5. Environmental Cost distributed between minimum of $0.58 and maximum of $1.03MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1728.22 and maximum of 1948.65 gallons
       3. Rupture cost between minimum of $0.69 and maximum of $1.32MM
       4. Rupture spill volume is between a minimum of 6523.15 and maximum of 12433.05 gallons
       5. Puncture cost between minimum of $6.02 and maximum of $6.79MM
       6. Puncture spill volume is between a minimum of 56785.47 and maximum of 64028.3 gallons
       7. Land use distributed as
          1. Forested: 119.83
16. "MEDICINE RIVER 14-33 TO 04-18 NPS 3
    1. Total Cumulative Length (m): 118.61
    2. Likelihood of failure distributed between minimum of 1.168e-02 and maximum of 2.715e-01.
       1. ILI Date of 2019-01-24
       2. ILI tool of MFL/Geometry
       3. Anomalies identified 123.0
       4. Depth fraction between 0.16 and 0.48
       5. Length between 4.0 mm and 55.0
    3. Consequence of failure distributed between minimum of $7.20 and maximum of $7.42MM
    4. Total length driven by Environmental: 118.61 meters.
    5. Environmental Cost distributed between minimum of $6.92 and maximum of $7.14MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1859.97 and maximum of 1894.18 gallons
       3. Rupture cost between minimum of $15.58 and maximum of $15.87MM
       4. Rupture spill volume is between a minimum of 146997.58 and maximum of 149701.04 gallons
       5. Puncture cost between minimum of $6.48 and maximum of $6.60MM
       6. Puncture spill volume is between a minimum of 61114.49 and maximum of 62238.46 gallons
       7. Land use distributed as
          1. Agricultural: 118.61
17. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5
    1. Total Cumulative Length (m): 90.0
    2. Likelihood of failure distributed between minimum of 2.451e-03 and maximum of 9.981e-01.
       1. ILI Date of 2015-07-27
       2. ILI tool of MFL/Geometry
       3. Anomalies identified 21.0
       4. Depth fraction between 0.1 and 0.58
       5. Length between 14.0 mm and 243.0
    3. Consequence of failure distributed between minimum of $23.38 and maximum of $49.62MM
    4. Total length driven by Environmental: 90.0 meters.
    5. Environmental Cost distributed between minimum of $22.75 and maximum of $48.89MM:
       1. Leak cost between minimum of $0.13 and maximum of $0.22MM
       2. Leak spill volume between a minimum of 1849.92 and maximum of 2047.2 gallons
       3. Rupture cost between minimum of $64.62 and maximum of $104.14MM
       4. Rupture spill volume is between a minimum of 887849.94 and maximum of 982532.16 gallons
       5. Puncture cost between minimum of $4.42 and maximum of $7.13MM
       6. Puncture spill volume is between a minimum of 60784.31 and maximum of 67266.48 gallons
       7. Land use distributed as
          1. Forested: 30.00
          2. Low Density Residential: 30.00
          3. Remote: 30.00
18. "NPS8 Red Earth to Rainbow P/L tie-in From 9-18-87-8-W5 To 15-29-81-9-W
    1. Total Cumulative Length (m): 89.98
    2. Likelihood of failure distributed between minimum of 1.638e-03 and maximum of 1.581e-01.
       1. ILI Date of 2016-02-09
       2. ILI tool of MFL/Geometry
       3. Anomalies identified 22.0
       4. Depth fraction between 0.13 and 0.57
       5. Length between 8.0 mm and 148.0
    3. Consequence of failure distributed between minimum of $24.83 and maximum of $56.06MM
    4. Total length driven by Environmental: 89.98 meters.
    5. Environmental Cost distributed between minimum of $24.36 and maximum of $55.26MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.27MM
       2. Leak spill volume between a minimum of 1787.92 and maximum of 2511.21 gallons
       3. Rupture cost between minimum of $90.95 and maximum of $127.74MM
       4. Rupture spill volume is between a minimum of 858090.93 and maximum of 1205225.89 gallons
       5. Puncture cost between minimum of $6.23 and maximum of $8.75MM
       6. Puncture spill volume is between a minimum of 58746.93 and maximum of 82512.62 gallons
       7. Land use distributed as
          1. Forested: 89.98
19. "NPS8 Empress to Laporte from 5-12-20-1W4 to 4-2-27-26W3
    1. Total Cumulative Length (m): 89.97
    2. Likelihood of failure distributed between minimum of 8.395e-03 and maximum of 3.490e-02.
       1. ILI Date of 2018-10-11
       2. ILI tool of MFL
       3. Anomalies identified 46.0
       4. Depth fraction between 0.13 and 0.21
       5. Length between 8.0 mm and 1278.0
    3. Consequence of failure distributed between minimum of $9.21 and maximum of $12.70MM
    4. Total length driven by Economic Loss: 89.97 meters.
    5. Economic Loss Cost distributed between minimum of $9.21 and maximum of $12.70MM:
       1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.28 and maximum of $0.31MM
       5. Leak scenario yielded 7.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $29.42 and maximum of $29.46MM
       8. Rupture scenario yielded 11.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $29,206,998.79 and maximum of $29,206,998.79
       10. Puncture cost between minimum of $2.21 and maximum of $2.25MM
       11. Puncture scenario yielded 13.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
20. "SS-03 NPS 6
    1. Total Cumulative Length (m): 75.32
    2. Likelihood of failure distributed between minimum of 2.792e-02 and maximum of 9.494e-01.
       1. ILI Date of 2016-07-21
       2. ILI tool of AFD
       3. Anomalies identified 83.0
       4. Depth fraction between 0.1 and 0.42
       5. Length between 11.0 mm and 250.0
    3. Consequence of failure distributed between minimum of $19.53 and maximum of $24.45MM
    4. Total length driven by Environmental: 75.32 meters.
    5. Environmental Cost distributed between minimum of $19.11 and maximum of $23.96MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1805.58 and maximum of 1815.99 gallons
       3. Rupture cost between minimum of $54.19 and maximum of $54.50MM
       4. Rupture spill volume is between a minimum of 511276.35 and maximum of 514224.45 gallons
       5. Puncture cost between minimum of $6.29 and maximum of $6.32MM
       6. Puncture spill volume is between a minimum of 59327.23 and maximum of 59669.32 gallons
       7. Land use distributed as
          1. Agricultural: 75.32
21. "STRACHAN TO ROCKY MOUNTAIN HOUSE NGL NPS 6
    1. Total Cumulative Length (m): 59.93
    2. Likelihood of failure distributed between minimum of 2.370e-03 and maximum of 1.039e-02.
       1. ILI Date of 2017-08-31
       2. ILI tool of MFL/Geometry
       3. Anomalies identified 91.0
       4. Depth fraction between 0.1 and 0.36
       5. Length between 4.0 mm and 1200.0
    3. Consequence of failure distributed between minimum of $4.57 and maximum of $79.23MM
    4. Total length driven by Safety: 29.97 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $70.80MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 20.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 10.89 and maximum of 10.89 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $91.10MM
       5. Rupture scenario yielded 77.0 intersections with structures, with minimum of 9.49 and maximum of 9.49 of population impacted
       6. Rupture hazard radius distributed between minimum of 113.66 and maximum of 113.66 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $91.10MM
       8. Puncture scenario yielded 50.0 intersections with structures, with minimum of 9.49 and maximum of 9.49 of population impacted
       9. Puncture hazard radius distributed between minimum of 50.68 and maximum of 50.68 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 29.97 meters.
    7. Economic Loss Cost distributed between minimum of $4.57 and maximum of $8.43MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.25 and maximum of $0.25MM
       5. Leak scenario yielded 20.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $42,776.72 and maximum of $42,776.72
       7. Rupture cost between minimum of $12.32 and maximum of $18.88MM
       8. Rupture scenario yielded 77.0 intersections with structures, with minimum of $6,560,625.00 and maximum of $6,560,625.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $12,112,859.08 and maximum of $12,112,859.08
       10. Puncture cost between minimum of $1.62 and maximum of $8.18MM
       11. Puncture scenario yielded 50.0 intersections with structures, with minimum of $6,560,625.00 and maximum of $6,560,625.00 in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,405,545.82 and maximum of $1,405,545.82"
22. "SS-48 NPS 6
    1. Total Cumulative Length (m): 59.93
    2. Likelihood of failure distributed between minimum of 3.711e-02 and maximum of 9.882e-02.
       1. ILI Date of 2017-05-26
       2. ILI tool of MFL/Geometry
       3. Anomalies identified 3.0
       4. Depth fraction between 0.17 and 0.22
       5. Length between 10.0 mm and 178.0
    3. Consequence of failure distributed between minimum of $21.40 and maximum of $22.07MM
    4. Total length driven by Environmental: 59.93 meters.
    5. Environmental Cost distributed between minimum of $20.97 and maximum of $21.63MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.18MM
       2. Leak spill volume between a minimum of 1650.03 and maximum of 1653.49 gallons
       3. Rupture cost between minimum of $49.52 and maximum of $49.63MM
       4. Rupture spill volume is between a minimum of 467229.46 and maximum of 468209.42 gallons
       5. Puncture cost between minimum of $5.75 and maximum of $5.76MM
       6. Puncture spill volume is between a minimum of 54216.14 and maximum of 54329.85 gallons
       7. Land use distributed as
          1. Remote: 59.93
23. "ZAMA TO RAINBOW STATION NPS 20
    1. Total Cumulative Length (m): 46.69
    2. Likelihood of failure distributed between minimum of 3.259e-02 and maximum of 6.054e-02.
       1. ILI Date of 2019-02-14
       2. ILI tool of MFL/Geometry
       3. Anomalies identified 44.0
       4. Depth fraction between 0.08 and 0.42
       5. Length between 14.0 mm and 112.0
    3. Consequence of failure distributed between minimum of $2.90 and maximum of $3.01MM
    4. Total length driven by Environmental: 46.69 meters.
    5. Environmental Cost distributed between minimum of $2.00 and maximum of $2.10MM:
       1. Leak cost between minimum of $0.16 and maximum of $0.16MM
       2. Leak spill volume between a minimum of 1517.12 and maximum of 1517.37 gallons
       3. Rupture cost between minimum of $4.05 and maximum of $4.40MM
       4. Rupture spill volume is between a minimum of 38171.54 and maximum of 41527.42 gallons
       5. Puncture cost between minimum of $5.28 and maximum of $5.28MM
       6. Puncture spill volume is between a minimum of 49849.12 and maximum of 49857.23 gallons
       7. Land use distributed as
          1. Remote: 46.69
24. "SUNDRE TO SPRINGDALE NPS 12
    1. Total Cumulative Length (m): 29.99
    2. Likelihood of failure distributed between minimum of 9.700e-03 and maximum of 9.700e-03.
       1. ILI Date of 2019-04-08
       2. ILI tool of MFL/Geometry
       3. Anomalies identified 2.0
       4. Depth fraction between 0.19 and 0.3
       5. Length between 22.0 mm and 108.2
    3. Consequence of failure distributed between minimum of $22.67 and maximum of $22.67MM
    4. Total length driven by Safety: 29.99 meters.
    5. Safety Cost distributed between minimum of $17.96 and maximum of $17.96MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 21.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 4.15 and maximum of 4.15 meters.
       4. Rupture cost between minimum of $55.88 and maximum of $55.88MM
       5. Rupture scenario yielded 85.0 intersections with structures, with minimum of 5.82 and maximum of 5.82 of population impacted
       6. Rupture hazard radius distributed between minimum of 80.22 and maximum of 80.22 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
       8. Puncture scenario yielded 54.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
       9. Puncture hazard radius distributed between minimum of 16.59 and maximum of 16.59 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 2.0.
25. "NPS8 Laporte to Kerrobert from 4-2-27-26W3 to 4-34-33-22W3
    1. Total Cumulative Length (m): 29.99
    2. Likelihood of failure distributed between minimum of 1.540e-02 and maximum of 1.540e-02.
       1. ILI Date of 2018-10-21
       2. ILI tool of MFL
       3. Anomalies identified 23.0
       4. Depth fraction between 0.1 and 0.27
       5. Length between 4.0 mm and 88.0
    3. Consequence of failure distributed between minimum of $12.08 and maximum of $12.08MM
    4. Total length driven by Economic Loss: 29.99 meters.
    5. Economic Loss Cost distributed between minimum of $12.08 and maximum of $12.08MM:
       1. Repair costs between minimum of $50,000.00 and maximum of $50,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.31 and maximum of $0.31MM
       5. Leak scenario yielded 5.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $29.46 and maximum of $29.46MM
       8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $29,206,998.79 and maximum of $29,206,998.79
       10. Puncture cost between minimum of $2.25 and maximum of $2.25MM
       11. Puncture scenario yielded 14.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"

### Reportable Pipeline Segments: SCC Method 2

SCC Method 2 has 8 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below:

1. "UTIKUMA TO EDMONTON NPS 24
   1. Total Cumulative Length (m): 61996.33
   2. Likelihood of failure distributed between minimum of 1.032e-03 and maximum of 8.578e-01.
      1. ILI Date of 2018-01-25
      2. ILI tool of USCD
      3. Cracks identified 5052.0
      4. Depth fraction between 0.08 and 0.33
      5. Length between 29.0 mm and 18292.0 mm
   3. Consequence of failure distributed between minimum of $5.01 and maximum of $1,936.83MM
   4. Total length driven by Safety: 3348.04 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $1,919.24MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 644.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.59 and maximum of 3.59 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $4,332.11MM
      5. Rupture scenario yielded 346.0 intersections with structures, with minimum of 0.0 and maximum of 451.26 of population impacted
      6. Rupture hazard radius distributed between minimum of 122.95 and maximum of 122.95 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
      8. Puncture scenario yielded 730.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 14.3 and maximum of 14.3 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0, 3.0.
   6. Total length driven by Environmental: 58552.33 meters.
   7. Environmental Cost distributed between minimum of $2.12 and maximum of $106.45MM:
      1. Leak cost between minimum of $0.09 and maximum of $70.45MM
      2. Leak spill volume between a minimum of 1364.65 and maximum of 463178.48 gallons
      3. Rupture cost between minimum of $4.66 and maximum of $156.03MM
      4. Rupture spill volume is between a minimum of 62668.67 and maximum of 877018.37 gallons
      5. Puncture cost between minimum of $0.30 and maximum of $70.45MM
      6. Puncture spill volume is between a minimum of 2869.65 and maximum of 463178.48 gallons
      7. Land use distributed as
         1. Agricultural: 36,937.63
         2. Commercial/Industrial: 772.06
         3. Forested: 10,408.34
         4. High Density Residential: 1,252.04
         5. Low Density Residential: 1,157.26
         6. Remote: 11,262.22
         7. Water Course: 206.79
   8. Total length driven by Economic Loss: 95.95 meters.
   9. Economic Loss Cost distributed between minimum of $2.50 and maximum of $12.92MM:
      1. Repair costs between minimum of $73,000.00 and maximum of $404,000.00.
      2. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $2.47 and maximum of $5.49MM
      5. Leak scenario yielded 644.0 intersections with structures, with minimum of $18,600.00 and maximum of $2,688,250.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,514.11 and maximum of $513,907.55
      7. Rupture cost between minimum of $2.54 and maximum of $25.63MM
      8. Rupture scenario yielded 346.0 intersections with structures, with minimum of $18,600.00 and maximum of $22,663,000.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $69,532.38 and maximum of $973,072.76
      10. Puncture cost between minimum of $2.48 and maximum of $5.57MM
      11. Puncture scenario yielded 730.0 intersections with structures, with minimum of $18,600.00 and maximum of $2,713,250.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $3,183.95 and maximum of $513,907.55"
2. "BRETON TO EDMONTON NPS 10
   1. Total Cumulative Length (m): 32486.86
   2. Likelihood of failure distributed between minimum of 1.002e-03 and maximum of 1.000e+00.
      1. ILI Date of 2014-11-27
      2. ILI tool of USCD
      3. Cracks identified 5294.0
      4. Depth fraction between 0.0116 and 0.9748
      5. Length between 10.0 mm and 18327.0 mm
   3. Consequence of failure distributed between minimum of $0.26 and maximum of $4,657.36MM
   4. Total length driven by Safety: 13391.51 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $4,567.87MM:
      1. Leak cost between minimum of $0.00 and maximum of $242.11MM
      2. Leak scenario yielded 105.0 intersections with structures, with minimum of 0.0 and maximum of 25.22 of population impacted.
      3. Leak hazard radius distributed between minimum of 10.9 and maximum of 12.16 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $10,293.98MM
      5. Rupture scenario yielded 220.0 intersections with structures, with minimum of 0.0 and maximum of 1072.29 of population impacted
      6. Rupture hazard radius distributed between minimum of 163.58 and maximum of 185.15 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $4,320.00MM
      8. Puncture scenario yielded 318.0 intersections with structures, with minimum of 0.0 and maximum of 450.0 of population impacted
      9. Puncture hazard radius distributed between minimum of 50.73 and maximum of 57.42 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0, 3.0, 4.0.
   6. Total length driven by Economic Loss: 19095.35 meters.
   7. Economic Loss Cost distributed between minimum of $0.26 and maximum of $89.50MM:
      1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.26 and maximum of $5.70MM
      5. Leak scenario yielded 105.0 intersections with structures, with minimum of $18,600.00 and maximum of $5,376,500.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $42,899.29 and maximum of $59,691.29
      7. Rupture cost between minimum of $0.24 and maximum of $201.26MM
      8. Rupture scenario yielded 220.0 intersections with structures, with minimum of $18,600.00 and maximum of $200,956,075.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $20,118.82 and maximum of $48,667.11
      10. Puncture cost between minimum of $1.63 and maximum of $98.76MM
      11. Puncture scenario yielded 318.0 intersections with structures, with minimum of $0.00 and maximum of $97,071,340.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $1,409,573.18 and maximum of $1,961,320.39"
3. "CADOTTE LAKE TO UTIKUMA STATION NPS 20
   1. Total Cumulative Length (m): 3059.41
   2. Likelihood of failure distributed between minimum of 1.076e-03 and maximum of 7.444e-01.
      1. ILI Date of 2011-04-15
      2. ILI tool of USCD
      3. Cracks identified 139.0
      4. Depth fraction between 0.13 and 0.25
      5. Length between 39.0 mm and 997.0 mm
   3. Consequence of failure distributed between minimum of $2.01 and maximum of $33.22MM
   4. Total length driven by Environmental: 3059.41 meters.
   5. Environmental Cost distributed between minimum of $1.15 and maximum of $32.03MM:
      1. Leak cost between minimum of $0.17 and maximum of $0.49MM
      2. Leak spill volume between a minimum of 1585.19 and maximum of 3088.01 gallons
      3. Rupture cost between minimum of $4.13 and maximum of $73.25MM
      4. Rupture spill volume is between a minimum of 38944.68 and maximum of 691127.72 gallons
      5. Puncture cost between minimum of $5.52 and maximum of $16.23MM
      6. Puncture spill volume is between a minimum of 52085.87 and maximum of 101464.97 gallons
      7. Land use distributed as
         1. Agricultural: 794.81
         2. Forested: 1,671.95
         3. Remote: 447.59
         4. Water Course: 145.07
4. "RAINBOW LAKE TO CADOTTE NPS 20
   1. Total Cumulative Length (m): 1709.79
   2. Likelihood of failure distributed between minimum of 1.179e-03 and maximum of 2.060e-01.
      1. ILI Date of 2012-12-08
      2. ILI tool of USCD
      3. Cracks identified 430.0
      4. Depth fraction between 0.08 and 0.24
      5. Length between 27.0 mm and 955.0 mm
   3. Consequence of failure distributed between minimum of $10.39 and maximum of $54.43MM
   4. Total length driven by Environmental: 1709.79 meters.
   5. Environmental Cost distributed between minimum of $9.44 and maximum of $53.02MM:
      1. Leak cost between minimum of $0.19 and maximum of $0.37MM
      2. Leak spill volume between a minimum of 1810.12 and maximum of 2430.98 gallons
      3. Rupture cost between minimum of $23.51 and maximum of $121.06MM
      4. Rupture spill volume is between a minimum of 221811.57 and maximum of 1142190.29 gallons
      5. Puncture cost between minimum of $6.30 and maximum of $12.22MM
      6. Puncture spill volume is between a minimum of 59476.35 and maximum of 79876.48 gallons
      7. Land use distributed as
         1. Agricultural: 523.25
         2. Forested: 1,176.60
         3. Water Course: 9.93
5. "SUNDRE TO HARTELL NPS 12
   1. Total Cumulative Length (m): 179.97
   2. Likelihood of failure distributed between minimum of 2.827e-03 and maximum of 2.516e-02.
      1. ILI Date of 2018-07-18
      2. ILI tool of USCD
      3. Cracks identified 11.0
      4. Depth fraction between nan and nan
      5. Length between 240.0 mm and 1153.0 mm
   3. Consequence of failure distributed between minimum of $3.75 and maximum of $32.81MM
   4. Total length driven by Safety: 89.99 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $28.51MM:
      1. Leak cost between minimum of $0.00 and maximum of $28.51MM
      2. Leak scenario yielded 2697.0 intersections with structures, with minimum of 2.97 and maximum of 2.97 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.77 and maximum of 4.11 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $28.51MM
      5. Rupture scenario yielded 293.0 intersections with structures, with minimum of 2.28 and maximum of 2.97 of population impacted
      6. Rupture hazard radius distributed between minimum of 72.83 and maximum of 79.49 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $28.51MM
      8. Puncture scenario yielded 752.0 intersections with structures, with minimum of 2.97 and maximum of 2.97 of population impacted
      9. Puncture hazard radius distributed between minimum of 15.06 and maximum of 16.44 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 89.99 meters.
   7. Environmental Cost distributed between minimum of $2.87 and maximum of $5.33MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.23MM
      2. Leak spill volume between a minimum of 1885.66 and maximum of 2146.35 gallons
      3. Rupture cost between minimum of $5.26 and maximum of $11.63MM
      4. Rupture spill volume is between a minimum of 49614.19 and maximum of 109726.32 gallons
      5. Puncture cost between minimum of $6.57 and maximum of $7.47MM
      6. Puncture spill volume is between a minimum of 61958.5 and maximum of 70524.33 gallons
      7. Land use distributed as
         1. Agricultural: 89.99
         2. Forested: 89.99
6. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
   1. Total Cumulative Length (m): 59.99
   2. Likelihood of failure distributed between minimum of 2.426e-01 and maximum of 4.363e-01.
      1. ILI Date of 2014-11-26
      2. ILI tool of USCD
      3. Cracks identified 2.0
      4. Depth fraction between 0.38 and 0.39
      5. Length between 70.0 mm and 103.0 mm
   3. Consequence of failure distributed between minimum of $19.83 and maximum of $19.93MM
      1. Total length driven by Economic Loss: 59.99 meters.
   4. Economic Loss Cost distributed between minimum of $19.83 and maximum of $19.93MM:
      1. Repair costs between minimum of $17,000.00 and maximum of $17,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.28 and maximum of $0.28MM
      5. Leak scenario yielded 16.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $59,691.29 and maximum of $59,691.29
      7. Rupture cost between minimum of $44.72 and maximum of $44.72MM
      8. Rupture scenario yielded 105.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $44,503,622.40 and maximum of $44,503,622.40
      10. Puncture cost between minimum of $2.18 and maximum of $2.18MM
      11. Puncture scenario yielded 60.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $1,961,320.39 and maximum of $1,961,320.39"
7. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
   1. Total Cumulative Length (m): 30.0
   2. Likelihood of failure distributed between minimum of 1.081e-02 and maximum of 1.081e-02.
      1. ILI Date of 2017-10-16
      2. ILI tool of USCD
      3. Cracks identified 1.0
      4. Depth fraction between 0.05 and 0.05
      5. Length between 267.0 mm and 267.0 mm
   3. Consequence of failure distributed between minimum of $2.39 and maximum of $2.39MM
   4. Total length driven by Environmental: 30.0 meters.
   5. Environmental Cost distributed between minimum of $1.53 and maximum of $1.53MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.20MM
      2. Leak spill volume between a minimum of 1847.73 and maximum of 1847.73 gallons
      3. Rupture cost between minimum of $7.11 and maximum of $7.11MM
      4. Rupture spill volume is between a minimum of 67111.68 and maximum of 67111.68 gallons
      5. Puncture cost between minimum of $6.43 and maximum of $6.43MM
      6. Puncture spill volume is between a minimum of 60712.21 and maximum of 60712.21 gallons
      7. Land use distributed as
         1. Agricultural: 30.00
8. "SSPL TRUNK LINE NPS 12
   1. Total Cumulative Length (m): 29.99
   2. Likelihood of failure distributed between minimum of 5.487e-02 and maximum of 5.487e-02.
      1. ILI Date of 2018-06-12
      2. ILI tool of USCD
      3. Cracks identified 6.0
      4. Depth fraction between 0.14 and 0.28
      5. Length between 29.909 mm and 496.489 mm
   3. Consequence of failure distributed between minimum of $3.20 and maximum of $3.20MM
   4. Total length driven by Environmental: 29.99 meters.
   5. Environmental Cost distributed between minimum of $2.31 and maximum of $2.31MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.18MM
      2. Leak spill volume between a minimum of 1723.53 and maximum of 1723.53 gallons
      3. Rupture cost between minimum of $4.21 and maximum of $4.21MM
      4. Rupture spill volume is between a minimum of 39740.23 and maximum of 39740.23 gallons
      5. Puncture cost between minimum of $6.00 and maximum of $6.00MM
      6. Puncture spill volume is between a minimum of 56631.41 and maximum of 56631.41 gallons
      7. Land use distributed as
         1. Agricultural: 29.99

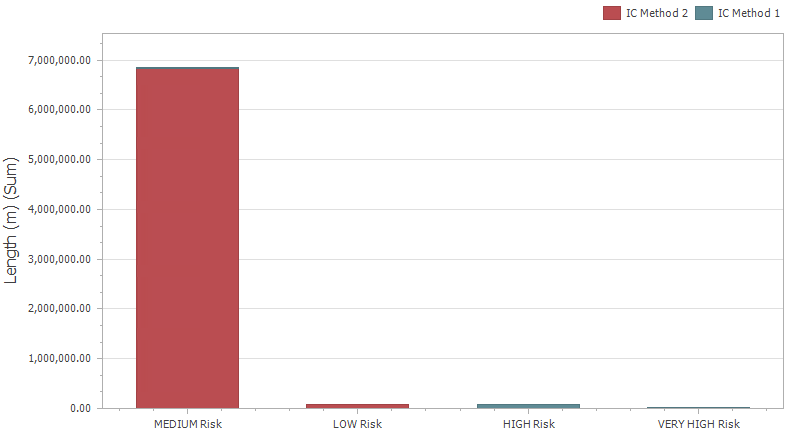
## Internal Corrosion and Total Consequence

### Assumptions of model

* Four different ILI technologies are used (where available), POE is calculated for all features, and maximum POE is assigned as the POE for risk calculations.
* Latest ILI of each technology type is used.
* Repair and excavation data has already been applied to the database.
* Pipelines with no ILI data use iFilms approach to estimate LOF.
* Pipelines with no iFilms data are assessed as high LOF pipelines.

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

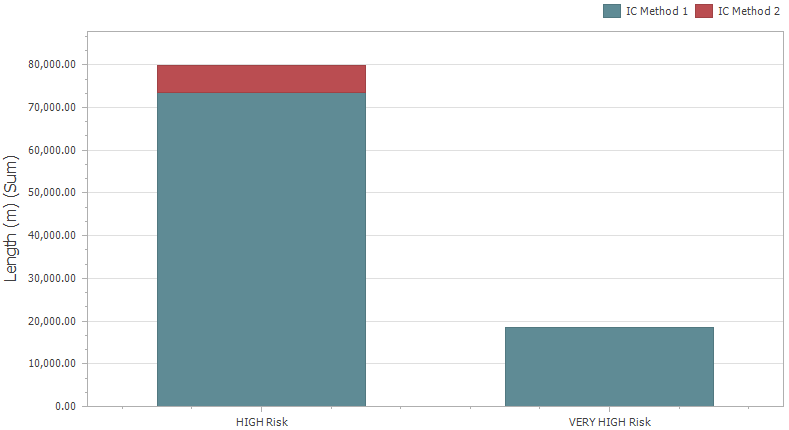


The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **IC Method Used** | **Cumulative Length (m)** | | | | |
| **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| IC Method 1 | 0.00 | 11,800.68 | 73,615.40 | 18,598.35 | **104,014.43** |
| IC Method 2 | 84,963.19 | 6,840,201.26 | 6,190.99 | 0.00 | **6,931,355.44** |
| **Grand Total** | **84,963.19** | **6,852,001.93** | **79,806.39** | **18,598.35** | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.



### Reportable Pipeline Segments: IC Method 1

IC Method 1 has 67 pipelines with segments that fall within the total risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below:

1. "Empress 8 inch Water
   1. Total Cumulative Length (m): 10119.82
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
      2. Wall thickness between minimum of 3.96 and maximum of 3.96
      3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
      4. iFilms SME override of nan
      5. iFilms SME override comment of nan
   3. Consequence of failure distributed between minimum of $0.20 and maximum of $0.22MM
   4. Total length driven by Economic Loss: 10119.82 meters.
   5. Economic Loss Cost distributed between minimum of $0.20 and maximum of $0.22MM:
      1. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is Fresh Water.
      4. Leak cost between minimum of $0.21 and maximum of $0.22MM
      5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
      7. Rupture cost between minimum of $0.21 and maximum of $0.22MM
      8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
      10. Puncture cost between minimum of $0.21 and maximum of $0.22MM
      11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
2. "Empress 10 inch Water
   1. Total Cumulative Length (m): 10102.58
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
      2. Wall thickness between minimum of 4.78 and maximum of 4.78
      3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
      4. iFilms SME override of nan
      5. iFilms SME override comment of nan
   3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28MM
      1. Total length driven by Economic Loss: 10102.58 meters.
   4. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.28MM:
      1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is Fresh Water.
      4. Leak cost between minimum of $0.22 and maximum of $0.28MM
      5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
      7. Rupture cost between minimum of $0.22 and maximum of $0.28MM
      8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
      10. Puncture cost between minimum of $0.22 and maximum of $0.28MM
      11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
3. "Sarnia 8 inch Fresh Water
   1. Total Cumulative Length (m): 7977.89
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
      2. Wall thickness between minimum of 4.78 and maximum of 4.78
      3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
      4. iFilms SME override of nan
      5. iFilms SME override comment of nan
   3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.25MM
      1. Total length driven by Economic Loss: 7977.89 meters.
   4. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.25MM:
      1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is Fresh Water.
      4. Leak cost between minimum of $0.21 and maximum of $0.25MM
      5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
      7. Rupture cost between minimum of $0.21 and maximum of $0.25MM
      8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
      10. Puncture cost between minimum of $0.21 and maximum of $0.25MM
      11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
4. "EMPRESS WATER LINE NPS 10
   1. Total Cumulative Length (m): 6987.6
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 2000-01-01 and maximum of 2001-01-01
      2. Wall thickness between minimum of 6.4 and maximum of 6.4
      3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
      4. iFilms SME override of nan
      5. iFilms SME override comment of nan
   3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28MM
      1. Total length driven by Economic Loss: 6987.6 meters.
   4. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.28MM:
      1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is Fresh Water.
      4. Leak cost between minimum of $0.22 and maximum of $0.28MM
      5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
      7. Rupture cost between minimum of $0.22 and maximum of $0.28MM
      8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
      10. Puncture cost between minimum of $0.22 and maximum of $0.28MM
      11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
5. "EMPRESS WASTE WATER DISCHARGE NPS 10
   1. Total Cumulative Length (m): 6957.2
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
      2. Wall thickness between minimum of 4.78 and maximum of 4.78
      3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
      4. iFilms SME override of nan
      5. iFilms SME override comment of nan
   3. Consequence of failure distributed between minimum of $0.58 and maximum of $1.01MM
   4. Total length driven by Environmental: 6957.2 meters.
   5. Environmental Cost distributed between minimum of $0.36 and maximum of $0.74MM:
      1. Leak cost between minimum of $0.02 and maximum of $0.05MM
      2. Leak spill volume between a minimum of 475.94 and maximum of 752.51 gallons
      3. Rupture cost between minimum of $17.46 and maximum of $35.70MM
      4. Rupture spill volume is between a minimum of 354842.05 and maximum of 561046.79 gallons
      5. Puncture cost between minimum of $0.77 and maximum of $1.57MM
      6. Puncture spill volume is between a minimum of 15638.25 and maximum of 24725.91 gallons
      7. Land use distributed as
         1. Agricultural: 6,944.12
         2. Water Course: 13.08
6. "SS-15 NPS 6
   1. Total Cumulative Length (m): 5229.36
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
      2. Wall thickness between minimum of 5.16 and maximum of 7.11
      3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
      4. iFilms SME override of nan
      5. iFilms SME override comment of nan
   3. Consequence of failure distributed between minimum of $1.63 and maximum of $1.83MM
   4. Total length driven by Environmental: 5229.36 meters.
   5. Environmental Cost distributed between minimum of $1.39 and maximum of $1.59MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.21MM
      2. Leak spill volume between a minimum of 1853.91 and maximum of 1962.4 gallons
      3. Rupture cost between minimum of $55.64 and maximum of $58.90MM
      4. Rupture spill volume is between a minimum of 524962.0 and maximum of 555682.93 gallons
      5. Puncture cost between minimum of $6.46 and maximum of $6.83MM
      6. Puncture spill volume is between a minimum of 60915.28 and maximum of 64480.05 gallons
      7. Land use distributed as
         1. Agricultural: 5,229.36
7. "C3 FROM ESSO NPS 6
   1. Total Cumulative Length (m): 4075.15
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
      2. Wall thickness between minimum of 4.8 and maximum of 7.1
      3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
      4. iFilms SME override of nan
      5. iFilms SME override comment of nan
   3. Consequence of failure distributed between minimum of $0.28 and maximum of $15.29MM
   4. Total length driven by Safety: 463.09 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $14.71MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 15.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 9.02 and maximum of 9.02 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $398.23MM
      5. Rupture scenario yielded 18.0 intersections with structures, with minimum of 0.0 and maximum of 41.48 of population impacted
      6. Rupture hazard radius distributed between minimum of 91.99 and maximum of 91.99 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
      8. Puncture scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 28.89 and maximum of 28.89 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Economic Loss: 3612.06 meters.
   7. Economic Loss Cost distributed between minimum of $0.28 and maximum of $0.58MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.24 and maximum of $0.50MM
      5. Leak scenario yielded 15.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $24,336.15 and maximum of $24,336.15
      7. Rupture cost between minimum of $7.10 and maximum of $11.97MM
      8. Rupture scenario yielded 18.0 intersections with structures, with minimum of $25,000.00 and maximum of $4,871,372.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $6,891,140.89 and maximum of $6,891,140.89
      10. Puncture cost between minimum of $1.01 and maximum of $1.28MM
      11. Puncture scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $799,630.73 and maximum of $799,630.73"
8. "RICHARDSON GAS LINE NPS 3
   1. Total Cumulative Length (m): 3703.21
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1965-01-01 and maximum of 1965-01-01
      2. Wall thickness between minimum of 3.18 and maximum of 3.18
      3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
      4. iFilms SME override of nan
      5. iFilms SME override comment of nan
   3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.24MM
      1. Total length driven by Economic Loss: 3703.21 meters.
   4. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.24MM:
      1. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.21 and maximum of $0.23MM
      5. Leak scenario yielded 1.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $3,382.92 and maximum of $3,382.92
      7. Rupture cost between minimum of $0.47 and maximum of $0.51MM
      8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $267,358.90 and maximum of $267,358.90
      10. Puncture cost between minimum of $0.32 and maximum of $0.34MM
      11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $111,154.91 and maximum of $111,154.91"
9. "Sarnia 6 inch tied into 6 inch E/P line
   1. Total Cumulative Length (m): 2501.78
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
      2. Wall thickness between minimum of 4.78 and maximum of 4.78
      3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
      4. iFilms SME override of nan
      5. iFilms SME override comment of nan
   3. Consequence of failure distributed between minimum of $0.35 and maximum of $12.64MM
   4. Total length driven by Safety: 469.08 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $12.04MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 40.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $24.21MM
      5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.52 of population impacted
      6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
      8. Puncture scenario yielded 47.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Economic Loss: 2032.7 meters.
   7. Economic Loss Cost distributed between minimum of $0.33 and maximum of $0.65MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.26 and maximum of $0.58MM
      5. Leak scenario yielded 40.0 intersections with structures, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $44,363.99 and maximum of $44,363.99
      7. Rupture cost between minimum of $12.80 and maximum of $13.31MM
      8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $25,000.00 and maximum of $537,650.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $12,562,319.03 and maximum of $12,562,319.03
      10. Puncture cost between minimum of $1.67 and maximum of $1.99MM
      11. Puncture scenario yielded 47.0 intersections with structures, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $1,457,700.03 and maximum of $1,457,700.03"
10. "Kerrbert 4 inch Water
    1. Total Cumulative Length (m): 2341.68
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
       2. Wall thickness between minimum of 4.78 and maximum of 4.78
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.23MM
       1. Total length driven by Economic Loss: 2341.68 meters.
    4. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.23MM:
       1. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is Fresh Water.
       4. Leak cost between minimum of $0.21 and maximum of $0.23MM
       5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
       7. Rupture cost between minimum of $0.21 and maximum of $0.23MM
       8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
       10. Puncture cost between minimum of $0.21 and maximum of $0.23MM
       11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
11. "10-36 LACT TO CROOKED LAKE NPS 6
    1. Total Cumulative Length (m): 2315.46
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 2017-11-20 and maximum of 2017-11-20
       2. Wall thickness between minimum of 4.78 and maximum of 7.11
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $0.59 and maximum of $0.63MM
    4. Total length driven by Environmental: 2315.46 meters.
    5. Environmental Cost distributed between minimum of $0.38 and maximum of $0.41MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.18MM
       2. Leak spill volume between a minimum of 1691.91 and maximum of 1738.53 gallons
       3. Rupture cost between minimum of $50.78 and maximum of $52.18MM
       4. Rupture spill volume is between a minimum of 479089.95 and maximum of 492289.71 gallons
       5. Puncture cost between minimum of $5.89 and maximum of $6.05MM
       6. Puncture spill volume is between a minimum of 55592.4 and maximum of 57124.07 gallons
       7. Land use distributed as
          1. Agricultural: 2,315.46
12. "COED BV 203 TO EST NPS 8
    1. Total Cumulative Length (m): 2259.9
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       2. Wall thickness between minimum of 4.78 and maximum of 4.78
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $5.08 and maximum of $158.72MM
    4. Total length driven by Safety: 1694.93 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $150.03MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $513.60MM
       5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 53.5 of population impacted
       6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $392.54MM
       8. Puncture scenario yielded 46.0 intersections with structures, with minimum of 0.0 and maximum of 40.89 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 2.0.
    6. Total length driven by Environmental: 564.97 meters.
    7. Environmental Cost distributed between minimum of $4.66 and maximum of $13.35MM:
       1. Leak cost between minimum of $0.13 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1973.38 and maximum of 2019.77 gallons
       3. Rupture cost between minimum of $64.53 and maximum of $169.76MM
       4. Rupture spill volume is between a minimum of 947101.66 and maximum of 969363.57 gallons
       5. Puncture cost between minimum of $4.42 and maximum of $11.62MM
       6. Puncture spill volume is between a minimum of 64840.82 and maximum of 66364.92 gallons
       7. Land use distributed as
          1. Commercial/Industrial: 2,256.78
          2. Water Course: 3.12
13. "SPEED CORNER TO FORT SASKATCHEWAN INLET (KEYSPAN) NPS 16
    1. Total Cumulative Length (m): 1771.15
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1995-01-01 and maximum of 1995-01-01
       2. Wall thickness between minimum of 5.56 and maximum of 10.31
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $1.36 and maximum of $1.59MM
       1. Total length driven by Economic Loss: 1771.15 meters.
    4. Economic Loss Cost distributed between minimum of $1.36 and maximum of $1.59MM:
       1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $1.02 and maximum of $1.10MM
       5. Leak scenario yielded 15.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $35,177.42 and maximum of $35,177.42
       7. Rupture cost between minimum of $59.11 and maximum of $59.26MM
       8. Rupture scenario yielded 8.0 intersections with structures, with minimum of $25,000.00 and maximum of $175,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $58,099,358.13 and maximum of $58,099,358.13
       10. Puncture cost between minimum of $2.14 and maximum of $2.27MM
       11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $25,000.00 and maximum of $125,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $1,155,850.00 and maximum of $1,155,850.00"
14. "BUCK CREEK TO STATION 1 NPS 3
    1. Total Cumulative Length (m): 1684.92
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
       2. Wall thickness between minimum of 3.18 and maximum of 3.18
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $0.30 and maximum of $122.64MM
    4. Total length driven by Safety: 306.82 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $119.66MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 5.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.7 and maximum of 11.7 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 57.3 and maximum of 57.3 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 8.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 42.7 and maximum of 42.7 meters.
       10. Product type is Ethane.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 1378.1 meters.
    7. Economic Loss Cost distributed between minimum of $0.30 and maximum of $2.98MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is Ethane.
       4. Leak cost between minimum of $0.28 and maximum of $2.97MM
       5. Leak scenario yielded 5.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $74,968.65 and maximum of $74,968.65
       7. Rupture cost between minimum of $6.13 and maximum of $8.82MM
       8. Rupture scenario yielded 7.0 intersections with structures, with minimum of $269,868.00 and maximum of $2,688,250.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $5,924,929.50 and maximum of $5,924,929.50
       10. Puncture cost between minimum of $2.67 and maximum of $5.36MM
       11. Puncture scenario yielded 8.0 intersections with structures, with minimum of $269,868.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $2,463,299.44 and maximum of $2,463,299.44"
15. "NPS4 SS-35 From 5-34-11-19-W3 To 5-35-11-19-W3
    1. Total Cumulative Length (m): 1532.63
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1968-01-01 and maximum of 1968-01-01
       2. Wall thickness between minimum of 3.17 and maximum of 3.17
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $1.17 and maximum of $1.22MM
    4. Total length driven by Environmental: 1532.63 meters.
    5. Environmental Cost distributed between minimum of $0.96 and maximum of $0.98MM:
       1. Leak cost between minimum of $0.16 and maximum of $0.17MM
       2. Leak spill volume between a minimum of 1545.39 and maximum of 1577.19 gallons
       3. Rupture cost between minimum of $21.40 and maximum of $21.84MM
       4. Rupture spill volume is between a minimum of 201897.55 and maximum of 206051.63 gallons
       5. Puncture cost between minimum of $5.38 and maximum of $5.49MM
       6. Puncture spill volume is between a minimum of 50778.06 and maximum of 51822.83 gallons
       7. Land use distributed as
          1. Agricultural: 1,532.63
16. "BATCH TRANSFER LINE NPS 24
    1. Total Cumulative Length (m): 1344.07
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
       1. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
       2. Wall thickness between minimum of 6.35 and maximum of 6.35
       3. iFilms growth rate between minimum of 0.05 and maximum of 0.05 mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $15.34 and maximum of $155.74MM
    4. Total length driven by Safety: 1021.53 meters.
    5. Safety Cost distributed between minimum of $4.31 and maximum of $124.72MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 32.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 2.91 and maximum of 2.91 meters.
       4. Rupture cost between minimum of $121.06 and maximum of $968.45MM
       5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 100.88 of population impacted
       6. Rupture hazard radius distributed between minimum of 99.14 and maximum of 99.14 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 34.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 11.53 and maximum of 11.53 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 322.55 meters.
    7. Environmental Cost distributed between minimum of $7.72 and maximum of $10.77MM:
       1. Leak cost between minimum of $0.06 and maximum of $0.06MM
       2. Leak spill volume between a minimum of 850.32 and maximum of 883.99 gallons
       3. Rupture cost between minimum of $215.31 and maximum of $223.83MM
       4. Rupture spill volume is between a minimum of 3159898.85 and maximum of 3285013.13 gallons
       5. Puncture cost between minimum of $1.90 and maximum of $1.98MM
       6. Puncture spill volume is between a minimum of 27939.64 and maximum of 29045.89 gallons
       7. Land use distributed as
          1. Commercial/Industrial: 1,344.07
17. "KALKASKA SARNIA TO PUMP STATION NPS 8
    1. Total Cumulative Length (m): 1330.88
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1974-01-01 and maximum of 1974-01-01
       2. Wall thickness between minimum of 4.78 and maximum of 4.78
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $0.30 and maximum of $0.69MM
    4. Total length driven by Safety: 408.51 meters.
    5. Safety Cost distributed between minimum of $0.02 and maximum of $0.37MM:
       1. Leak cost between minimum of $0.02 and maximum of $0.38MM
       2. Leak scenario yielded 0.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 11.01 and maximum of 11.01 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
       5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 140.37 and maximum of 140.37 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 1.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 51.35 and maximum of 51.35 meters.
       10. Product type is NGL.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 922.37 meters.
    7. Economic Loss Cost distributed between minimum of $0.28 and maximum of $0.31MM:
       1. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.26 and maximum of $0.26MM
       5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $44,314.96 and maximum of $44,314.96
       7. Rupture cost between minimum of $21.48 and maximum of $21.75MM
       8. Rupture scenario yielded 2.0 intersections with structures, with minimum of $50,000.00 and maximum of $268,825.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $21,268,460.05 and maximum of $21,268,460.05
       10. Puncture cost between minimum of $1.67 and maximum of $1.94MM
       11. Puncture scenario yielded 1.0 intersections with structures, with minimum of $268,825.00 and maximum of $268,825.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $1,456,089.09 and maximum of $1,456,089.09"
18. "EDS OPERATIVE NPS 12
    1. Total Cumulative Length (m): 1330.76
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1974-01-01 and maximum of 1974-01-01
       2. Wall thickness between minimum of 6.22 and maximum of 6.22
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $0.94 and maximum of $1.40MM
       1. Total length driven by Economic Loss: 1330.76 meters.
    4. Economic Loss Cost distributed between minimum of $0.92 and maximum of $0.99MM:
       1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.89 and maximum of $0.89MM
       5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $44,566.23 and maximum of $44,566.23
       7. Rupture cost between minimum of $47.58 and maximum of $48.15MM
       8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $268,825.00 and maximum of $562,650.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $46,740,539.02 and maximum of $46,740,539.02
       10. Puncture cost between minimum of $2.31 and maximum of $2.58MM
       11. Puncture scenario yielded 1.0 intersections with structures, with minimum of $268,825.00 and maximum of $268,825.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $1,464,345.16 and maximum of $1,464,345.16"
19. "CARROT CREEK LATERAL NPS 2
    1. Total Cumulative Length (m): 1263.04
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1988-01-01 and maximum of 1988-01-01
       2. Wall thickness between minimum of 3.18 and maximum of 3.18
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $0.30 and maximum of $0.31MM
       1. Total length driven by Economic Loss: 1263.04 meters.
    4. Economic Loss Cost distributed between minimum of $0.27 and maximum of $0.28MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $0.27MM
       5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $2.42 and maximum of $2.42MM
       8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $2,214,603.35 and maximum of $2,214,603.35
       10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
       11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
20. "FOOTHILLS EMPRESS 4 TO EMPRESS 6 NPS 36
    1. Total Cumulative Length (m): 1144.55
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1998-01-01 and maximum of 1998-01-01
       2. Wall thickness between minimum of 14.27 and maximum of 14.27
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $4.32 and maximum of $126.58MM
    4. Total length driven by Safety: 156.53 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $119.59MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 117.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 9.71 and maximum of 9.71 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $765.13MM
       5. Rupture scenario yielded 3.0 intersections with structures, with minimum of 0.0 and maximum of 79.7 of population impacted
       6. Rupture hazard radius distributed between minimum of 355.87 and maximum of 355.87 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 25.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 44.58 and maximum of 44.58 meters.
       10. Product type is NGL.
       11. Class area location is/are nan.
    6. Total length driven by Economic Loss: 988.02 meters.
    7. Economic Loss Cost distributed between minimum of $4.32 and maximum of $6.99MM:
       1. Repair costs between minimum of $100,500.00 and maximum of $100,500.00.
       2. Outage losses between minimum of $4,200,000.00 and maximum of $4,200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $4.33 and maximum of $7.04MM
       5. Leak scenario yielded 117.0 intersections with structures, with minimum of $0.00 and maximum of $2,713,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $30,397.21 and maximum of $30,397.21
       7. Rupture cost between minimum of $258.48 and maximum of $265.88MM
       8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $7,418,325.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $254,159,387.22 and maximum of $254,159,387.22
       10. Puncture cost between minimum of $5.30 and maximum of $8.01MM
       11. Puncture scenario yielded 25.0 intersections with structures, with minimum of $0.00 and maximum of $2,713,250.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $998,783.28 and maximum of $998,783.28"
21. "NIPISI FUEL GAS NPS 3
    1. Total Cumulative Length (m): 1135.8
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 2012-05-01 and maximum of 2012-05-01
       2. Wall thickness between minimum of 3.99 and maximum of 3.99
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.26MM
       1. Total length driven by Economic Loss: 1135.8 meters.
    4. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.26MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is FG.
       4. Leak cost between minimum of $0.22 and maximum of $0.27MM
       5. Leak scenario yielded 48.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $9,264.52 and maximum of $9,264.52
       7. Rupture cost between minimum of $0.94 and maximum of $0.99MM
       8. Rupture scenario yielded 37.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $732,194.60 and maximum of $732,194.60
       10. Puncture cost between minimum of $0.51 and maximum of $0.56MM
       11. Puncture scenario yielded 49.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $304,411.14 and maximum of $304,411.14"
22. "NPS20 ENBRIDGE CONDENSATE TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
    1. Total Cumulative Length (m): 1131.77
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
       1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       2. Wall thickness between minimum of 5.56 and maximum of 5.56
       3. iFilms growth rate between minimum of 0.06 and maximum of 0.06 mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $7.91 and maximum of $10.06MM
    4. Total length driven by Environmental: 1131.77 meters.
    5. Environmental Cost distributed between minimum of $6.86 and maximum of $8.02MM:
       1. Leak cost between minimum of $0.06 and maximum of $0.06MM
       2. Leak spill volume between a minimum of 529.42 and maximum of 541.3 gallons
       3. Rupture cost between minimum of $144.81 and maximum of $148.06MM
       4. Rupture spill volume is between a minimum of 1366242.13 and maximum of 1396891.33 gallons
       5. Puncture cost between minimum of $1.84 and maximum of $1.89MM
       6. Puncture spill volume is between a minimum of 17395.54 and maximum of 17785.77 gallons
       7. Land use distributed as
          1. Agricultural: 467.25
          2. Remote: 664.53
23. "KERROBERT TO SASK ENERGY FUEL GAS NPS 2
    1. Total Cumulative Length (m): 1021.76
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
       2. Wall thickness between minimum of 4.78 and maximum of 4.78
       3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $0.33 and maximum of $22.28MM
    4. Total length driven by Safety: 117.91 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $21.65MM:
       1. Leak cost between minimum of $0.00 and maximum of $21.89MM
       2. Leak scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 10.69 and maximum of 10.69 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
       5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       6. Rupture hazard radius distributed between minimum of 39.77 and maximum of 39.77 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
       8. Puncture scenario yielded 22.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 38.44 and maximum of 38.44 meters.
       10. Product type is FG.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 903.85 meters.
    7. Economic Loss Cost distributed between minimum of $0.33 and maximum of $0.64MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is FG.
       4. Leak cost between minimum of $0.31 and maximum of $0.61MM
       5. Leak scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $106,972.91 and maximum of $106,972.91
       7. Rupture cost between minimum of $4.10 and maximum of $4.39MM
       8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $3,892,857.05 and maximum of $3,892,857.05
       10. Puncture cost between minimum of $3.72 and maximum of $4.02MM
       11. Puncture scenario yielded 22.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $3,514,886.76 and maximum of $3,514,886.76"
24. "NPS4 ENBRIDGE TRANSFER from 2-34-33-22W3 to 10-34-33-22W3
    1. Total Cumulative Length (m): 907.79
    2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
       1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       2. Wall thickness between minimum of 3.2 and maximum of 3.2
       3. iFilms growth rate between minimum of 0.06 and maximum of 0.06 mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $0.80 and maximum of $1.37MM
    4. Total length driven by Environmental: 907.79 meters.
    5. Environmental Cost distributed between minimum of $0.59 and maximum of $1.12MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1925.94 and maximum of 1935.35 gallons
       3. Rupture cost between minimum of $26.67 and maximum of $26.80MM
       4. Rupture spill volume is between a minimum of 251613.85 and maximum of 252844.1 gallons
       5. Puncture cost between minimum of $6.71 and maximum of $6.74MM
       6. Puncture spill volume is between a minimum of 63281.92 and maximum of 63591.33 gallons
       7. Land use distributed as
          1. Agricultural: 380.94
          2. Remote: 526.85
25. "NPS20 ENBRIDGE BLEND TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
    1. Total Cumulative Length (m): 896.89
    2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
       1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       2. Wall thickness between minimum of 5.56 and maximum of 5.56
       3. iFilms growth rate between minimum of 0.06 and maximum of 0.07 mm/yr
       4. iFilms SME override of nan
       5. iFilms SME override comment of nan
    3. Consequence of failure distributed between minimum of $4.34 and maximum of $7.77MM
    4. Total length driven by Environmental: 896.89 meters.
    5. Environmental Cost distributed between minimum of $3.14 and maximum of $6.82MM:
       1. Leak cost between minimum of $0.03 and maximum of $0.05MM
       2. Leak spill volume between a minimum of 501.53 and maximum of 510.83 gallons
       3. Rupture cost between minimum of $89.82 and maximum of $139.73MM
       4. Rupture spill volume is between a minimum of 1294263.27 and maximum of 1318272.77 gallons
       5. Puncture cost between minimum of $1.14 and maximum of $1.78MM
       6. Puncture spill volume is between a minimum of 16479.07 and maximum of 16784.77 gallons
       7. Land use distributed as
          1. Agricultural: 430.45
          2. Commercial/Industrial: 97.02
          3. Remote: 369.42

### Reportable Pipeline Segments: IC Method 2

IC Method 2 has 12 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below:

MFLA

1. "NORTH FERRIER 08-20 TO 09-27 NPS 8
   1. Total Cumulative Length (m): 4413.64
   2. Likelihood of failure distributed between minimum of 1.006e-02 and maximum of 2.646e-01.
      1. ILI Date of 2013-09-17
      2. ILI tool of MFL
      3. Features identified 8940.0
      4. Depth fraction between 0.1 and 0.62
      5. Length between 4.0 mm and 132.0 mm
   3. Consequence of failure distributed between minimum of $0.49 and maximum of $2.46MM
   4. Total length driven by Safety: 22.4 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $0.80MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 43.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.99 and maximum of 4.11 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $165.41MM
      5. Rupture scenario yielded 85.0 intersections with structures, with minimum of 0.0 and maximum of 17.23 of population impacted
      6. Rupture hazard radius distributed between minimum of 53.97 and maximum of 55.69 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
      8. Puncture scenario yielded 67.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
      9. Puncture hazard radius distributed between minimum of 15.93 and maximum of 16.44 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 4391.25 meters.
   7. Environmental Cost distributed between minimum of $0.27 and maximum of $2.19MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.34MM
      2. Leak spill volume between a minimum of 1730.56 and maximum of 2162.78 gallons
      3. Rupture cost between minimum of $1.33 and maximum of $4.89MM
      4. Rupture spill volume is between a minimum of 12530.79 and maximum of 46113.32 gallons
      5. Puncture cost between minimum of $6.03 and maximum of $11.16MM
      6. Puncture spill volume is between a minimum of 56862.27 and maximum of 71064.13 gallons
      7. Land use distributed as
         1. Agricultural: 4,254.71
         2. Forested: 59.99
         3. Water Course: 98.95
2. "BRETON TO EDMONTON NPS 8
   1. Total Cumulative Length (m): 530.88
   2. Likelihood of failure distributed between minimum of 1.007e-03 and maximum of 2.563e-02.
      1. ILI Date of 2014-11-12
      2. ILI tool of MFL
      3. Features identified 1205.0
      4. Depth fraction between 0.11 and 0.42
      5. Length between 4.0 mm and 112.0 mm
   3. Consequence of failure distributed between minimum of $1.18 and maximum of $529.31MM
   4. Total length driven by Safety: 410.51 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $523.87MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 117.0 intersections with structures, with minimum of 2.97 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.13 and maximum of 12.03 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $4,344.21MM
      5. Rupture scenario yielded 236.0 intersections with structures, with minimum of 0.0 and maximum of 452.52 of population impacted
      6. Rupture hazard radius distributed between minimum of 129.12 and maximum of 138.23 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $1,122.91MM
      8. Puncture scenario yielded 355.0 intersections with structures, with minimum of 2.97 and maximum of 116.97 of population impacted
      9. Puncture hazard radius distributed between minimum of 45.37 and maximum of 48.58 meters.
      10. Product type is Condensate.
      11. Class area location is/are 1.0, 2.0, 3.0.
   6. Total length driven by Environmental: 120.37 meters.
   7. Environmental Cost distributed between minimum of $0.32 and maximum of $10.91MM:
      1. Leak cost between minimum of $0.11 and maximum of $0.47MM
      2. Leak spill volume between a minimum of 1679.26 and maximum of 2658.84 gallons
      3. Rupture cost between minimum of $1.13 and maximum of $13.17MM
      4. Rupture spill volume is between a minimum of 16536.91 and maximum of 73997.62 gallons
      5. Puncture cost between minimum of $3.76 and maximum of $15.54MM
      6. Puncture spill volume is between a minimum of 55176.81 and maximum of 87363.34 gallons
      7. Land use distributed as
         1. Agricultural: 125.95
         2. Commercial/Industrial: 149.96
         3. Forested: 27.97
         4. High Density Residential: 149.96
         5. Low Density Residential: 59.98
         6. Water Course: 17.07
3. "UTILITY NPS 8
   1. Total Cumulative Length (m): 299.84
   2. Likelihood of failure distributed between minimum of 1.128e-03 and maximum of 1.888e-02.
      1. ILI Date of 2011-08-12
      2. ILI tool of MFL
      3. Features identified 160.0
      4. Depth fraction between 0.02 and 0.09
      5. Length between 12.0 mm and 116.0 mm
   3. Consequence of failure distributed between minimum of $3.12 and maximum of $57.85MM
   4. Total length driven by Safety: 239.87 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $54.50MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 10.66 and maximum of 10.66 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $359.33MM
      5. Rupture scenario yielded 40.0 intersections with structures, with minimum of 0.0 and maximum of 37.43 of population impacted
      6. Rupture hazard radius distributed between minimum of 135.26 and maximum of 135.26 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
      8. Puncture scenario yielded 45.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 49.48 and maximum of 49.48 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Economic Loss: 59.97 meters.
   7. Economic Loss Cost distributed between minimum of $2.97 and maximum of $4.25MM:
      1. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.25 and maximum of $0.52MM
      5. Leak scenario yielded 16.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $40,141.48 and maximum of $40,141.48
      7. Rupture cost between minimum of $19.53 and maximum of $25.18MM
      8. Rupture scenario yielded 40.0 intersections with structures, with minimum of $50,000.00 and maximum of $5,695,325.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $19,265,442.30 and maximum of $19,265,442.30
      10. Puncture cost between minimum of $1.53 and maximum of $1.80MM
      11. Puncture scenario yielded 45.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $1,318,957.76 and maximum of $1,318,957.76"
4. "SECT 5 RICHARDSON TO GRENFELL NPS 6
   1. Total Cumulative Length (m): 198.75
   2. Likelihood of failure distributed between minimum of 1.173e-03 and maximum of 8.580e-02.
      1. ILI Date of 2012-03-06
      2. ILI tool of MFL
      3. Features identified 13.0
      4. Depth fraction between 0.1 and 0.4
      5. Length between 12.603 mm and 35.309 mm
   3. Consequence of failure distributed between minimum of $1.07 and maximum of $30.75MM
   4. Total length driven by Safety: 60.0 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $28.27MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 18.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
      3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $43.78MM
      5. Rupture scenario yielded 59.0 intersections with structures, with minimum of 4.56 and maximum of 4.56 of population impacted
      6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $43.78MM
      8. Puncture scenario yielded 53.0 intersections with structures, with minimum of 4.56 and maximum of 4.56 of population impacted
      9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
      10. Product type is NGL.
      11. Class area location is/are 1.0.
   6. Total length driven by Economic Loss: 138.75 meters.
   7. Economic Loss Cost distributed between minimum of $0.87 and maximum of $2.48MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $0.30MM
      5. Leak scenario yielded 18.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $18.43MM
      8. Rupture scenario yielded 59.0 intersections with structures, with minimum of $539,736.00 and maximum of $564,736.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $2.85MM
      11. Puncture scenario yielded 53.0 intersections with structures, with minimum of $539,736.00 and maximum of $564,736.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
5. "SECT 6 GRENFELL TO MANSON NPS 6
   1. Total Cumulative Length (m): 179.97
   2. Likelihood of failure distributed between minimum of 1.071e-02 and maximum of 8.667e-02.
      1. ILI Date of 2011-03-16
      2. ILI tool of MFL
      3. Features identified 8.0
      4. Depth fraction between 0.12 and 0.42
      5. Length between 10.003 mm and 52.991 mm
   3. Consequence of failure distributed between minimum of $1.00 and maximum of $2.55MM
   4. Total length driven by Economic Loss: 179.97 meters.
   5. Economic Loss Cost distributed between minimum of $1.00 and maximum of $2.55MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $0.27MM
      5. Leak scenario yielded 10.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $17.84MM
      8. Rupture scenario yielded 67.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $2.26MM
      11. Puncture scenario yielded 43.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
6. "RADIAL LAKE TO LOCHEARN PUMP STATION NPS 3
   1. Total Cumulative Length (m): 178.9
   2. Likelihood of failure distributed between minimum of 1.677e-02 and maximum of 1.378e-01.
      1. ILI Date of 2012-08-29
      2. ILI tool of MFL
      3. Features identified 22.0
      4. Depth fraction between 0.16 and 0.3
      5. Length between 8.0 mm and 16.0 mm
   3. Consequence of failure distributed between minimum of $0.50 and maximum of $1.30MM
   4. Total length driven by Economic Loss: 178.9 meters.
   5. Economic Loss Cost distributed between minimum of $0.50 and maximum of $1.30MM:
      1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.27 and maximum of $0.27MM
      5. Leak scenario yielded 6.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
      7. Rupture cost between minimum of $5.02 and maximum of $5.02MM
      8. Rupture scenario yielded 22.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
      10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
      11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
7. "CROMER TRUCK TERMINAL LATERAL NPS 6
   1. Total Cumulative Length (m): 59.8
   2. Likelihood of failure distributed between minimum of 2.165e-02 and maximum of 8.130e-01.
      1. ILI Date of 2017-09-18
      2. ILI tool of MFL/Geometry
      3. Features identified 170.0
      4. Depth fraction between 0.12 and 0.8
      5. Length between 4.0 mm and 56.0 mm
   3. Consequence of failure distributed between minimum of $3.69 and maximum of $4.51MM
   4. Total length driven by Environmental: 59.8 meters.
   5. Environmental Cost distributed between minimum of $3.42 and maximum of $4.23MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.20MM
      2. Leak spill volume between a minimum of 1853.91 and maximum of 1859.91 gallons
      3. Rupture cost between minimum of $55.64 and maximum of $55.82MM
      4. Rupture spill volume is between a minimum of 524962.0 and maximum of 526660.67 gallons
      5. Puncture cost between minimum of $6.46 and maximum of $6.48MM
      6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61112.38 gallons
      7. Land use distributed as
         1. Agricultural: 59.80
8. "NPS6 Emerge From 2-6-49-27W3 To 11-33-48-27W3
   1. Total Cumulative Length (m): 59.64
   2. Likelihood of failure distributed between minimum of 1.093e-03 and maximum of 1.421e-03.
      1. ILI Date of 2013-09-04
      2. ILI tool of MFL
      3. Features identified 20.0
      4. Depth fraction between 0.1 and 0.2
      5. Length between 8.0 mm and 14.0 mm
   3. Consequence of failure distributed between minimum of $18.19 and maximum of $20.11MM
   4. Total length driven by Safety: 59.64 meters.
   5. Safety Cost distributed between minimum of $10.22 and maximum of $12.11MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 6.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 4.11 and maximum of 4.11 meters.
      4. Rupture cost between minimum of $12.11 and maximum of $12.11MM
      5. Rupture scenario yielded 10.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
      6. Rupture hazard radius distributed between minimum of 43.81 and maximum of 43.81 meters.
      7. Puncture cost between minimum of $12.11 and maximum of $12.11MM
      8. Puncture scenario yielded 12.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 16.44 and maximum of 16.44 meters.
      10. Product type is Blend.
      11. Class area location is/are 1.0.
9. "SUNDRE TO HARTELL NPS 12
   1. Total Cumulative Length (m): 30.0
   2. Likelihood of failure distributed between minimum of 1.744e-02 and maximum of 1.744e-02.
      1. ILI Date of 2015-11-16
      2. ILI tool of MFL/Geometry
      3. Features identified 2.0
      4. Depth fraction between 0.21 and 0.51
      5. Length between 12.0 mm and 16.0 mm
   3. Consequence of failure distributed between minimum of $1.97 and maximum of $1.97MM
   4. Total length driven by Environmental: 30.0 meters.
   5. Environmental Cost distributed between minimum of $1.12 and maximum of $1.12MM:
      1. Leak cost between minimum of $0.22 and maximum of $0.22MM
      2. Leak spill volume between a minimum of 2058.87 and maximum of 2058.87 gallons
      3. Rupture cost between minimum of $7.80 and maximum of $7.80MM
      4. Rupture spill volume is between a minimum of 73563.27 and maximum of 73563.27 gallons
      5. Puncture cost between minimum of $7.17 and maximum of $7.17MM
      6. Puncture spill volume is between a minimum of 67649.65 and maximum of 67649.65 gallons
      7. Land use distributed as
         1. Agricultural: 30.00
10. "CRIMSON LAKE TO 10-33 NPS 4
    1. Total Cumulative Length (m): 29.97
    2. Likelihood of failure distributed between minimum of 1.281e-02 and maximum of 1.281e-02.
       1. ILI Date of 2016-02-23
       2. ILI tool of MFL/Geometry
       3. Features identified 28.0
       4. Depth fraction between 0.15 and 0.39
       5. Length between 4.0 mm and 26.0 mm
    3. Consequence of failure distributed between minimum of $2.35 and maximum of $2.35MM
    4. Total length driven by Environmental: 29.97 meters.
    5. Environmental Cost distributed between minimum of $2.12 and maximum of $2.12MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1784.55 and maximum of 1785.19 gallons
       3. Rupture cost between minimum of $24.71 and maximum of $24.72MM
       4. Rupture spill volume is between a minimum of 233142.35 and maximum of 233226.49 gallons
       5. Puncture cost between minimum of $6.21 and maximum of $6.22MM
       6. Puncture spill volume is between a minimum of 58636.26 and maximum of 58657.42 gallons
       7. Land use distributed as
          1. Forested: 29.97
11. "NPS4 Eckville Lateral From 06-18-039-03W5 to 04-33-039-03W5
    1. Total Cumulative Length (m): 29.96
    2. Likelihood of failure distributed between minimum of 1.326e-02 and maximum of 1.326e-02.
       1. ILI Date of 2016-01-28
       2. ILI tool of MFL/Geometry
       3. Features identified 5.0
       4. Depth fraction between 0.15 and 0.44
       5. Length between 10.0 mm and 22.0 mm
    3. Consequence of failure distributed between minimum of $4.06 and maximum of $4.07MM
    4. Total length driven by Environmental: 29.96 meters.
    5. Environmental Cost distributed between minimum of $3.81 and maximum of $3.82MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.18MM
       2. Leak spill volume between a minimum of 1723.97 and maximum of 1724.83 gallons
       3. Rupture cost between minimum of $23.87 and maximum of $23.88MM
       4. Rupture spill volume is between a minimum of 225227.59 and maximum of 225340.74 gallons
       5. Puncture cost between minimum of $6.00 and maximum of $6.01MM
       6. Puncture spill volume is between a minimum of 56645.67 and maximum of 56674.12 gallons
       7. Land use distributed as
          1. Agricultural: 29.96
12. "SS-44 NPS 8
    1. Total Cumulative Length (m): 29.68
    2. Likelihood of failure distributed between minimum of 3.011e-03 and maximum of 3.011e-03.
       1. ILI Date of 2017-08-22
       2. ILI tool of MFL/Geometry
       3. Features identified 92.0
       4. Depth fraction between 0.15 and 0.54
       5. Length between 4.0 mm and 150.0 mm
    3. Consequence of failure distributed between minimum of $13.67 and maximum of $14.99MM
    4. Total length driven by Environmental: 29.68 meters.
    5. Environmental Cost distributed between minimum of $13.32 and maximum of $14.62MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1883.82 and maximum of 1884.08 gallons
       3. Rupture cost between minimum of $95.83 and maximum of $95.84MM
       4. Rupture spill volume is between a minimum of 904119.31 and maximum of 904240.46 gallons
       5. Puncture cost between minimum of $6.56 and maximum of $6.56MM
       6. Puncture spill volume is between a minimum of 61898.15 and maximum of 61906.44 gallons
       7. Land use distributed as
          1. Agricultural: 29.68

IC Method 2 has 1 pipeline with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below:

UT

1. "NORTH FERRIER 08-20 TO 09-27 NPS 8
   1. Total Cumulative Length (m): 149.96
   2. Likelihood of failure distributed between minimum of 1.017e-02 and maximum of 2.479e-01.
      1. ILI Date of 2017-05-24
      2. ILI tool of Ultra Sonic
      3. Features identified 169.0
      4. Depth fraction between 0.11 and 0.67
      5. Length between 6.0 mm and 76.0 mm
   3. Consequence of failure distributed between minimum of $0.50 and maximum of $1.54MM
   4. Total length driven by Environmental: 149.96 meters.
   5. Environmental Cost distributed between minimum of $0.28 and maximum of $1.31MM:
      1. Leak cost between minimum of $0.22 and maximum of $0.22MM
      2. Leak spill volume between a minimum of 2083.29 and maximum of 2118.08 gallons
      3. Rupture cost between minimum of $2.98 and maximum of $3.46MM
      4. Rupture spill volume is between a minimum of 28124.68 and maximum of 32674.37 gallons
      5. Puncture cost between minimum of $7.26 and maximum of $7.38MM
      6. Puncture spill volume is between a minimum of 68452.02 and maximum of 69595.35 gallons
      7. Land use distributed as
         1. Agricultural: 149.96

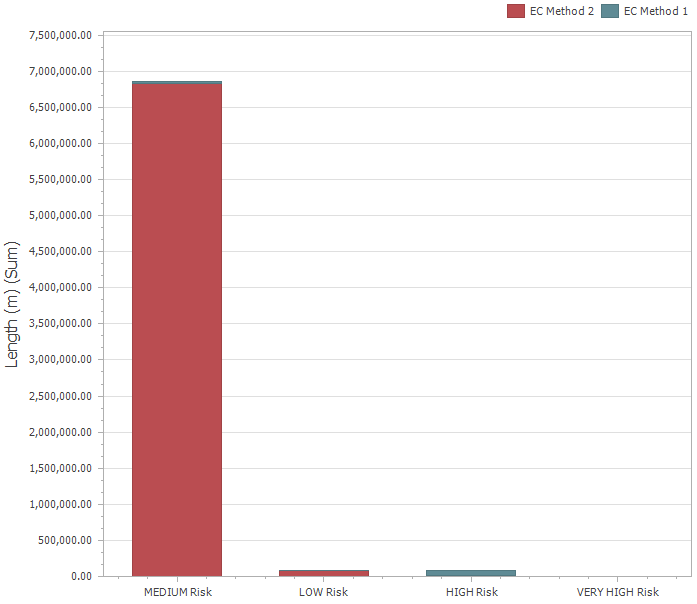
## External Corrosion and Total Consequence

### Assumptions of model

* Four different ILI technologies are used (where available), POE is calculated for all features, and maximum POE is assigned as the POE for risk calculations.
* Latest ILI of each technology type is used.
* Repair and excavation data has already been applied to the database.
* Pipelines with no ILI data use ECDA approach to estimate LOF.
* Pipelines with no ECDA data are assessed as high LOF pipelines.

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

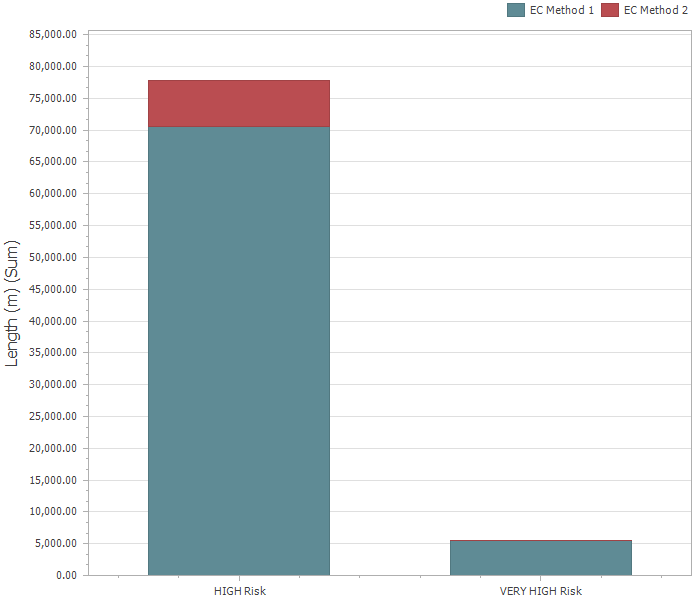


The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **EC Method Used** | **Cumulative Length (m)** | | | | |
| **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| Method 1 | 0.50 | 28,039.98 | 70,540.18 | 5,433.76 | **104,014.43** |
| Method 2 | 87,566.13 | 6,836,359.65 | 7,339.67 | 90.00 | **6,931,355.44** |
| **Grand Total** | **87,566.63** | **6,864,399.63** | **77,879.85** | **5,523.76** | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.



### Reportable Pipeline Segments: EC Method 1

EC Method 1 has 46 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below.

1. "Empress 8 inch Water
   1. Total Cumulative Length (m): 10119.82
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
      2. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
      3. Mainline coating type of Yellow Jacket
      4. Joint coating type of Unknown
      5. Coating installation date between minimum of NaT and maximum of NaT
      6. Date of last CIS survey of NaT
      7. CIS On only potential between minimum of nan and maximum of nan -mV
      8. CIS On-Off potential between minimum of nan and maximum of nan -mV
      9. DCVG percent iR between minimum of nan and maximum of nan
      10. ACVG potential between minimum of nan and maximum of nan mV
   3. Consequence of failure distributed between minimum of $0.20 and maximum of $0.22MM
   4. Total length driven by Economic Loss: 10119.82 meters.
   5. Economic Loss Cost distributed between minimum of $0.20 and maximum of $0.22MM:
      1. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is Fresh Water.
      4. Leak cost between minimum of $0.21 and maximum of $0.22MM
      5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
      7. Rupture cost between minimum of $0.21 and maximum of $0.22MM
      8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
      10. Puncture cost between minimum of $0.21 and maximum of $0.22MM
      11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
2. "Empress 10 inch Water
   1. Total Cumulative Length (m): 10102.58
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
      2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
      3. Mainline coating type of Yellow Jacket
      4. Joint coating type of Unknown
      5. Coating installation date between minimum of NaT and maximum of NaT
      6. Date of last CIS survey of NaT
      7. CIS On only potential between minimum of nan and maximum of nan -mV
      8. CIS On-Off potential between minimum of nan and maximum of nan -mV
      9. DCVG percent iR between minimum of nan and maximum of nan
      10. ACVG potential between minimum of nan and maximum of nan mV
   3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28MM
   4. Total length driven by Economic Loss: 10102.58 meters.
   5. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.28MM:
      1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is Fresh Water.
      4. Leak cost between minimum of $0.22 and maximum of $0.28MM
      5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
      7. Rupture cost between minimum of $0.22 and maximum of $0.28MM
      8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
      10. Puncture cost between minimum of $0.22 and maximum of $0.28MM
      11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
3. "Sarnia 8 inch Fresh Water
   1. Total Cumulative Length (m): 7977.89
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
      2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
      3. Mainline coating type of Yellow Jacket
      4. Joint coating type of Unknown
      5. Coating installation date between minimum of NaT and maximum of NaT
      6. Date of last CIS survey of NaT
      7. CIS On only potential between minimum of nan and maximum of nan -mV
      8. CIS On-Off potential between minimum of nan and maximum of nan -mV
      9. DCVG percent iR between minimum of nan and maximum of nan
      10. ACVG potential between minimum of nan and maximum of nan mV
   3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.25MM
   4. Total length driven by Economic Loss: 7977.89 meters.
   5. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.25MM:
      1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is Fresh Water.
      4. Leak cost between minimum of $0.21 and maximum of $0.25MM
      5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
      7. Rupture cost between minimum of $0.21 and maximum of $0.25MM
      8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
      10. Puncture cost between minimum of $0.21 and maximum of $0.25MM
      11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
4. "EMPRESS WATER LINE NPS 10
   1. Total Cumulative Length (m): 6987.6
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 2000-01-01 and maximum of 2001-01-01
      2. Wall thickness between minimum of 6.4 and maximum of 6.4 mm
      3. Mainline coating type of Yellow Jacket
      4. Joint coating type of Unknown
      5. Coating installation date between minimum of NaT and maximum of NaT
      6. Date of last CIS survey of NaT
      7. CIS On only potential between minimum of nan and maximum of nan -mV
      8. CIS On-Off potential between minimum of nan and maximum of nan -mV
      9. DCVG percent iR between minimum of nan and maximum of nan
      10. ACVG potential between minimum of nan and maximum of nan mV
   3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28MM
   4. Total length driven by Economic Loss: 6987.6 meters.
   5. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.28MM:
      1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is Fresh Water.
      4. Leak cost between minimum of $0.22 and maximum of $0.28MM
      5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
      7. Rupture cost between minimum of $0.22 and maximum of $0.28MM
      8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
      10. Puncture cost between minimum of $0.22 and maximum of $0.28MM
      11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
5. "EMPRESS WASTE WATER DISCHARGE NPS 10
   1. Total Cumulative Length (m): 6957.2
   2. Likelihood of failure distributed between minimum of 4.500e-01 and maximum of 4.500e-01.
      1. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
      2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
      3. Mainline coating type of Extruded Polyethylene
      4. Joint coating type of Data not available
      5. Coating installation date between minimum of NaT and maximum of NaT
      6. Date of last CIS survey of NaT
      7. CIS On only potential between minimum of nan and maximum of nan -mV
      8. CIS On-Off potential between minimum of nan and maximum of nan -mV
      9. DCVG percent iR between minimum of nan and maximum of nan
      10. ACVG potential between minimum of nan and maximum of nan mV
   3. Consequence of failure distributed between minimum of $0.58 and maximum of $1.01MM
   4. Total length driven by Environmental: 6957.2 meters.
   5. Environmental Cost distributed between minimum of $0.36 and maximum of $0.74MM:
      1. Leak cost between minimum of $0.02 and maximum of $0.05MM
      2. Leak spill volume between a minimum of 475.94 and maximum of 752.51 gallons
      3. Rupture cost between minimum of $17.46 and maximum of $35.70MM
      4. Rupture spill volume is between a minimum of 354842.05 and maximum of 561046.79 gallons
      5. Puncture cost between minimum of $0.77 and maximum of $1.57MM
      6. Puncture spill volume is between a minimum of 15638.25 and maximum of 24725.91 gallons
      7. Land use distributed as
         1. Agricultural: 6,944.12
         2. Water Course: 13.08
6. "SS-15 NPS 6
   1. Total Cumulative Length (m): 5229.36
   2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
      1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
      2. Wall thickness between minimum of 5.16 and maximum of 7.11 mm
      3. Mainline coating type of Coal Tar
      4. Joint coating type of Unknown
      5. Coating installation date between minimum of NaT and maximum of NaT
      6. Date of last CIS survey of NaT
      7. CIS On only potential between minimum of nan and maximum of nan -mV
      8. CIS On-Off potential between minimum of nan and maximum of nan -mV
      9. DCVG percent iR between minimum of nan and maximum of nan
      10. ACVG potential between minimum of nan and maximum of nan mV
   3. Consequence of failure distributed between minimum of $1.63 and maximum of $1.83MM
   4. Total length driven by Environmental: 5229.36 meters.
   5. Environmental Cost distributed between minimum of $1.39 and maximum of $1.59MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.21MM
      2. Leak spill volume between a minimum of 1853.91 and maximum of 1962.4 gallons
      3. Rupture cost between minimum of $55.64 and maximum of $58.90MM
      4. Rupture spill volume is between a minimum of 524962.0 and maximum of 555682.93 gallons
      5. Puncture cost between minimum of $6.46 and maximum of $6.83MM
      6. Puncture spill volume is between a minimum of 60915.28 and maximum of 64480.05 gallons
      7. Land use distributed as
         1. Agricultural: 5,229.36
7. "C3 FROM ESSO NPS 6
   1. Total Cumulative Length (m): 4075.15
   2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
      1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
      2. Wall thickness between minimum of 4.8 and maximum of 7.1 mm
      3. Mainline coating type of Single-wrap Tape, Yellow Jacket, Liquid Epoxy
      4. Joint coating type of Heat Applied Tape
      5. Coating installation date between minimum of NaT and maximum of NaT
      6. Date of last CIS survey of NaT
      7. CIS On only potential between minimum of nan and maximum of nan -mV
      8. CIS On-Off potential between minimum of nan and maximum of nan -mV
      9. DCVG percent iR between minimum of nan and maximum of nan
      10. ACVG potential between minimum of nan and maximum of nan mV
   3. Consequence of failure distributed between minimum of $0.28 and maximum of $15.29MM
   4. Total length driven by Safety: 463.09 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $14.71MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 15.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 9.02 and maximum of 9.02 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $398.23MM
      5. Rupture scenario yielded 18.0 intersections with structures, with minimum of 0.0 and maximum of 41.48 of population impacted
      6. Rupture hazard radius distributed between minimum of 91.99 and maximum of 91.99 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
      8. Puncture scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 28.89 and maximum of 28.89 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Economic Loss: 3612.06 meters.
   7. Economic Loss Cost distributed between minimum of $0.28 and maximum of $0.58MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.24 and maximum of $0.50MM
      5. Leak scenario yielded 15.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $24,336.15 and maximum of $24,336.15
      7. Rupture cost between minimum of $7.10 and maximum of $11.97MM
      8. Rupture scenario yielded 18.0 intersections with structures, with minimum of $25,000.00 and maximum of $4,871,372.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $6,891,140.89 and maximum of $6,891,140.89
      10. Puncture cost between minimum of $1.01 and maximum of $1.28MM
      11. Puncture scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $799,630.73 and maximum of $799,630.73"
8. "RICHARDSON GAS LINE NPS 3
   1. Total Cumulative Length (m): 3703.21
   2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
      1. Installation date between minimum of 1965-01-01 and maximum of 1965-01-01
      2. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
      3. Mainline coating type of Yellow Jacket
      4. Joint coating type of Unknown
      5. Coating installation date between minimum of NaT and maximum of NaT
      6. Date of last CIS survey of NaT
      7. CIS On only potential between minimum of nan and maximum of nan -mV
      8. CIS On-Off potential between minimum of nan and maximum of nan -mV
      9. DCVG percent iR between minimum of nan and maximum of nan
      10. ACVG potential between minimum of nan and maximum of nan mV
   3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.24MM
   4. Total length driven by Economic Loss: 3703.21 meters.
   5. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.24MM:
      1. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.21 and maximum of $0.23MM
      5. Leak scenario yielded 1.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $3,382.92 and maximum of $3,382.92
      7. Rupture cost between minimum of $0.47 and maximum of $0.51MM
      8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $267,358.90 and maximum of $267,358.90
      10. Puncture cost between minimum of $0.32 and maximum of $0.34MM
      11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $111,154.91 and maximum of $111,154.91"
9. "Sarnia 6 inch tied into 6 inch E/P line
   1. Total Cumulative Length (m): 2501.78
   2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
      1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
      2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
      3. Mainline coating type of Yellow Jacket
      4. Joint coating type of Heat Applied Tape
      5. Coating installation date between minimum of NaT and maximum of NaT
      6. Date of last CIS survey of NaT
      7. CIS On only potential between minimum of nan and maximum of nan -mV
      8. CIS On-Off potential between minimum of nan and maximum of nan -mV
      9. DCVG percent iR between minimum of nan and maximum of nan
      10. ACVG potential between minimum of nan and maximum of nan mV
   3. Consequence of failure distributed between minimum of $0.35 and maximum of $12.64MM
   4. Total length driven by Safety: 469.08 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $12.04MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 40.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $24.21MM
      5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.52 of population impacted
      6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
      8. Puncture scenario yielded 47.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Economic Loss: 2032.7 meters.
   7. Economic Loss Cost distributed between minimum of $0.33 and maximum of $0.65MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.26 and maximum of $0.58MM
      5. Leak scenario yielded 40.0 intersections with structures, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $44,363.99 and maximum of $44,363.99
      7. Rupture cost between minimum of $12.80 and maximum of $13.31MM
      8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $25,000.00 and maximum of $537,650.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $12,562,319.03 and maximum of $12,562,319.03
      10. Puncture cost between minimum of $1.67 and maximum of $1.99MM
      11. Puncture scenario yielded 47.0 intersections with structures, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $1,457,700.03 and maximum of $1,457,700.03"
10. "Kerrbert 4 inch Water
    1. Total Cumulative Length (m): 2341.68
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
       2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       3. Mainline coating type of Single-wrap Tape
       4. Joint coating type of Shrink Sleeves
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of NaT
       7. CIS On only potential between minimum of nan and maximum of nan -mV
       8. CIS On-Off potential between minimum of nan and maximum of nan -mV
       9. DCVG percent iR between minimum of nan and maximum of nan
       10. ACVG potential between minimum of nan and maximum of nan mV
    3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.23MM
    4. Total length driven by Economic Loss: 2341.68 meters.
    5. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.23MM:
       1. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is Fresh Water.
       4. Leak cost between minimum of $0.21 and maximum of $0.23MM
       5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
       7. Rupture cost between minimum of $0.21 and maximum of $0.23MM
       8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
       10. Puncture cost between minimum of $0.21 and maximum of $0.23MM
       11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
11. "COED BV 203 TO EST NPS 8
    1. Total Cumulative Length (m): 2259.9
    2. Likelihood of failure distributed between minimum of 3.490e-02 and maximum of 6.118e-01.
       1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       3. Mainline coating type of Tape
       4. Joint coating type of Shrink Sleeves
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of 2017-01-01
       7. CIS On only potential between minimum of 977.0 and maximum of 2057.0 -mV
       8. CIS On-Off potential between minimum of 850.0 and maximum of 1638.0 -mV
       9. DCVG percent iR between minimum of 0.0 and maximum of 37.34
       10. ACVG potential between minimum of 0.0 and maximum of 0.37 mV
    3. Consequence of failure distributed between minimum of $5.08 and maximum of $158.72MM
    4. Total length driven by Safety: 1694.93 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $150.03MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $513.60MM
       5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 53.5 of population impacted
       6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $392.54MM
       8. Puncture scenario yielded 46.0 intersections with structures, with minimum of 0.0 and maximum of 40.89 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 2.0.
    6. Total length driven by Environmental: 564.97 meters.
    7. Environmental Cost distributed between minimum of $4.66 and maximum of $13.35MM:
       1. Leak cost between minimum of $0.13 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1973.38 and maximum of 2019.77 gallons
       3. Rupture cost between minimum of $64.53 and maximum of $169.76MM
       4. Rupture spill volume is between a minimum of 947101.66 and maximum of 969363.57 gallons
       5. Puncture cost between minimum of $4.42 and maximum of $11.62MM
       6. Puncture spill volume is between a minimum of 64840.82 and maximum of 66364.92 gallons
       7. Land use distributed as
          1. Commercial/Industrial: 2,256.78
          2. Water Course: 3.12
12. "SPEED CORNER TO FORT SASKATCHEWAN INLET (KEYSPAN) NPS 16
    1. Total Cumulative Length (m): 1771.15
    2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
       1. Installation date between minimum of 1995-01-01 and maximum of 1995-01-01
       2. Wall thickness between minimum of 5.56 and maximum of 10.31 mm
       3. Mainline coating type of Extruded Polyethylene
       4. Joint coating type of Unknown
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of NaT
       7. CIS On only potential between minimum of nan and maximum of nan -mV
       8. CIS On-Off potential between minimum of nan and maximum of nan -mV
       9. DCVG percent iR between minimum of nan and maximum of nan
       10. ACVG potential between minimum of nan and maximum of nan mV
    3. Consequence of failure distributed between minimum of $1.36 and maximum of $1.59MM
    4. Total length driven by Economic Loss: 1771.15 meters.
    5. Economic Loss Cost distributed between minimum of $1.36 and maximum of $1.59MM:
       1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $1.02 and maximum of $1.10MM
       5. Leak scenario yielded 15.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $35,177.42 and maximum of $35,177.42
       7. Rupture cost between minimum of $59.11 and maximum of $59.26MM
       8. Rupture scenario yielded 8.0 intersections with structures, with minimum of $25,000.00 and maximum of $175,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $58,099,358.13 and maximum of $58,099,358.13
       10. Puncture cost between minimum of $2.14 and maximum of $2.27MM
       11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $25,000.00 and maximum of $125,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $1,155,850.00 and maximum of $1,155,850.00"
13. "BATCH TRANSFER LINE NPS 24
    1. Total Cumulative Length (m): 1622.82
    2. Likelihood of failure distributed between minimum of 2.752e-03 and maximum of 4.101e-03.
       1. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
       2. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
       3. Mainline coating type of Extruded Polyethylene
       4. Joint coating type of Canusa Sleeve
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of 2016-11-11
       7. CIS On only potential between minimum of 903.0 and maximum of 2535.0 -mV
       8. CIS On-Off potential between minimum of 773.0 and maximum of 1506.0 -mV
       9. DCVG percent iR between minimum of 0.0 and maximum of 0.0
       10. ACVG potential between minimum of 0.01 and maximum of 0.55 mV
    3. Consequence of failure distributed between minimum of $15.34 and maximum of $164.89MM
    4. Total length driven by Safety: 1217.12 meters.
    5. Safety Cost distributed between minimum of $4.31 and maximum of $128.31MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 32.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 2.91 and maximum of 2.91 meters.
       4. Rupture cost between minimum of $121.06 and maximum of $968.45MM
       5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 100.88 of population impacted
       6. Rupture hazard radius distributed between minimum of 99.14 and maximum of 99.14 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 34.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 11.53 and maximum of 11.53 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 405.7 meters.
    7. Environmental Cost distributed between minimum of $7.72 and maximum of $13.50MM:
       1. Leak cost between minimum of $0.06 and maximum of $0.06MM
       2. Leak spill volume between a minimum of 850.32 and maximum of 883.99 gallons
       3. Rupture cost between minimum of $215.31 and maximum of $223.83MM
       4. Rupture spill volume is between a minimum of 3159898.85 and maximum of 3285013.13 gallons
       5. Puncture cost between minimum of $1.90 and maximum of $1.98MM
       6. Puncture spill volume is between a minimum of 27939.64 and maximum of 29045.89 gallons
       7. Land use distributed as
          1. Commercial/Industrial: 1,622.82
14. "NPS4 SS-35 From 5-34-11-19-W3 To 5-35-11-19-W3
    1. Total Cumulative Length (m): 1532.63
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1968-01-01 and maximum of 1968-01-01
       2. Wall thickness between minimum of 3.17 and maximum of 3.17 mm
       3. Mainline coating type of Extruded Polyethylene
       4. Joint coating type of Unknown
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of NaT
       7. CIS On only potential between minimum of nan and maximum of nan -mV
       8. CIS On-Off potential between minimum of nan and maximum of nan -mV
       9. DCVG percent iR between minimum of nan and maximum of nan
       10. ACVG potential between minimum of nan and maximum of nan mV
    3. Consequence of failure distributed between minimum of $1.17 and maximum of $1.22MM
    4. Total length driven by Environmental: 1532.63 meters.
    5. Environmental Cost distributed between minimum of $0.96 and maximum of $0.98MM:
       1. Leak cost between minimum of $0.16 and maximum of $0.17MM
       2. Leak spill volume between a minimum of 1545.39 and maximum of 1577.19 gallons
       3. Rupture cost between minimum of $21.40 and maximum of $21.84MM
       4. Rupture spill volume is between a minimum of 201897.55 and maximum of 206051.63 gallons
       5. Puncture cost between minimum of $5.38 and maximum of $5.49MM
       6. Puncture spill volume is between a minimum of 50778.06 and maximum of 51822.83 gallons
       7. Land use distributed as
          1. Agricultural: 1,532.63
15. "NPS20 ENBRIDGE CONDENSATE TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
    1. Total Cumulative Length (m): 1144.92
    2. Likelihood of failure distributed between minimum of 1.503e-02 and maximum of 5.681e-02.
       1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       2. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
       3. Mainline coating type of Tape
       4. Joint coating type of Data not available
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of 2017-01-01
       7. CIS On only potential between minimum of 1321.0 and maximum of 1943.0 -mV
       8. CIS On-Off potential between minimum of 1016.0 and maximum of 1365.0 -mV
       9. DCVG percent iR between minimum of 0.0 and maximum of 65.7
       10. ACVG potential between minimum of 0.0 and maximum of 0.1 mV
    3. Consequence of failure distributed between minimum of $7.91 and maximum of $12.14MM
    4. Total length driven by Environmental: 1144.92 meters.
    5. Environmental Cost distributed between minimum of $6.86 and maximum of $8.60MM:
       1. Leak cost between minimum of $0.06 and maximum of $0.06MM
       2. Leak spill volume between a minimum of 529.42 and maximum of 541.3 gallons
       3. Rupture cost between minimum of $144.81 and maximum of $148.06MM
       4. Rupture spill volume is between a minimum of 1366242.13 and maximum of 1396891.33 gallons
       5. Puncture cost between minimum of $1.84 and maximum of $1.89MM
       6. Puncture spill volume is between a minimum of 17395.54 and maximum of 17785.77 gallons
       7. Land use distributed as
          1. Agricultural: 474.19
          2. Remote: 670.73
16. "ESSO ETHANE NPS 6
    1. Total Cumulative Length (m): 885.6
    2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
       1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
       2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       3. Mainline coating type of Extruded Polyethylene
       4. Joint coating type of Heat Applied Tape
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of NaT
       7. CIS On only potential between minimum of nan and maximum of nan -mV
       8. CIS On-Off potential between minimum of nan and maximum of nan -mV
       9. DCVG percent iR between minimum of nan and maximum of nan
       10. ACVG potential between minimum of nan and maximum of nan mV
    3. Consequence of failure distributed between minimum of $0.41 and maximum of $15.39MM
    4. Total length driven by Safety: 632.57 meters.
    5. Safety Cost distributed between minimum of $0.07 and maximum of $14.76MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 10.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
       4. Rupture cost between minimum of $12.11 and maximum of $456.43MM
       5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 1.26 and maximum of 47.54 of population impacted
       6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $221.29MM
       8. Puncture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 23.05 of population impacted
       9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 253.03 meters.
    7. Economic Loss Cost distributed between minimum of $0.33 and maximum of $0.63MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.26 and maximum of $0.52MM
       5. Leak scenario yielded 10.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $44,363.99 and maximum of $44,363.99
       7. Rupture cost between minimum of $13.04 and maximum of $18.77MM
       8. Rupture scenario yielded 7.0 intersections with structures, with minimum of $268,825.00 and maximum of $5,997,715.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $12,562,319.03 and maximum of $12,562,319.03
       10. Puncture cost between minimum of $1.67 and maximum of $4.90MM
       11. Puncture scenario yielded 16.0 intersections with structures, with minimum of $25,000.00 and maximum of $3,226,943.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $1,457,700.03 and maximum of $1,457,700.03"
17. "NPS2 Yoyo line (Alliance flare line) From 8-14-55-22W4 To 9-14-55-22W4
    1. Total Cumulative Length (m): 799.43
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 2004-11-01 and maximum of 2004-11-01
       2. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
       3. Mainline coating type of Yellow Jacket
       4. Joint coating type of Unknown
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of NaT
       7. CIS On only potential between minimum of nan and maximum of nan -mV
       8. CIS On-Off potential between minimum of nan and maximum of nan -mV
       9. DCVG percent iR between minimum of nan and maximum of nan
       10. ACVG potential between minimum of nan and maximum of nan mV
    3. Consequence of failure distributed between minimum of $0.24 and maximum of $0.32MM
    4. Total length driven by Economic Loss: 799.43 meters.
    5. Economic Loss Cost distributed between minimum of $0.24 and maximum of $0.32MM:
       1. Repair costs between minimum of $21,000.00 and maximum of $21,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is C3/C4.
       4. Leak cost between minimum of $0.23 and maximum of $0.31MM
       5. Leak scenario yielded 28.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $12,073.09 and maximum of $12,073.09
       7. Rupture cost between minimum of $0.66 and maximum of $0.74MM
       8. Rupture scenario yielded 28.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $439,352.33 and maximum of $439,352.33
       10. Puncture cost between minimum of $0.62 and maximum of $0.69MM
       11. Puncture scenario yielded 29.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $396,694.17 and maximum of $396,694.17"
18. "16-19-037-03W5 TO 10-19-037-03W5 NPS 4
    1. Total Cumulative Length (m): 775.79
    2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
       1. Installation date between minimum of 1991-01-01 and maximum of 1991-01-01
       2. Wall thickness between minimum of 3.18 and maximum of 6.02 mm
       3. Mainline coating type of Unknown
       4. Joint coating type of Unknown
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of NaT
       7. CIS On only potential between minimum of nan and maximum of nan -mV
       8. CIS On-Off potential between minimum of nan and maximum of nan -mV
       9. DCVG percent iR between minimum of nan and maximum of nan
       10. ACVG potential between minimum of nan and maximum of nan mV
    3. Consequence of failure distributed between minimum of $0.62 and maximum of $1.66MM
    4. Total length driven by Environmental: 775.79 meters.
    5. Environmental Cost distributed between minimum of $0.40 and maximum of $1.43MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 1869.97 gallons
       3. Rupture cost between minimum of $25.67 and maximum of $25.89MM
       4. Rupture spill volume is between a minimum of 242204.33 and maximum of 244301.7 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.51MM
       6. Puncture spill volume is between a minimum of 60915.38 and maximum of 61442.88 gallons
       7. Land use distributed as
          1. Agricultural: 775.79
19. "NPS4 SS-57 From 10-27-10-19-W3 To 12-27-10-19-W3
    1. Total Cumulative Length (m): 763.86
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
       2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       3. Mainline coating type of Extruded Polyethylene
       4. Joint coating type of Unknown
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of NaT
       7. CIS On only potential between minimum of nan and maximum of nan -mV
       8. CIS On-Off potential between minimum of nan and maximum of nan -mV
       9. DCVG percent iR between minimum of nan and maximum of nan
       10. ACVG potential between minimum of nan and maximum of nan mV
    3. Consequence of failure distributed between minimum of $1.03 and maximum of $1.62MM
    4. Total length driven by Environmental: 763.86 meters.
    5. Environmental Cost distributed between minimum of $0.81 and maximum of $1.39MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.29MM
       2. Leak spill volume between a minimum of 1632.86 and maximum of 1648.37 gallons
       3. Rupture cost between minimum of $22.61 and maximum of $38.31MM
       4. Rupture spill volume is between a minimum of 213324.43 and maximum of 215351.24 gallons
       5. Puncture cost between minimum of $5.69 and maximum of $9.64MM
       6. Puncture spill volume is between a minimum of 53651.97 and maximum of 54161.72 gallons
       7. Land use distributed as
          1. Agricultural: 561.08
          2. Remote: 199.75
          3. Water Course: 3.02
20. "16 EST to Enbridge 7-5-53-23W4 to 2-5-53-23W4
    1. Total Cumulative Length (m): 482.65
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1979-01-01 and maximum of 1979-01-01
       2. Wall thickness between minimum of 5.6 and maximum of 5.6 mm
       3. Mainline coating type of Yellow Jacket
       4. Joint coating type of Unknown
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of NaT
       7. CIS On only potential between minimum of nan and maximum of nan -mV
       8. CIS On-Off potential between minimum of nan and maximum of nan -mV
       9. DCVG percent iR between minimum of nan and maximum of nan
       10. ACVG potential between minimum of nan and maximum of nan mV
    3. Consequence of failure distributed between minimum of $125.09 and maximum of $125.43MM
    4. Total length driven by Safety: 482.65 meters.
    5. Safety Cost distributed between minimum of $120.27 and maximum of $120.61MM:
       1. Leak cost between minimum of $121.06 and maximum of $121.06MM
       2. Leak scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 9.03 and maximum of 9.03 meters.
       4. Rupture cost between minimum of $121.06 and maximum of $133.16MM
       5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 12.61 and maximum of 13.87 of population impacted
       6. Rupture hazard radius distributed between minimum of 178.36 and maximum of 178.36 meters.
       7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
       8. Puncture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 28.91 and maximum of 28.91 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0.
21. "BUCK CREEK TO STATION 1 NPS 3
    1. Total Cumulative Length (m): 443.02
    2. Likelihood of failure distributed between minimum of 3.502e-02 and maximum of 6.119e-01.
       1. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
       2. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
       3. Mainline coating type of Unknown
       4. Joint coating type of Unknown
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of 2016-12-01
       7. CIS On only potential between minimum of 1036.0 and maximum of 1447.0 -mV
       8. CIS On-Off potential between minimum of 916.0 and maximum of 1321.0 -mV
       9. DCVG percent iR between minimum of 0.0 and maximum of 0.0
       10. ACVG potential between minimum of 0.02 and maximum of 0.26 mV
    3. Consequence of failure distributed between minimum of $0.42 and maximum of $122.64MM
    4. Total length driven by Safety: 275.53 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $119.66MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 5.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.7 and maximum of 11.7 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 57.3 and maximum of 57.3 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 8.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 42.7 and maximum of 42.7 meters.
       10. Product type is Ethane.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 167.49 meters.
    7. Economic Loss Cost distributed between minimum of $0.33 and maximum of $2.98MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is Ethane.
       4. Leak cost between minimum of $0.28 and maximum of $2.97MM
       5. Leak scenario yielded 5.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $74,968.65 and maximum of $74,968.65
       7. Rupture cost between minimum of $6.13 and maximum of $8.82MM
       8. Rupture scenario yielded 7.0 intersections with structures, with minimum of $269,868.00 and maximum of $2,688,250.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $5,924,929.50 and maximum of $5,924,929.50
       10. Puncture cost between minimum of $2.67 and maximum of $5.36MM
       11. Puncture scenario yielded 8.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $2,463,299.44 and maximum of $2,463,299.44"
22. "Access C5 Line 36
    1. Total Cumulative Length (m): 404.28
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
       2. Wall thickness between minimum of 7.09 and maximum of 7.09 mm
       3. Mainline coating type of Double Wrap Polyken
       4. Joint coating type of Double-wrap Tape
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of NaT
       7. CIS On only potential between minimum of nan and maximum of nan -mV
       8. CIS On-Off potential between minimum of nan and maximum of nan -mV
       9. DCVG percent iR between minimum of nan and maximum of nan
       10. ACVG potential between minimum of nan and maximum of nan mV
    3. Consequence of failure distributed between minimum of $1.47 and maximum of $1.60MM
    4. Total length driven by Environmental: 404.28 meters.
    5. Environmental Cost distributed between minimum of $1.21 and maximum of $1.24MM:
       1. Leak cost between minimum of $0.13 and maximum of $0.14MM
       2. Leak spill volume between a minimum of 1973.44 and maximum of 1981.77 gallons
       3. Rupture cost between minimum of $38.08 and maximum of $38.24MM
       4. Rupture spill volume is between a minimum of 558809.69 and maximum of 561166.98 gallons
       5. Puncture cost between minimum of $4.42 and maximum of $4.44MM
       6. Puncture spill volume is between a minimum of 64842.88 and maximum of 65116.41 gallons
       7. Land use distributed as
          1. Commercial/Industrial: 404.28
23. "Access C5 Line 37
    1. Total Cumulative Length (m): 404.14
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
       2. Wall thickness between minimum of 7.09 and maximum of 7.09 mm
       3. Mainline coating type of Double Wrap Polyken
       4. Joint coating type of Double-wrap Tape
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of NaT
       7. CIS On only potential between minimum of nan and maximum of nan -mV
       8. CIS On-Off potential between minimum of nan and maximum of nan -mV
       9. DCVG percent iR between minimum of nan and maximum of nan
       10. ACVG potential between minimum of nan and maximum of nan mV
    3. Consequence of failure distributed between minimum of $1.47 and maximum of $1.60MM
    4. Total length driven by Environmental: 404.14 meters.
    5. Environmental Cost distributed between minimum of $1.21 and maximum of $1.24MM:
       1. Leak cost between minimum of $0.13 and maximum of $0.14MM
       2. Leak spill volume between a minimum of 1973.44 and maximum of 1981.77 gallons
       3. Rupture cost between minimum of $38.08 and maximum of $38.24MM
       4. Rupture spill volume is between a minimum of 558809.69 and maximum of 561166.19 gallons
       5. Puncture cost between minimum of $4.42 and maximum of $4.44MM
       6. Puncture spill volume is between a minimum of 64842.88 and maximum of 65116.32 gallons
       7. Land use distributed as
          1. Commercial/Industrial: 404.14
24. "NPS8 Petro Vera to Lone Rock From 13-11-47-27-W3 To 16-10-47-27-W3
    1. Total Cumulative Length (m): 359.45
    2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
       1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       2. Wall thickness between minimum of 5.6 and maximum of 5.6 mm
       3. Mainline coating type of Tape
       4. Joint coating type of Unknown
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of NaT
       7. CIS On only potential between minimum of nan and maximum of nan -mV
       8. CIS On-Off potential between minimum of nan and maximum of nan -mV
       9. DCVG percent iR between minimum of nan and maximum of nan
       10. ACVG potential between minimum of nan and maximum of nan mV
    3. Consequence of failure distributed between minimum of $0.99 and maximum of $13.32MM
    4. Total length driven by Safety: 46.08 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $12.03MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 5.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 2.28 and maximum of 2.28 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
       5. Rupture scenario yielded 3.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 30.46 and maximum of 30.46 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 6.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 8.99 and maximum of 8.99 meters.
       10. Product type is Blend.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 313.38 meters.
    7. Environmental Cost distributed between minimum of $0.77 and maximum of $0.80MM:
       1. Leak cost between minimum of $0.05 and maximum of $0.05MM
       2. Leak spill volume between a minimum of 492.22 and maximum of 499.14 gallons
       3. Rupture cost between minimum of $25.04 and maximum of $25.39MM
       4. Rupture spill volume is between a minimum of 236237.43 and maximum of 239558.37 gallons
       5. Puncture cost between minimum of $1.71 and maximum of $1.74MM
       6. Puncture spill volume is between a minimum of 16173.37 and maximum of 16400.73 gallons
       7. Land use distributed as
          1. Agricultural: 295.97
          2. Remote: 63.49
25. "NIPISI 11-02 TO 14-02 NPS 16
    1. Total Cumulative Length (m): 339.6
    2. Likelihood of failure distributed between minimum of 1.853e-02 and maximum of 6.799e-02.
       1. Installation date between minimum of 1996-08-01 and maximum of 1996-08-01
       2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       3. Mainline coating type of Unknown
       4. Joint coating type of Unknown
       5. Coating installation date between minimum of NaT and maximum of NaT
       6. Date of last CIS survey of 2016-01-01
       7. CIS On only potential between minimum of 1217.0 and maximum of 1779.0 -mV
       8. CIS On-Off potential between minimum of 1064.0 and maximum of 1223.0 -mV
       9. DCVG percent iR between minimum of 0.0 and maximum of 62.28
       10. ACVG potential between minimum of 0.01 and maximum of 0.11 mV
    3. Consequence of failure distributed between minimum of $1.28 and maximum of $1.67MM
    4. Total length driven by Economic Loss: 339.6 meters.
    5. Economic Loss Cost distributed between minimum of $0.86 and maximum of $0.87MM:
       1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is Crude Oil.
       4. Leak cost between minimum of $0.87 and maximum of $0.87MM
       5. Leak scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $903.67 and maximum of $907.58
       7. Rupture cost between minimum of $2.39 and maximum of $2.44MM
       8. Rupture scenario yielded 5.0 intersections with structures, with minimum of $50,000.00 and maximum of $100,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $1,492,510.39 and maximum of $1,498,965.83
       10. Puncture cost between minimum of $0.90 and maximum of $0.92MM
       11. Puncture scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $29,692.55 and maximum of $29,820.98"

### Reportable Pipeline Segments: EC Method 2

EC Method 2 has 27 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below.

MFL A

1. "UTILITY NPS 8
   1. Total Cumulative Length (m): 1555.99
   2. Likelihood of failure distributed between minimum of 9.998e-04 and maximum of 2.509e-02.
      1. ILI Date of 2011-08-12
      2. ILI tool of MFL
      3. Features identified 342.0
      4. Depth fraction between 0.02 and 0.32
      5. Length between 9.0 mm and 119.0 mm
   3. Consequence of failure distributed between minimum of $3.08 and maximum of $97.42MM
   4. Total length driven by Safety: 1466.04 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $93.63MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 10.66 and maximum of 10.66 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $568.51MM
      5. Rupture scenario yielded 40.0 intersections with structures, with minimum of 1.26 and maximum of 59.22 of population impacted
      6. Rupture hazard radius distributed between minimum of 135.26 and maximum of 135.26 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $320.46MM
      8. Puncture scenario yielded 45.0 intersections with structures, with minimum of 0.0 and maximum of 33.38 of population impacted
      9. Puncture hazard radius distributed between minimum of 49.48 and maximum of 49.48 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Economic Loss: 89.95 meters.
   7. Economic Loss Cost distributed between minimum of $3.08 and maximum of $4.66MM:
      1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.25 and maximum of $0.52MM
      5. Leak scenario yielded 16.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $40,141.48 and maximum of $40,141.48
      7. Rupture cost between minimum of $19.48 and maximum of $25.75MM
      8. Rupture scenario yielded 40.0 intersections with structures, with minimum of $268,825.00 and maximum of $6,266,540.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $19,265,442.30 and maximum of $19,265,442.30
      10. Puncture cost between minimum of $1.53 and maximum of $5.33MM
      11. Puncture scenario yielded 45.0 intersections with structures, with minimum of $25,000.00 and maximum of $3,792,943.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $1,318,957.76 and maximum of $1,318,957.76"
2. "SECT 6 GRENFELL TO MANSON NPS 6
   1. Total Cumulative Length (m): 1135.66
   2. Likelihood of failure distributed between minimum of 1.001e-02 and maximum of 4.740e-02.
      1. ILI Date of 2011-03-16
      2. ILI tool of MFL
      3. Features identified 136.0
      4. Depth fraction between 0.1 and 0.35
      5. Length between 7.165 mm and 89.76 mm
   3. Consequence of failure distributed between minimum of $1.01 and maximum of $4.46MM
   4. Total length driven by Safety: 30.0 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $3.03MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 10.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
      3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
      5. Rupture scenario yielded 67.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
      8. Puncture scenario yielded 43.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
      9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
      10. Product type is NGL.
      11. Class area location is/are 1.0.
   6. Total length driven by Economic Loss: 1105.66 meters.
   7. Economic Loss Cost distributed between minimum of $0.89 and maximum of $3.64MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $0.30MM
      5. Leak scenario yielded 10.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $20.58MM
      8. Rupture scenario yielded 67.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $2.29MM
      11. Puncture scenario yielded 43.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
3. "SECT 5 RICHARDSON TO GRENFELL NPS 6
   1. Total Cumulative Length (m): 1109.93
   2. Likelihood of failure distributed between minimum of 1.035e-02 and maximum of 1.188e-01.
      1. ILI Date of 2012-03-06
      2. ILI tool of MFL
      3. Features identified 164.0
      4. Depth fraction between 0.12 and 0.51
      5. Length between 8.381 mm and 145.911 mm
   3. Consequence of failure distributed between minimum of $0.72 and maximum of $4.85MM
   4. Total length driven by Economic Loss: 1109.93 meters.
   5. Economic Loss Cost distributed between minimum of $0.72 and maximum of $4.85MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $0.30MM
      5. Leak scenario yielded 18.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $17.89MM
      8. Rupture scenario yielded 59.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $2.29MM
      11. Puncture scenario yielded 53.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
4. "UTIKUMA TO EDMONTON NPS 24
   1. Total Cumulative Length (m): 899.94
   2. Likelihood of failure distributed between minimum of 1.487e-03 and maximum of 3.105e-01.
      1. ILI Date of 2017-03-09
      2. ILI tool of MFL/Geometry
      3. Features identified 1672.0
      4. Depth fraction between 0.02 and 0.72
      5. Length between 12.0 mm and 5968.0 mm
   3. Consequence of failure distributed between minimum of $2.68 and maximum of $88.65MM
   4. Total length driven by Safety: 89.99 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $82.26MM:
      1. Leak cost between minimum of $0.00 and maximum of $28.51MM
      2. Leak scenario yielded 644.0 intersections with structures, with minimum of 2.97 and maximum of 2.97 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.59 and maximum of 3.59 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $190.19MM
      5. Rupture scenario yielded 346.0 intersections with structures, with minimum of 0.0 and maximum of 19.81 of population impacted
      6. Rupture hazard radius distributed between minimum of 122.95 and maximum of 122.95 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $28.51MM
      8. Puncture scenario yielded 730.0 intersections with structures, with minimum of 2.97 and maximum of 2.97 of population impacted
      9. Puncture hazard radius distributed between minimum of 14.3 and maximum of 14.3 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 659.96 meters.
   7. Environmental Cost distributed between minimum of $0.11 and maximum of $73.71MM:
      1. Leak cost between minimum of $0.09 and maximum of $21.32MM
      2. Leak spill volume between a minimum of 1390.19 and maximum of 201117.71 gallons
      3. Rupture cost between minimum of $5.01 and maximum of $78.71MM
      4. Rupture spill volume is between a minimum of 73563.52 and maximum of 742620.95 gallons
      5. Puncture cost between minimum of $3.11 and maximum of $21.32MM
      6. Puncture spill volume is between a minimum of 45678.62 and maximum of 201117.71 gallons
      7. Land use distributed as
         1. Agricultural: 417.24
         2. Commercial/Industrial: 60.00
         3. Forested: 87.09
         4. High Density Residential: 60.00
         5. Remote: 269.98
         6. Water Course: 5.64
   8. Total length driven by Economic Loss: 149.99 meters.
   9. Economic Loss Cost distributed between minimum of $2.48 and maximum of $4.16MM:
      1. Repair costs between minimum of $73,000.00 and maximum of $404,000.00.
      2. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $2.47 and maximum of $2.82MM
      5. Leak scenario yielded 644.0 intersections with structures, with minimum of $18,600.00 and maximum of $18,600.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,542.45 and maximum of $223,144.89
      7. Rupture cost between minimum of $2.61 and maximum of $5.93MM
      8. Rupture scenario yielded 346.0 intersections with structures, with minimum of $25,000.00 and maximum of $3,044,275.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $81,620.47 and maximum of $823,955.63
      10. Puncture cost between minimum of $2.53 and maximum of $2.87MM
      11. Puncture scenario yielded 730.0 intersections with structures, with minimum of $18,600.00 and maximum of $18,600.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $50,681.51 and maximum of $223,144.89"
5. "NORTH FERRIER 08-20 TO 09-27 NPS 8
   1. Total Cumulative Length (m): 479.89
   2. Likelihood of failure distributed between minimum of 1.963e-03 and maximum of 9.253e-02.
      1. ILI Date of 2013-09-17
      2. ILI tool of MFL
      3. Features identified 1203.0
      4. Depth fraction between 0.11 and 0.44
      5. Length between 4.0 mm and 148.0 mm
   3. Consequence of failure distributed between minimum of $1.00 and maximum of $125.01MM
   4. Total length driven by Safety: 119.97 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 43.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.99 and maximum of 4.11 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $262.68MM
      5. Rupture scenario yielded 85.0 intersections with structures, with minimum of 2.28 and maximum of 27.36 of population impacted
      6. Rupture hazard radius distributed between minimum of 53.97 and maximum of 55.69 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
      8. Puncture scenario yielded 67.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 15.93 and maximum of 16.44 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 3.0.
   6. Total length driven by Environmental: 359.92 meters.
   7. Environmental Cost distributed between minimum of $0.61 and maximum of $2.73MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.22MM
      2. Leak spill volume between a minimum of 1734.36 and maximum of 2085.62 gallons
      3. Rupture cost between minimum of $1.33 and maximum of $4.25MM
      4. Rupture spill volume is between a minimum of 12511.34 and maximum of 40103.54 gallons
      5. Puncture cost between minimum of $6.04 and maximum of $7.26MM
      6. Puncture spill volume is between a minimum of 56987.26 and maximum of 68528.77 gallons
      7. Land use distributed as
         1. Agricultural: 359.92
         2. Forested: 119.97
6. "SECT 8 RAPID CITY TO PORTAGE NPS 6
   1. Total Cumulative Length (m): 329.95
   2. Likelihood of failure distributed between minimum of 1.149e-02 and maximum of 3.797e-01.
      1. ILI Date of 2014-07-16
      2. ILI tool of MFL
      3. Features identified 50.0
      4. Depth fraction between 0.11 and 0.67
      5. Length between 10.57 mm and 147.87 mm
   3. Consequence of failure distributed between minimum of $0.66 and maximum of $4.97MM
   4. Total length driven by Economic Loss: 329.95 meters.
   5. Economic Loss Cost distributed between minimum of $0.66 and maximum of $4.97MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $0.30MM
      5. Leak scenario yielded 22.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $17.87MM
      8. Rupture scenario yielded 75.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $2.29MM
      11. Puncture scenario yielded 45.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
7. "CADOTTE LAKE TO UTIKUMA STATION NPS 20
   1. Total Cumulative Length (m): 299.94
   2. Likelihood of failure distributed between minimum of 1.055e-03 and maximum of 2.723e-02.
      1. ILI Date of 2016-02-17
      2. ILI tool of MFL/Geometry
      3. Features identified 255.0
      4. Depth fraction between 0.07 and 0.59
      5. Length between 12.0 mm and 201.0 mm
   3. Consequence of failure distributed between minimum of $1.31 and maximum of $37.26MM
   4. Total length driven by Environmental: 179.97 meters.
   5. Environmental Cost distributed between minimum of $0.45 and maximum of $36.03MM:
      1. Leak cost between minimum of $0.22 and maximum of $0.38MM
      2. Leak spill volume between a minimum of 2047.24 and maximum of 2930.33 gallons
      3. Rupture cost between minimum of $12.28 and maximum of $53.36MM
      4. Rupture spill volume is between a minimum of 115895.24 and maximum of 503423.68 gallons
      5. Puncture cost between minimum of $7.13 and maximum of $12.63MM
      6. Puncture spill volume is between a minimum of 67267.62 and maximum of 96284.12 gallons
      7. Land use distributed as
         1. Agricultural: 89.98
         2. Forested: 209.96
   6. Total length driven by Economic Loss: 119.98 meters.
   7. Economic Loss Cost distributed between minimum of $0.86 and maximum of $1.23MM:
      1. Repair costs between minimum of $57,000.00 and maximum of $57,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.86 and maximum of $0.86MM
      5. Leak scenario yielded 37.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $2,271.46 and maximum of $3,251.28
      7. Rupture cost between minimum of $0.99 and maximum of $1.42MM
      8. Rupture scenario yielded 50.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $128,588.53 and maximum of $558,560.56
      10. Puncture cost between minimum of $0.93 and maximum of $0.96MM
      11. Puncture scenario yielded 48.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $74,635.03 and maximum of $106,829.52"
8. "BRETON TO EDMONTON NPS 8
   1. Total Cumulative Length (m): 239.93
   2. Likelihood of failure distributed between minimum of 1.045e-03 and maximum of 8.858e-02.
      1. ILI Date of 2014-11-12
      2. ILI tool of MFL
      3. Features identified 559.0
      4. Depth fraction between 0.10 and 0.49
      5. Length between 6.0 mm and 201.0 mm
   3. Consequence of failure distributed between minimum of $5.18 and maximum of $197.82MM
   4. Total length driven by Safety: 239.93 meters.
   5. Safety Cost distributed between minimum of $4.69 and maximum of $194.24MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 117.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.13 and maximum of 12.03 meters.
      4. Rupture cost between minimum of $121.06 and maximum of $5,539.97MM
      5. Rupture scenario yielded 236.0 intersections with structures, with minimum of 12.61 and maximum of 577.08 of population impacted
      6. Rupture hazard radius distributed between minimum of 129.12 and maximum of 138.23 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $306.43MM
      8. Puncture scenario yielded 355.0 intersections with structures, with minimum of 1.26 and maximum of 31.92 of population impacted
      9. Puncture hazard radius distributed between minimum of 45.37 and maximum of 48.58 meters.
      10. Product type is Condensate.
      11. Class area location is/are 1.0, 2.0.
9. "UNITY TO LONE ROCK NPS 4
   1. Total Cumulative Length (m): 149.97
   2. Likelihood of failure distributed between minimum of 2.010e-03 and maximum of 5.187e-03.
      1. ILI Date of 2017-04-25
      2. ILI tool of MFL/Geometry
      3. Features identified 145.0
      4. Depth fraction between 0.11 and 0.49
      5. Length between 4.0 mm and 128.0 mm
   3. Consequence of failure distributed between minimum of $10.01 and maximum of $14.13MM
   4. Total length driven by Environmental: 149.97 meters.
   5. Environmental Cost distributed between minimum of $9.70 and maximum of $13.77MM:
      1. Leak cost between minimum of $0.21 and maximum of $0.26MM
      2. Leak spill volume between a minimum of 1972.39 and maximum of 2415.69 gallons
      3. Rupture cost between minimum of $27.31 and maximum of $33.45MM
      4. Rupture spill volume is between a minimum of 257682.32 and maximum of 315598.07 gallons
      5. Puncture cost between minimum of $6.87 and maximum of $8.41MM
      6. Puncture spill volume is between a minimum of 64808.16 and maximum of 79374.21 gallons
      7. Land use distributed as
         1. Agricultural: 119.97
         2. Remote: 29.99
10. "SS-03 NPS 6
    1. Total Cumulative Length (m): 149.94
    2. Likelihood of failure distributed between minimum of 2.057e-02 and maximum of 4.316e-02.
       1. ILI Date of 2016-02-02
       2. ILI tool of MFL/Geometry
       3. Features identified 271.0
       4. Depth fraction between 0.1 and 0.43
       5. Length between 4.0 mm and 74.0 mm
    3. Consequence of failure distributed between minimum of $4.65 and maximum of $24.45MM
    4. Total length driven by Environmental: 149.94 meters.
    5. Environmental Cost distributed between minimum of $4.37 and maximum of $23.96MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1815.99 and maximum of 1815.99 gallons
       3. Rupture cost between minimum of $54.50 and maximum of $54.50MM
       4. Rupture spill volume is between a minimum of 514224.45 and maximum of 514224.45 gallons
       5. Puncture cost between minimum of $6.32 and maximum of $6.32MM
       6. Puncture spill volume is between a minimum of 59669.32 and maximum of 59669.32 gallons
       7. Land use distributed as
          1. Agricultural: 149.94
11. "NPS6 Brookfield to Joffre From 15-20-38-25W4 To 15-17-39-26W4
    1. Total Cumulative Length (m): 110.49
    2. Likelihood of failure distributed between minimum of 1.135e-03 and maximum of 9.315e-03.
       1. ILI Date of 2016-04-21
       2. ILI tool of MFL/Geometry
       3. Features identified 95.0
       4. Depth fraction between 0.11 and 0.44
       5. Length between 6.0 mm and 72.0 mm
    3. Consequence of failure distributed between minimum of $11.13 and maximum of $26.77MM
    4. Total length driven by Environmental: 110.49 meters.
    5. Environmental Cost distributed between minimum of $10.80 and maximum of $26.28MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.22MM
       2. Leak spill volume between a minimum of 1919.14 and maximum of 2046.96 gallons
       3. Rupture cost between minimum of $57.60 and maximum of $61.44MM
       4. Rupture spill volume is between a minimum of 543432.51 and maximum of 579628.2 gallons
       5. Puncture cost between minimum of $6.68 and maximum of $7.13MM
       6. Puncture spill volume is between a minimum of 63058.55 and maximum of 67258.6 gallons
       7. Land use distributed as
          1. Agricultural: 110.49
12. "RADIAL LAKE TO LOCHEARN PUMP STATION NPS 3
    1. Total Cumulative Length (m): 89.97
    2. Likelihood of failure distributed between minimum of 2.919e-02 and maximum of 1.403e-01.
       1. ILI Date of 2012-08-29
       2. ILI tool of MFL
       3. Features identified 15.0
       4. Depth fraction between 0.15 and 0.27
       5. Length between 10.0 mm and 36.0 mm
    3. Consequence of failure distributed between minimum of $0.72 and maximum of $1.09MM
    4. Total length driven by Economic Loss: 89.97 meters.
    5. Economic Loss Cost distributed between minimum of $0.72 and maximum of $1.09MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.27 and maximum of $0.27MM
       5. Leak scenario yielded 6.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $5.02 and maximum of $5.02MM
       8. Rupture scenario yielded 22.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
       10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
       11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
13. "SECT 3 HERBERT TO CARON NPS 6
    1. Total Cumulative Length (m): 67.37
    2. Likelihood of failure distributed between minimum of 1.821e-03 and maximum of 2.070e-02.
       1. ILI Date of 2013-03-06
       2. ILI tool of MFL
       3. Features identified 9.0
       4. Depth fraction between 0.14 and 0.4
       5. Length between 13.629 mm and 60.756 mm
    3. Consequence of failure distributed between minimum of $1.43 and maximum of $13.10MM
    4. Total length driven by Safety: 7.38 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $10.18MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 9.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
       5. Rupture scenario yielded 45.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 41.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
       10. Product type is NGL.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 59.99 meters.
    7. Economic Loss Cost distributed between minimum of $1.43 and maximum of $2.92MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $0.27MM
       5. Leak scenario yielded 9.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
       7. Rupture cost between minimum of $17.84 and maximum of $18.13MM
       8. Rupture scenario yielded 45.0 intersections with structures, with minimum of $293,825.00 and maximum of $293,825.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
       10. Puncture cost between minimum of $2.26 and maximum of $2.55MM
       11. Puncture scenario yielded 41.0 intersections with structures, with minimum of $293,825.00 and maximum of $293,825.00 in cost of structures impacted
       12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
14. "CRIMSON LAKE TO 10-33 NPS 4
    1. Total Cumulative Length (m): 63.64
    2. Likelihood of failure distributed between minimum of 3.171e-03 and maximum of 1.506e-02.
       1. ILI Date of 2016-02-23
       2. ILI tool of MFL/Geometry
       3. Features identified 39.0
       4. Depth fraction between 0.12 and 0.45
       5. Length between 4.0 mm and 76.0 mm
    3. Consequence of failure distributed between minimum of $5.84 and maximum of $11.96MM
    4. Total length driven by Environmental: 63.64 meters.
    5. Environmental Cost distributed between minimum of $5.57 and maximum of $11.61MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.32MM
       2. Leak spill volume between a minimum of 1705.83 and maximum of 1909.12 gallons
       3. Rupture cost between minimum of $23.62 and maximum of $41.39MM
       4. Rupture spill volume is between a minimum of 222858.4 and maximum of 249416.5 gallons
       5. Puncture cost between minimum of $5.94 and maximum of $10.41MM
       6. Puncture spill volume is between a minimum of 56049.8 and maximum of 62729.27 gallons
       7. Land use distributed as
          1. Forested: 60.03
          2. Water Course: 3.61
15. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
    1. Total Cumulative Length (m): 59.99
    2. Likelihood of failure distributed between minimum of 1.486e-03 and maximum of 2.011e-03.
       1. ILI Date of 2016-03-08
       2. ILI tool of MFL/Geometry
       3. Features identified 271.0
       4. Depth fraction between 0.1 and 0.47
       5. Length between 4.0 mm and 154.0 mm
    3. Consequence of failure distributed between minimum of $11.72 and maximum of $13.00MM
    4. Total length driven by Economic Loss: 59.99 meters.
    5. Economic Loss Cost distributed between minimum of $11.72 and maximum of $13.00MM:
       1. Repair costs between minimum of $17,000.00 and maximum of $17,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.28 and maximum of $0.28MM
       5. Leak scenario yielded 16.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $59,691.29 and maximum of $59,691.29
       7. Rupture cost between minimum of $44.72 and maximum of $44.72MM
       8. Rupture scenario yielded 105.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $44,503,622.40 and maximum of $44,503,622.40
       10. Puncture cost between minimum of $2.18 and maximum of $2.18MM
       11. Puncture scenario yielded 60.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,961,320.39 and maximum of $1,961,320.39"
16. "WEST SENLAC TO UNITY NPS 6
    1. Total Cumulative Length (m): 59.99
    2. Likelihood of failure distributed between minimum of 1.099e-02 and maximum of 1.102e-01.
       1. ILI Date of 2016-06-13
       2. ILI tool of MFL/Geometry
       3. Features identified 17.0
       4. Depth fraction between 0.11 and 0.6
       5. Length between 4.0 mm and 36.0 mm
    3. Consequence of failure distributed between minimum of $1.75 and maximum of $4.69MM
    4. Total length driven by Environmental: 59.99 meters.
    5. Environmental Cost distributed between minimum of $1.52 and maximum of $4.43MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.22MM
       2. Leak spill volume between a minimum of 1878.04 and maximum of 2034.92 gallons
       3. Rupture cost between minimum of $56.37 and maximum of $61.07MM
       4. Rupture spill volume is between a minimum of 531793.88 and maximum of 576218.57 gallons
       5. Puncture cost between minimum of $6.54 and maximum of $7.09MM
       6. Puncture spill volume is between a minimum of 61708.03 and maximum of 66862.96 gallons
       7. Land use distributed as
          1. Agricultural: 59.99
17. "10-33 VALVE SITE TO MAIN LINE TIE-IN 2-6 NPS 3
    1. Total Cumulative Length (m): 59.98
    2. Likelihood of failure distributed between minimum of 1.132e-01 and maximum of 1.626e-01.
       1. ILI Date of 2017-07-20
       2. ILI tool of MFL/Geometry
       3. Features identified 61.0
       4. Depth fraction between 0.13 and 0.62
       5. Length between 4.0 mm and 50.0 mm
    3. Consequence of failure distributed between minimum of $0.32 and maximum of $0.49MM
    4. Total length driven by Economic Loss: 59.98 meters.
    5. Economic Loss Cost distributed between minimum of $0.32 and maximum of $0.49MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.26 and maximum of $0.26MM
       5. Leak scenario yielded 8.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $50,866.30 and maximum of $50,866.30
       7. Rupture cost between minimum of $4.23 and maximum of $4.23MM
       8. Rupture scenario yielded 36.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,020,070.39 and maximum of $4,020,070.39
       10. Puncture cost between minimum of $1.88 and maximum of $1.88MM
       11. Puncture scenario yielded 34.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,671,351.05 and maximum of $1,671,351.05"
18. "NPS8 RL-1 From 9-10-109-8W6 To 4-11-109-8W6
    1. Total Cumulative Length (m): 58.72
    2. Likelihood of failure distributed between minimum of 1.156e-03 and maximum of 1.292e-02.
       1. ILI Date of 2016-01-19
       2. ILI tool of MFL/Geometry
       3. Features identified 98.0
       4. Depth fraction between 0.11 and 0.41
       5. Length between 8.0 mm and 664.0 mm
    3. Consequence of failure distributed between minimum of $2.60 and maximum of $10.93MM
    4. Total length driven by Environmental: 58.72 meters.
    5. Environmental Cost distributed between minimum of $2.37 and maximum of $10.60MM:
       1. Leak cost between minimum of $0.15 and maximum of $0.15MM
       2. Leak spill volume between a minimum of 1398.42 and maximum of 1419.13 gallons
       3. Rupture cost between minimum of $71.14 and maximum of $72.19MM
       4. Rupture spill volume is between a minimum of 671156.67 and maximum of 681095.43 gallons
       5. Puncture cost between minimum of $4.87 and maximum of $4.94MM
       6. Puncture spill volume is between a minimum of 45948.97 and maximum of 46629.4 gallons
       7. Land use distributed as
          1. Forested: 24.79
          2. Remote: 33.92
19. "NI-95 NPS 8
    1. Total Cumulative Length (m): 58.71
    2. Likelihood of failure distributed between minimum of 1.270e-03 and maximum of 2.048e-03.
       1. ILI Date of 2018-03-01
       2. ILI tool of MFL/Geometry
       3. Features identified 160.0
       4. Depth fraction between 0.1 and 0.49
       5. Length between 4.0 mm and 81.0 mm
    3. Consequence of failure distributed between minimum of $23.55 and maximum of $41.35MM
    4. Total length driven by Environmental: 58.71 meters.
    5. Environmental Cost distributed between minimum of $23.06 and maximum of $40.69MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1809.17 and maximum of 1810.77 gallons
       3. Rupture cost between minimum of $92.03 and maximum of $92.11MM
       4. Rupture spill volume is between a minimum of 868292.36 and maximum of 869059.11 gallons
       5. Puncture cost between minimum of $6.30 and maximum of $6.31MM
       6. Puncture spill volume is between a minimum of 59445.35 and maximum of 59497.84 gallons
       7. Land use distributed as
          1. Agricultural: 58.71
20. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5
    1. Total Cumulative Length (m): 30.0
    2. Likelihood of failure distributed between minimum of 1.712e-01 and maximum of 1.712e-01.
       1. ILI Date of 2015-07-27
       2. ILI tool of MFL/Geometry
       3. Features identified 10.0
       4. Depth fraction between 0.1 and 0.58
       5. Length between 15.0 mm and 243.0 mm
    3. Consequence of failure distributed between minimum of $49.56 and maximum of $49.62MM
    4. Total length driven by Environmental: 30.0 meters.
    5. Environmental Cost distributed between minimum of $48.84 and maximum of $48.89MM:
       1. Leak cost between minimum of $0.22 and maximum of $0.22MM
       2. Leak spill volume between a minimum of 2045.08 and maximum of 2047.2 gallons
       3. Rupture cost between minimum of $104.03 and maximum of $104.14MM
       4. Rupture spill volume is between a minimum of 981512.08 and maximum of 982532.16 gallons
       5. Puncture cost between minimum of $7.12 and maximum of $7.13MM
       6. Puncture spill volume is between a minimum of 67196.64 and maximum of 67266.48 gallons
       7. Land use distributed as
          1. Remote: 30.00
21. "COCHRANE TO ROCKY MOUNTAIN HOUSE NPS 8
    1. Total Cumulative Length (m): 30.0
    2. Likelihood of failure distributed between minimum of 8.425e-03 and maximum of 8.425e-03.
       1. ILI Date of 2019-05-02
       2. ILI tool of MFL/Geometry
       3. Features identified 310.0
       4. Depth fraction between 0.1 and 0.47
       5. Length between 4.0 mm and 349.0 mm
    3. Consequence of failure distributed between minimum of $17.37 and maximum of $17.37MM
    4. Total length driven by Economic Loss: 30.0 meters.
    5. Economic Loss Cost distributed between minimum of $17.37 and maximum of $17.37MM:
       1. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.28 and maximum of $0.28MM
       5. Leak scenario yielded 52.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $29.42 and maximum of $29.42MM
       8. Rupture scenario yielded 225.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $29,206,998.79 and maximum of $29,206,998.79
       10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
       11. Puncture scenario yielded 133.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
22. "WEST PEMBINA TO BRAZEAU NPS 3
    1. Total Cumulative Length (m): 30.0
    2. Likelihood of failure distributed between minimum of 8.281e-01 and maximum of 8.281e-01.
       1. ILI Date of 2009-12-01
       2. ILI tool of MFL
       3. Features identified 1.0
       4. Depth fraction between 0.72 and 0.72
       5. Length between 21.0 mm and 21.0 mm
    3. Consequence of failure distributed between minimum of $1.03 and maximum of $1.03MM
    4. Total length driven by Economic Loss: 30.0 meters.
    5. Economic Loss Cost distributed between minimum of $1.03 and maximum of $1.03MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $0.27MM
       5. Leak scenario yielded 24.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $5.02 and maximum of $5.02MM
       8. Rupture scenario yielded 53.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
       10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
       11. Puncture scenario yielded 50.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
23. "SUNDRE TO HARTELL NPS 12
    1. Total Cumulative Length (m): 30.0
    2. Likelihood of failure distributed between minimum of 1.383e-02 and maximum of 1.383e-02.
       1. ILI Date of 2015-11-16
       2. ILI tool of MFL/Geometry
       3. Features identified 7.0
       4. Depth fraction between 0.1 and 0.32
       5. Length between 12.0 mm and 4162.0 mm
    3. Consequence of failure distributed between minimum of $7.85 and maximum of $7.85MM
    4. Total length driven by Environmental: 30.0 meters.
    5. Environmental Cost distributed between minimum of $6.94 and maximum of $6.94MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1791.54 and maximum of 1791.54 gallons
       3. Rupture cost between minimum of $7.16 and maximum of $7.16MM
       4. Rupture spill volume is between a minimum of 67576.42 and maximum of 67576.42 gallons
       5. Puncture cost between minimum of $6.24 and maximum of $6.24MM
       6. Puncture spill volume is between a minimum of 58865.82 and maximum of 58865.82 gallons
       7. Land use distributed as
          1. Agricultural: 30.00
24. "NPS8 Red Earth to Rainbow P/L tie-in From 9-18-87-8-W5 To 15-29-81-9-W
    1. Total Cumulative Length (m): 29.99
    2. Likelihood of failure distributed between minimum of 3.922e-02 and maximum of 3.922e-02.
       1. ILI Date of 2016-02-09
       2. ILI tool of MFL/Geometry
       3. Features identified 12.0
       4. Depth fraction between 0.13 and 0.57
       5. Length between 8.0 mm and 64.0 mm
    3. Consequence of failure distributed between minimum of $33.77 and maximum of $33.77MM
    4. Total length driven by Environmental: 29.99 meters.
    5. Environmental Cost distributed between minimum of $33.21 and maximum of $33.21MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1816.46 and maximum of 1816.54 gallons
       3. Rupture cost between minimum of $92.40 and maximum of $92.41MM
       4. Rupture spill volume is between a minimum of 871790.09 and maximum of 871826.89 gallons
       5. Puncture cost between minimum of $6.33 and maximum of $6.33MM
       6. Puncture spill volume is between a minimum of 59684.81 and maximum of 59687.33 gallons
       7. Land use distributed as
          1. Forested: 29.99
25. "SS-11 NPS 6
    1. Total Cumulative Length (m): 29.99
    2. Likelihood of failure distributed between minimum of 1.428e-03 and maximum of 1.428e-03.
       1. ILI Date of 2017-05-24
       2. ILI tool of MFL/Geometry
       3. Features identified 39.0
       4. Depth fraction between 0.1 and 0.48
       5. Length between 4.0 mm and 96.0 mm
    3. Consequence of failure distributed between minimum of $26.14 and maximum of $26.14MM
    4. Total length driven by Environmental: 29.99 meters.
    5. Environmental Cost distributed between minimum of $25.66 and maximum of $25.66MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1958.94 and maximum of 1958.94 gallons
       3. Rupture cost between minimum of $58.79 and maximum of $58.79MM
       4. Rupture spill volume is between a minimum of 554702.8 and maximum of 554702.8 gallons
       5. Puncture cost between minimum of $6.82 and maximum of $6.82MM
       6. Puncture spill volume is between a minimum of 64366.32 and maximum of 64366.32 gallons
       7. Land use distributed as
          1. Remote: 29.99

EC Method 2 has 3 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below.

MFL C:

1. "SS-44 NPS 8
   1. Total Cumulative Length (m): 89.04
   2. Likelihood of failure distributed between minimum of 1.457e-03 and maximum of 4.186e-02.
      1. ILI Date of 2017-08-21
      2. ILI tool of AFD
      3. Features identified 609.0
      4. Depth fraction between 0.1 and 0.61
      5. Length between 10.0 mm and 934.0 mm
   3. Consequence of failure distributed between minimum of $10.96 and maximum of $45.46MM
   4. Total length driven by Environmental: 89.04 meters.
   5. Environmental Cost distributed between minimum of $10.63 and maximum of $44.77MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.20MM
      2. Leak spill volume between a minimum of 1857.13 and maximum of 1896.57 gallons
      3. Rupture cost between minimum of $94.47 and maximum of $96.48MM
      4. Rupture spill volume is between a minimum of 891307.61 and maximum of 910237.43 gallons
      5. Puncture cost between minimum of $6.47 and maximum of $6.61MM
      6. Puncture spill volume is between a minimum of 61021.03 and maximum of 62317.01 gallons
      7. Land use distributed as
         1. Agricultural: 89.04
2. "SUNDRE TO BENTLEY NPS 8
   1. Total Cumulative Length (m): 30.0
   2. Likelihood of failure distributed between minimum of 1.200e-02 and maximum of 1.200e-02.
      1. ILI Date of 2016-09-14
      2. ILI tool of AFD
      3. Features identified 14.0
      4. Depth fraction between 0.1 and 0.54
      5. Length between 15.0 mm and 129.0 mm
   3. Consequence of failure distributed between minimum of $1.52 and maximum of $2.11MM
   4. Total length driven by Environmental: 30.0 meters.
   5. Environmental Cost distributed between minimum of $1.24 and maximum of $1.82MM:
      1. Leak cost between minimum of $0.11 and maximum of $0.11MM
      2. Leak spill volume between a minimum of 2191.76 and maximum of 2274.9 gallons
      3. Rupture cost between minimum of $2.62 and maximum of $2.62MM
      4. Rupture spill volume is between a minimum of 53330.52 and maximum of 53330.52 gallons
      5. Puncture cost between minimum of $3.54 and maximum of $3.68MM
      6. Puncture spill volume is between a minimum of 72016.32 and maximum of 74748.07 gallons
      7. Land use distributed as
         1. Agricultural: 30.00
3. "HARMATTAN TO SUNDRE NPS 6
   1. Total Cumulative Length (m): 0.75
   2. Likelihood of failure distributed between minimum of 2.580e-03 and maximum of 2.580e-03.
      1. ILI Date of 2016-06-10
      2. ILI tool of AFD
      3. Features identified 3.0
      4. Depth fraction between 0.14 and 0.27
      5. Length between 12.0 mm and 54.0 mm
   3. Consequence of failure distributed between minimum of $10.36 and maximum of $10.36MM
   4. Total length driven by Environmental: 0.75 meters.
   5. Environmental Cost distributed between minimum of $9.94 and maximum of $9.94MM:
      1. Leak cost between minimum of $0.17 and maximum of $0.17MM
      2. Leak spill volume between a minimum of 1995.79 and maximum of 1995.79 gallons
      3. Rupture cost between minimum of $47.06 and maximum of $47.06MM
      4. Rupture spill volume is between a minimum of 565137.27 and maximum of 565137.27 gallons
      5. Puncture cost between minimum of $5.46 and maximum of $5.46MM
      6. Puncture spill volume is between a minimum of 65577.11 and maximum of 65577.11 gallons
      7. Land use distributed as
         1. Water Course: 0.75

EC Method 2 has 3 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below.

Mixed MFL:

1. "SECT 5 RICHARDSON TO GRENFELL NPS 6
   1. Total Cumulative Length (m): 30.0
   2. Likelihood of failure distributed between minimum of 1.570e-02 and maximum of 1.570e-02.
      1. ILI Date of 2017-06-19
      2. ILI tool of SpirAll MFL/Geometry
      3. Features identified 2.0
      4. Depth fraction between 0.12 and 0.58
      5. Length between 14.686 mm and 20.392 mm
   3. Consequence of failure distributed between minimum of $1.23 and maximum of $3.53MM
   4. Total length driven by Safety: 15.67 meters.
   5. Safety Cost distributed between minimum of $0.59 and maximum of $2.86MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 18.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
      3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
      4. Rupture cost between minimum of $87.55 and maximum of $87.55MM
      5. Rupture scenario yielded 59.0 intersections with structures, with minimum of 9.12 and maximum of 9.12 of population impacted
      6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
      8. Puncture scenario yielded 53.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
      9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
      10. Product type is NGL.
      11. Class area location is/are 1.0.
   6. Total length driven by Economic Loss: 14.32 meters.
   7. Economic Loss Cost distributed between minimum of $0.63 and maximum of $0.66MM:
      1. Repair costs between minimum of $40,000.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.30 and maximum of $0.30MM
      5. Leak scenario yielded 18.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $18.95 and maximum of $18.95MM
      8. Rupture scenario yielded 59.0 intersections with structures, with minimum of $1,079,472.00 and maximum of $1,079,472.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.29 and maximum of $2.56MM
      11. Puncture scenario yielded 53.0 intersections with structures, with minimum of $269,868.00 and maximum of $269,868.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
2. "WASCANA MAINLINE NPS 12
   1. Total Cumulative Length (m): 30.0
   2. Likelihood of failure distributed between minimum of 1.415e-02 and maximum of 1.415e-02.
      1. ILI Date of 2015-02-21
      2. ILI tool of MFL/Geometry/AFD/USCD
      3. Features identified 33.0
      4. Depth fraction between 0.1 and 0.48
      5. Length between 8.0 mm and 22.0 mm
   3. Consequence of failure distributed between minimum of $1.25 and maximum of $1.71MM
   4. Total length driven by Economic Loss: 30.0 meters.
   5. Economic Loss Cost distributed between minimum of $0.85 and maximum of $0.99MM:
      1. Repair costs between minimum of $44,000.00 and maximum of $187,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.85 and maximum of $0.99MM
      5. Leak scenario yielded 9.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $2,497.72 and maximum of $2,498.45
      7. Rupture cost between minimum of $0.97 and maximum of $1.11MM
      8. Rupture scenario yielded 34.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $122,783.82 and maximum of $122,783.82
      10. Puncture cost between minimum of $0.93 and maximum of $1.07MM
      11. Puncture scenario yielded 18.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $82,069.54 and maximum of $82,093.44"
3. "SECT 9 PORTAGE TO FORT WHYTE TERMINAL NPS 6
   1. Total Cumulative Length (m): 29.99
   2. Likelihood of failure distributed between minimum of 1.367e-02 and maximum of 1.367e-02.
      1. ILI Date of 2016-03-30
      2. ILI tool of SpirAll MFL/Geometry
      3. Features identified 1.0
      4. Depth fraction between 0.53 and 0.53
      5. Length between 23.26 mm and 23.26 mm
   3. Consequence of failure distributed between minimum of $2.77 and maximum of $2.77MM
   4. Total length driven by Economic Loss: 29.99 meters.
   5. Economic Loss Cost distributed between minimum of $2.77 and maximum of $2.77MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $0.27MM
      5. Leak scenario yielded 13.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $17.84MM
      8. Rupture scenario yielded 55.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $2.26MM
      11. Puncture scenario yielded 47.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"

## Construction Threat and Total Consequence

As indicated by ASME B31.8S, some construction and joining practices contribute to failure. In particular, the presence of wrinkle bends, some buried couplings (such as Dresser couplings), buried threaded connections, and factors leading to suspect welds are of concern.

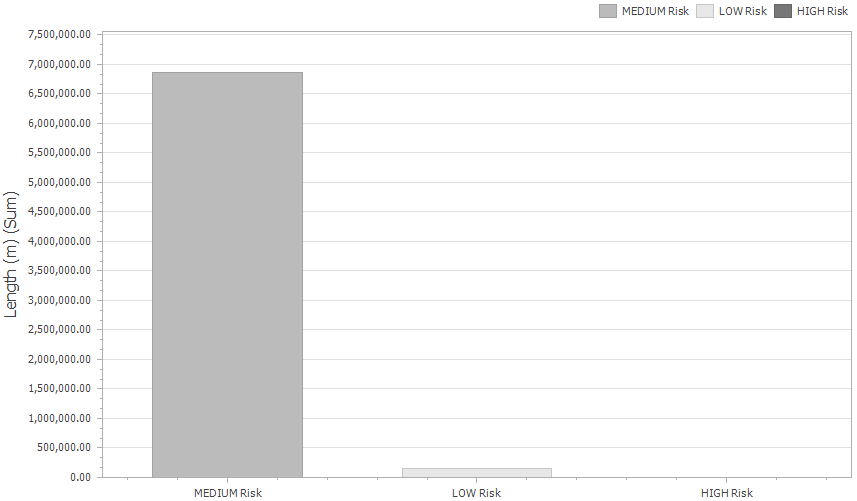
The Construction Threat Algorithm covers five primary construction threat categories: welding-related threats; threats related to buried couplings; threats related to the presence of wrinkle bends; repair type threats; and, non-metallics threats. For each of the above threat categories a pipeline segment is assessed from the perspective of potential susceptibility to the threat, and any contributing or mitigating factors are then taken into consideration. Finally, as imperfections associated with construction threats are considered to be stable, the overall susceptibility to failure for construction threats is a function of the potential for external forces to be imposed. Therefore, a Ground Movement Factor is included in the calculation of Construction Threat scores.

The determination of susceptibility to construction threats is derived from a review of construction and installation records, including pipe material, as well as operational records, such as pipe inspection reports, maintenance information, and hydrostatic test records.

### Assumptions of model

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

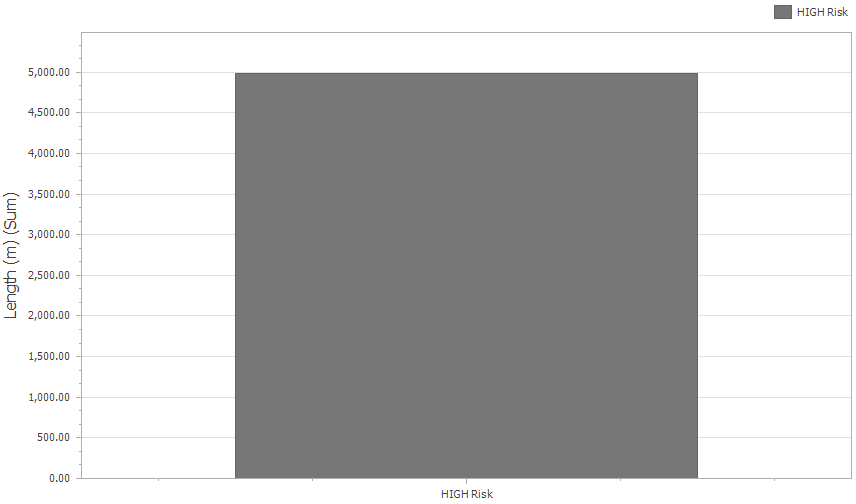


The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  | **Cumulative Length (m)** | | | | |
| --- | --- | --- | --- | --- | --- |
|  | **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| **Construction Threat** | 158,940.32 | 6,871,440.74 | 4,988.81 | 0.00 | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.



### Reportable Pipeline Segments

Construction Threat has 16 pipelines with segments that fall within the safety risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below:

1. "RAINBOW LAKE TO CADOTTE NPS 20
   1. Total Cumulative Length (m): 1979.75
   2. Likelihood of failure distributed between minimum of 5.486e-03 and maximum of 5.939e-02.
      1. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
      2. Girth weld type of Unknown
      3. Geotechnical hazard POF between minimum of 5.300e-02 and maximum of 5.300e-02
      4. Geotechnical hazard ID of nan, 258.0
      5. Hydrotechnical hazard POF between minimum of 4.800e-03 and maximum of 4.800e-03
      6. Hydrotechnical hazard ID of nan, 260.0
   3. Consequence of failure distributed between minimum of $3.19 and maximum of $20.17MM
   4. Total length driven by Environmental: 1979.75 meters.
   5. Environmental Cost distributed between minimum of $2.31 and maximum of $18.92MM:
      1. Leak cost between minimum of $0.17 and maximum of $0.30MM
      2. Leak spill volume between a minimum of 1606.02 and maximum of 1675.69 gallons
      3. Rupture cost between minimum of $4.36 and maximum of $37.88MM
      4. Rupture spill volume is between a minimum of 41144.26 and maximum of 212921.56 gallons
      5. Puncture cost between minimum of $5.59 and maximum of $9.80MM
      6. Puncture spill volume is between a minimum of 52770.13 and maximum of 55059.5 gallons
      7. Land use distributed as
         1. Forested: 1,302.96
         2. Water Course: 676.79
2. "UTIKUMA TO EDMONTON NPS 24
   1. Total Cumulative Length (m): 844.83
   2. Likelihood of failure distributed between minimum of 1.357e-03 and maximum of 1.020e-02.
      1. Installation date between minimum of 1967-01-01 and maximum of 1994-01-01
      2. Girth weld type of Unknown
      3. Geotechnical hazard POF between minimum of 1.200e-03 and maximum of 9.000e-03
      4. Geotechnical hazard ID of nan, 4285.0, 311.0
      5. Hydrotechnical hazard POF between minimum of 6.000e-07 and maximum of 6.000e-07
      6. Hydrotechnical hazard ID of nan, 1075.0, 4258.0
   3. Consequence of failure distributed between minimum of $10.68 and maximum of $38.95MM
   4. Total length driven by Environmental: 844.83 meters.
   5. Environmental Cost distributed between minimum of $7.83 and maximum of $36.10MM:
      1. Leak cost between minimum of $0.18 and maximum of $30.72MM
      2. Leak spill volume between a minimum of 1445.44 and maximum of 289833.47 gallons
      3. Rupture cost between minimum of $17.19 and maximum of $65.43MM
      4. Rupture spill volume is between a minimum of 96624.17 and maximum of 446525.9 gallons
      5. Puncture cost between minimum of $5.87 and maximum of $30.72MM
      6. Puncture spill volume is between a minimum of 47493.97 and maximum of 289833.47 gallons
      7. Land use distributed as
         1. Agricultural: 250.11
         2. Forested: 588.55
         3. Water Course: 6.17
3. "UNITY TO LONE ROCK NPS 4
   1. Total Cumulative Length (m): 449.9
   2. Likelihood of failure distributed between minimum of 3.032e-03 and maximum of 3.032e-03.
      1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
      2. Girth weld type of Unknown
      3. Geotechnical hazard POF between minimum of 2.800e-03 and maximum of 2.800e-03
      4. Geotechnical hazard ID of nan, 511.0
      5. Hydrotechnical hazard POF between minimum of nan and maximum of nan
      6. Hydrotechnical hazard ID of nan
   3. Consequence of failure distributed between minimum of $12.17 and maximum of $17.01MM
   4. Total length driven by Environmental: 449.9 meters.
   5. Environmental Cost distributed between minimum of $11.84 and maximum of $16.63MM:
      1. Leak cost between minimum of $0.21 and maximum of $0.28MM
      2. Leak spill volume between a minimum of 1983.24 and maximum of 2616.27 gallons
      3. Rupture cost between minimum of $27.46 and maximum of $36.23MM
      4. Rupture spill volume is between a minimum of 259100.53 and maximum of 341802.72 gallons
      5. Puncture cost between minimum of $6.91 and maximum of $9.11MM
      6. Puncture spill volume is between a minimum of 65164.85 and maximum of 85964.79 gallons
      7. Land use distributed as
         1. Agricultural: 116.50
         2. Remote: 333.40
4. "LONE ROCK TO KERROBERT NPS 10
   1. Total Cumulative Length (m): 396.12
   2. Likelihood of failure distributed between minimum of 3.032e-03 and maximum of 3.032e-03.
      1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
      2. Girth weld type of Unknown
      3. Geotechnical hazard POF between minimum of 2.800e-03 and maximum of 2.800e-03
      4. Geotechnical hazard ID of 3247.0, nan
      5. Hydrotechnical hazard POF between minimum of nan and maximum of nan
      6. Hydrotechnical hazard ID of nan
   3. Consequence of failure distributed between minimum of $10.12 and maximum of $12.63MM
   4. Total length driven by Environmental: 396.12 meters.
   5. Environmental Cost distributed between minimum of $9.80 and maximum of $12.29MM:
      1. Leak cost between minimum of $0.19 and maximum of $0.26MM
      2. Leak spill volume between a minimum of 1770.97 and maximum of 2408.19 gallons
      3. Rupture cost between minimum of $19.39 and maximum of $24.69MM
      4. Rupture spill volume is between a minimum of 182898.94 and maximum of 232935.95 gallons
      5. Puncture cost between minimum of $6.17 and maximum of $8.39MM
      6. Puncture spill volume is between a minimum of 58189.98 and maximum of 79127.55 gallons
      7. Land use distributed as
         1. Agricultural: 120.50
         2. Remote: 275.62
5. "RADIAL LAKE RIVER CROSSING NPS 8
   1. Total Cumulative Length (m): 281.86
   2. Likelihood of failure distributed between minimum of 1.357e-03 and maximum of 2.749e-02.
      1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
      2. Girth weld type of Unknown
      3. Geotechnical hazard POF between minimum of 1.200e-03 and maximum of 1.200e-03
      4. Geotechnical hazard ID of nan, 2494.0
      5. Hydrotechnical hazard POF between minimum of 2.500e-02 and maximum of 2.500e-02
      6. Hydrotechnical hazard ID of nan, 1938.0
   3. Consequence of failure distributed between minimum of $20.85 and maximum of $34.60MM
   4. Total length driven by Safety: 225.49 meters.
   5. Safety Cost distributed between minimum of $9.88 and maximum of $22.32MM:
      1. Leak cost between minimum of $0.02 and maximum of $0.02MM
      2. Leak scenario yielded 0.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
      3. Leak hazard radius distributed between minimum of 11.33 and maximum of 11.33 meters.
      4. Rupture cost between minimum of $21.89 and maximum of $43.78MM
      5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 2.28 and maximum of 4.56 of population impacted
      6. Rupture hazard radius distributed between minimum of 144.9 and maximum of 144.9 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
      8. Puncture scenario yielded 2.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
      9. Puncture hazard radius distributed between minimum of 53.01 and maximum of 53.01 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0.
   6. Total length driven by Economic Loss: 56.37 meters.
   7. Economic Loss Cost distributed between minimum of $10.97 and maximum of $12.35MM:
      1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.26 and maximum of $0.30MM
      5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $48,231.06 and maximum of $48,231.06
      7. Rupture cost between minimum of $23.67 and maximum of $23.75MM
      8. Rupture scenario yielded 2.0 intersections with structures, with minimum of $269,868.00 and maximum of $355,118.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $23,147,943.65 and maximum of $23,147,943.65
      10. Puncture cost between minimum of $1.80 and maximum of $2.10MM
      11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $269,868.00 and maximum of $269,868.00 in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $1,584,762.99 and maximum of $1,584,762.99"
6. "NPS6 Station 8 to Buck Creek Frac Plant From 4-5-49-9W5 To 13-24-48-7W
   1. Total Cumulative Length (m): 207.01
   2. Likelihood of failure distributed between minimum of 2.793e-03 and maximum of 2.793e-03.
      1. Installation date between minimum of 1958-01-01 and maximum of 1958-01-01
      2. Girth weld type of Unknown
      3. Geotechnical hazard POF between minimum of 2.400e-03 and maximum of 2.400e-03
      4. Geotechnical hazard ID of nan, 2428.0
      5. Hydrotechnical hazard POF between minimum of nan and maximum of nan
      6. Hydrotechnical hazard ID of nan
   3. Consequence of failure distributed between minimum of $31.93 and maximum of $62.91MM
   4. Total length driven by Safety: 207.01 meters.
   5. Safety Cost distributed between minimum of $26.07 and maximum of $57.02MM:
      1. Leak cost between minimum of $0.00 and maximum of $57.02MM
      2. Leak scenario yielded 6.0 intersections with structures, with minimum of 5.94 and maximum of 5.94 of population impacted.
      3. Leak hazard radius distributed between minimum of 10.87 and maximum of 10.87 meters.
      4. Rupture cost between minimum of $57.02 and maximum of $57.02MM
      5. Rupture scenario yielded 29.0 intersections with structures, with minimum of 5.94 and maximum of 5.94 of population impacted
      6. Rupture hazard radius distributed between minimum of 113.48 and maximum of 113.48 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $57.02MM
      8. Puncture scenario yielded 15.0 intersections with structures, with minimum of 5.94 and maximum of 5.94 of population impacted
      9. Puncture hazard radius distributed between minimum of 50.6 and maximum of 50.6 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 2.0.
7. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
   1. Total Cumulative Length (m): 179.98
   2. Likelihood of failure distributed between minimum of 1.084e-03 and maximum of 2.079e-03.
      1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
      2. Girth weld type of Unknown
      3. Geotechnical hazard POF between minimum of 4.100e-07 and maximum of 1.600e-03
      4. Geotechnical hazard ID of nan, 2310.0, 9102.0
      5. Hydrotechnical hazard POF between minimum of 2.900e-04 and maximum of 9.400e-04
      6. Hydrotechnical hazard ID of 2820.0, nan, 1945.0
   3. Consequence of failure distributed between minimum of $13.00 and maximum of $18.70MM
   4. Total length driven by Economic Loss: 179.98 meters.
   5. Economic Loss Cost distributed between minimum of $13.00 and maximum of $18.70MM:
      1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.28 and maximum of $0.34MM
      5. Leak scenario yielded 16.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $59,691.29 and maximum of $59,691.29
      7. Rupture cost between minimum of $44.72 and maximum of $44.78MM
      8. Rupture scenario yielded 105.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $44,503,622.40 and maximum of $44,503,622.40
      10. Puncture cost between minimum of $2.18 and maximum of $2.24MM
      11. Puncture scenario yielded 60.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $1,961,320.39 and maximum of $1,961,320.39"
8. "CADOTTE LAKE TO UTIKUMA STATION NPS 20
   1. Total Cumulative Length (m): 179.97
   2. Likelihood of failure distributed between minimum of 1.231e-03 and maximum of 1.231e-03.
      1. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
      2. Girth weld type of Unknown
      3. Geotechnical hazard POF between minimum of nan and maximum of nan
      4. Geotechnical hazard ID of nan
      5. Hydrotechnical hazard POF between minimum of 8.000e-04 and maximum of 8.000e-04
      6. Hydrotechnical hazard ID of nan, 5193.0
   3. Consequence of failure distributed between minimum of $12.60 and maximum of $20.94MM
   4. Total length driven by Environmental: 179.97 meters.
   5. Environmental Cost distributed between minimum of $11.63 and maximum of $19.69MM:
      1. Leak cost between minimum of $0.25 and maximum of $0.41MM
      2. Leak spill volume between a minimum of 2314.95 and maximum of 2319.14 gallons
      3. Rupture cost between minimum of $28.67 and maximum of $48.68MM
      4. Rupture spill volume is between a minimum of 270494.71 and maximum of 273618.75 gallons
      5. Puncture cost between minimum of $8.06 and maximum of $13.56MM
      6. Puncture spill volume is between a minimum of 76064.05 and maximum of 76201.73 gallons
      7. Land use distributed as
         1. Forested: 30.30
         2. Water Course: 149.67
9. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
   1. Total Cumulative Length (m): 149.99
   2. Likelihood of failure distributed between minimum of 1.916e-02 and maximum of 1.916e-02.
      1. Installation date between minimum of 1966-01-01 and maximum of 1966-01-01
      2. Girth weld type of Unknown
      3. Geotechnical hazard POF between minimum of 1.700e-02 and maximum of 1.700e-02
      4. Geotechnical hazard ID of nan, 514.0
      5. Hydrotechnical hazard POF between minimum of nan and maximum of nan
      6. Hydrotechnical hazard ID of nan
   3. Consequence of failure distributed between minimum of $4.54 and maximum of $4.69MM
   4. Total length driven by Environmental: 149.99 meters.
   5. Environmental Cost distributed between minimum of $3.66 and maximum of $3.80MM:
      1. Leak cost between minimum of $0.17 and maximum of $0.17MM
      2. Leak spill volume between a minimum of 1614.2 and maximum of 1625.23 gallons
      3. Rupture cost between minimum of $6.23 and maximum of $6.55MM
      4. Rupture spill volume is between a minimum of 58761.24 and maximum of 61799.14 gallons
      5. Puncture cost between minimum of $5.62 and maximum of $5.66MM
      6. Puncture spill volume is between a minimum of 53038.79 and maximum of 53401.2 gallons
      7. Land use distributed as
         1. Agricultural: 149.99
10. "SECT 7 MANSON TO RAPID CITY NPS 6
    1. Total Cumulative Length (m): 138.33
    2. Likelihood of failure distributed between minimum of 1.189e-03 and maximum of 1.189e-03.
       1. Installation date between minimum of 1963-07-01 and maximum of 1963-07-01
       2. Girth weld type of Unknown
       3. Geotechnical hazard POF between minimum of 9.700e-04 and maximum of 9.700e-04
       4. Geotechnical hazard ID of 7949.0, nan
       5. Hydrotechnical hazard POF between minimum of nan and maximum of nan
       6. Hydrotechnical hazard ID of nan
    3. Consequence of failure distributed between minimum of $24.44 and maximum of $127.06MM
    4. Total length driven by Safety: 138.33 meters.
    5. Safety Cost distributed between minimum of $20.67 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 17.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
       4. Rupture cost between minimum of $121.06 and maximum of $121.06MM
       5. Rupture scenario yielded 55.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 39.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
       10. Product type is NGL.
       11. Class area location is/are 1.0.
11. "SS-39 NPS 8
    1. Total Cumulative Length (m): 59.81
    2. Likelihood of failure distributed between minimum of 1.054e-03 and maximum of 1.054e-03.
       1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
       2. Girth weld type of Unknown
       3. Geotechnical hazard POF between minimum of 9.000e-08 and maximum of 9.000e-08
       4. Geotechnical hazard ID of nan, 9034.0
       5. Hydrotechnical hazard POF between minimum of 8.500e-04 and maximum of 8.500e-04
       6. Hydrotechnical hazard ID of nan, 428.0
    3. Consequence of failure distributed between minimum of $35.86 and maximum of $59.88MM
    4. Total length driven by Environmental: 59.81 meters.
    5. Environmental Cost distributed between minimum of $35.09 and maximum of $59.07MM:
       1. Leak cost between minimum of $0.22 and maximum of $0.36MM
       2. Leak spill volume between a minimum of 2036.73 and maximum of 2042.5 gallons
       3. Rupture cost between minimum of $103.61 and maximum of $174.40MM
       4. Rupture spill volume is between a minimum of 977503.58 and maximum of 980274.33 gallons
       5. Puncture cost between minimum of $7.09 and maximum of $11.94MM
       6. Puncture spill volume is between a minimum of 66922.21 and maximum of 67111.9 gallons
       7. Land use distributed as
          1. Remote: 36.39
          2. Water Course: 23.41
12. "NPS12 Medicine River Jct to Sundre From 9-27-39-3-W5 To 16-8-34-5-W5
    1. Total Cumulative Length (m): 59.66
    2. Likelihood of failure distributed between minimum of 1.110e-03 and maximum of 1.110e-03.
       1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
       2. Girth weld type of Unknown
       3. Geotechnical hazard POF between minimum of nan and maximum of nan
       4. Geotechnical hazard ID of nan
       5. Hydrotechnical hazard POF between minimum of 9.000e-04 and maximum of 9.000e-04
       6. Hydrotechnical hazard ID of nan, 4394.0
    3. Consequence of failure distributed between minimum of $22.29 and maximum of $29.60MM
    4. Total length driven by Safety: 59.66 meters.
    5. Safety Cost distributed between minimum of $17.43 and maximum of $23.79MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 55.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 3.95 and maximum of 3.95 meters.
       4. Rupture cost between minimum of $55.88 and maximum of $55.88MM
       5. Rupture scenario yielded 97.0 intersections with structures, with minimum of 5.82 and maximum of 5.82 of population impacted
       6. Rupture hazard radius distributed between minimum of 76.25 and maximum of 76.25 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
       8. Puncture scenario yielded 80.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
       9. Puncture hazard radius distributed between minimum of 15.77 and maximum of 15.77 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 2.0.
13. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5
    1. Total Cumulative Length (m): 30.0
    2. Likelihood of failure distributed between minimum of 1.671e-03 and maximum of 1.671e-03.
       1. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
       2. Girth weld type of Unknown
       3. Geotechnical hazard POF between minimum of nan and maximum of nan
       4. Geotechnical hazard ID of nan
       5. Hydrotechnical hazard POF between minimum of 1.500e-03 and maximum of 1.500e-03
       6. Hydrotechnical hazard ID of nan, 1041.0
    3. Consequence of failure distributed between minimum of $39.58 and maximum of $66.05MM
    4. Total length driven by Environmental: 30.0 meters.
    5. Environmental Cost distributed between minimum of $38.95 and maximum of $65.39MM:
       1. Leak cost between minimum of $0.22 and maximum of $0.37MM
       2. Leak spill volume between a minimum of 2093.25 and maximum of 2099.49 gallons
       3. Rupture cost between minimum of $106.48 and maximum of $178.74MM
       4. Rupture spill volume is between a minimum of 1004629.51 and maximum of 1007625.77 gallons
       5. Puncture cost between minimum of $7.29 and maximum of $12.24MM
       6. Puncture spill volume is between a minimum of 68779.31 and maximum of 68984.44 gallons
       7. Land use distributed as
          1. Forested: 26.02
          2. Water Course: 3.98
14. "SUNDRE TO BENTLEY NPS 8
    1. Total Cumulative Length (m): 30.0
    2. Likelihood of failure distributed between minimum of 1.043e-03 and maximum of 1.043e-03.
       1. Installation date between minimum of 1962-01-01 and maximum of 1962-01-01
       2. Girth weld type of Unknown
       3. Geotechnical hazard POF between minimum of nan and maximum of nan
       4. Geotechnical hazard ID of nan
       5. Hydrotechnical hazard POF between minimum of 8.400e-04 and maximum of 8.400e-04
       6. Hydrotechnical hazard ID of nan, 478.0
    3. Consequence of failure distributed between minimum of $26.42 and maximum of $28.69MM
    4. Total length driven by Safety: 30.0 meters.
    5. Safety Cost distributed between minimum of $22.07 and maximum of $22.55MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 40.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 20.4 and maximum of 20.4 meters.
       4. Rupture cost between minimum of $43.78 and maximum of $43.78MM
       5. Rupture scenario yielded 132.0 intersections with structures, with minimum of 4.56 and maximum of 4.56 of population impacted
       6. Rupture hazard radius distributed between minimum of 135.46 and maximum of 135.46 meters.
       7. Puncture cost between minimum of $21.89 and maximum of $21.89MM
       8. Puncture scenario yielded 98.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 55.42 and maximum of 55.42 meters.
       10. Product type is Butane/Condensate.
       11. Class area location is/are 1.0.
15. "PINCHER CREEK TO CARWAY NPS 12
    1. Total Cumulative Length (m): 1.62
    2. Likelihood of failure distributed between minimum of 1.820e-03 and maximum of 1.820e-03.
       1. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
       2. Girth weld type of Unknown
       3. Geotechnical hazard POF between minimum of 1.500e-03 and maximum of 1.500e-03
       4. Geotechnical hazard ID of 1079.0
       5. Hydrotechnical hazard POF between minimum of 2.300e-05 and maximum of 2.300e-05
       6. Hydrotechnical hazard ID of nan, 603.0
    3. Consequence of failure distributed between minimum of $15.60 and maximum of $15.61MM
    4. Total length driven by Environmental: 1.62 meters.
    5. Environmental Cost distributed between minimum of $14.53 and maximum of $14.67MM:
       1. Leak cost between minimum of $0.43 and maximum of $0.43MM
       2. Leak spill volume between a minimum of 2426.89 and maximum of 2428.0 gallons
       3. Rupture cost between minimum of $28.79 and maximum of $28.79MM
       4. Rupture spill volume is between a minimum of 161827.35 and maximum of 161827.35 gallons
       5. Puncture cost between minimum of $14.19 and maximum of $14.19MM
       6. Puncture spill volume is between a minimum of 79742.24 and maximum of 79778.59 gallons
       7. Land use distributed as
          1. Agricultural: 0.25
          2. Water Course: 1.37
16. "HARMATTAN TO SUNDRE NPS 6
    1. Total Cumulative Length (m): 0.001
    2. Likelihood of failure distributed between minimum of 1.570e-03 and maximum of 1.570e-03.
       1. Installation date between minimum of 1962-01-01 and maximum of 1962-01-01
       2. Girth weld type of Unknown
       3. Geotechnical hazard POF between minimum of 6.985e-04 and maximum of 6.985e-04
       4. Geotechnical hazard ID of 9087.0
       5. Hydrotechnical hazard POF between minimum of 1.400e-06 and maximum of 1.400e-06
       6. Hydrotechnical hazard ID of 768.0
    3. Consequence of failure distributed between minimum of $13.67 and maximum of $13.67MM
    4. Total length driven by Environmental: 0.001 meters.
    5. Environmental Cost distributed between minimum of $13.20 and maximum of $13.20MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.18MM
       2. Leak spill volume between a minimum of 2156.53 and maximum of 2156.53 gallons
       3. Rupture cost between minimum of $50.85 and maximum of $50.85MM
       4. Rupture spill volume is between a minimum of 610654.13 and maximum of 610654.13 gallons
       5. Puncture cost between minimum of $5.90 and maximum of $5.90MM
       6. Puncture spill volume is between a minimum of 70858.78 and maximum of 70858.78 gallons
       7. Land use distributed as
          1. Agricultural: 0.001

| Pipeline Name | Geotechnical Hazard ID | Begin Measure (m) | End Measure (m) | Length (m) |
| --- | --- | --- | --- | --- |
| RAINBOW LAKE TO CADOTTE NPS 20 | 258 | 176,197.76 | 177,477.85 | 1,280.09 |
| UTIKUMA TO EDMONTON NPS 24 | 4285 | 43,988.49 | 44,504.26 | 515.77 |
| UNITY TO LONE ROCK NPS 4 | 511 | 71,590.41 | 72,005.90 | 415.49 |
| LONE ROCK TO KERROBERT NPS 10 | 3247 | 6,473.39 | 6,842.09 | 368.70 |
| UTIKUMA TO EDMONTON NPS 24 | 311 | 94,320.40 | 94,587.89 | 267.49 |
| NPS6 Station 8 to Buck Creek Frac Plant From 4-5-49-9W5 To 13-24-48-7W | 2428 | 24,965.09 | 25,157.98 | 192.89 |
| NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4 | 514 | 96,878.18 | 97,001.97 | 123.80 |
| SECT 7 MANSON TO RAPID CITY NPS 6 | 7949 | 23,829.81 | 23,938.80 | 108.99 |
| RADIAL LAKE RIVER CROSSING NPS 8 | 2494 | 211.09 | 313.23 | 102.15 |
| ROCKY MOUNTAIN HOUSE TO BRETON NPS 10 | 9102 | 79,476.19 | 79,585.09 | 78.91 |
| ROCKY MOUNTAIN HOUSE TO BRETON NPS 10 | 2310 | 33,454.18 | 33,475.40 | 21.22 |
| SS-39 NPS 8 | 9034 | 6,833.99 | 6,847.77 | 13.78 |
| PINCHER CREEK TO CARWAY NPS 12 | 1079 | 15,189.83 | 15,191.45 | 1.62 |
| HARMATTAN TO SUNDRE NPS 6 | 9087 | 17,698.53 | 17,698.53 | 0.00 |

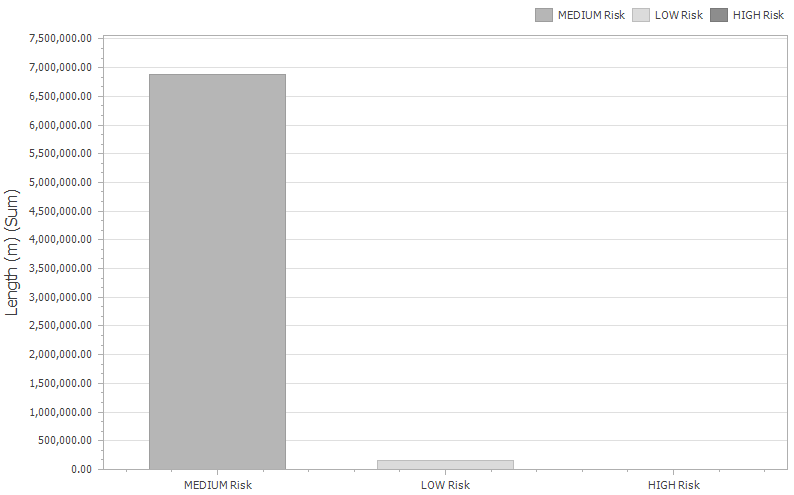
| Pipeline Name | Hydrotechnical Hazard ID | Begin Measure (m) | End Measure (m) | Length (m) |
| --- | --- | --- | --- | --- |
| RAINBOW LAKE TO CADOTTE NPS 20 | 260 | 177,491.00 | 178,141.40 | 650.40 |
| RADIAL LAKE RIVER CROSSING NPS 8 | 1938 | 61.34 | 219.65 | 158.31 |
| CADOTTE LAKE TO UTIKUMA STATION NPS 20 | 5193 | 42,952.81 | 43,102.48 | 149.67 |
| NPS12 Medicine River Jct to Sundre From 9-27-39-3-W5 To 16-8-34-5-W5 | 4394 | 57,600.06 | 57,643.49 | 43.43 |
| ROCKY MOUNTAIN HOUSE TO BRETON NPS 10 | 2820 | 33,415.41 | 33,451.49 | 36.09 |
| SS-39 NPS 8 | 428 | 6,806.77 | 6,830.18 | 23.41 |
| ROCKY MOUNTAIN HOUSE TO BRETON NPS 10 | 1945 | 79,596.03 | 79,603.95 | 7.92 |
| UTIKUMA TO EDMONTON NPS 24 | 1075 | 88,921.31 | 88,926.10 | 4.79 |
| NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5 | 1041 | 5,873.30 | 5,877.28 | 3.98 |
| SUNDRE TO BENTLEY NPS 8 | 478 | 43,468.78 | 43,472.22 | 3.43 |
| PINCHER CREEK TO CARWAY NPS 12 | 603 | 15,190.08 | 15,191.45 | 1.37 |
| UTIKUMA TO EDMONTON NPS 24 | 4258 | 94,570.99 | 94,572.28 | 1.28 |
| HARMATTAN TO SUNDRE NPS 6 | 768 | 17,698.53 | 17,698.53 | 0.00 |

## Natural Forces and Total Consequence

### Assumptions of model

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

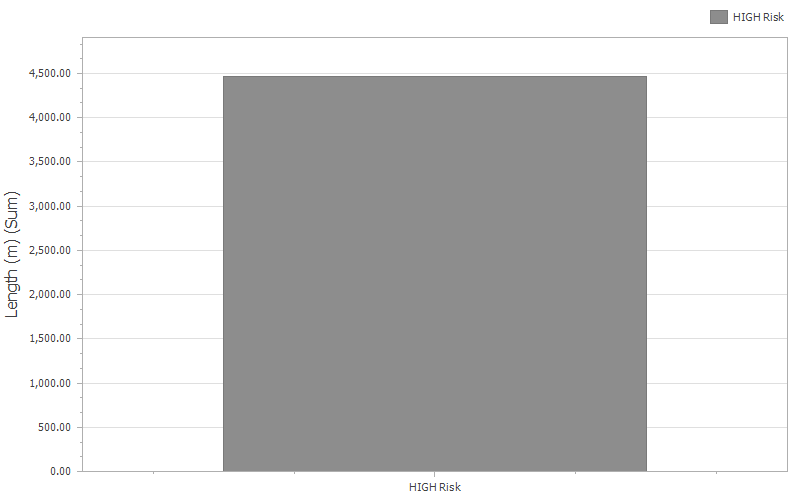


The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  | **Cumulative Length (m)** | | | | |
| --- | --- | --- | --- | --- | --- |
|  | **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| **Construction Threat** | 159,000.30 | 6,871,908.51 | 4,461.07 | 0.00 | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.



### Reportable Pipeline Segments

Natural Forces has 11 pipelines with segments that fall within the safety risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below:

1. "RAINBOW LAKE TO CADOTTE NPS 20
   1. Total Cumulative Length (m): 1979.75
   2. Likelihood of failure distributed between minimum of 4.800e-03 and maximum of 5.300e-02.
      1. Geotechnical hazard POF between minimum of 5.300e-02 and maximum of 5.300e-02
      2. Geotechnical vulnerability between minimum of 2.400e-01 and maximum of 2.400e-01
      3. Geotechnical hazard ID of nan, 258.0
      4. Hydrotechnical hazard POF between minimum of 4.800e-03 and maximum of 4.800e-03
      5. Hydrotechnical vulnerability between minimum of 1.200e-01 and maximum of 1.200e-01
      6. Hydrotechnical hazard ID of nan, 260.0
   3. Consequence of failure distributed between minimum of $3.19 and maximum of $20.17MM
   4. Total length driven by Environmental: 1979.75 meters.
   5. Environmental Cost distributed between minimum of $2.31 and maximum of $18.92MM:
      1. Leak cost between minimum of $0.17 and maximum of $0.30MM
      2. Leak spill volume between a minimum of 1606.02 and maximum of 1675.69 gallons
      3. Rupture cost between minimum of $4.36 and maximum of $37.88MM
      4. Rupture spill volume is between a minimum of 41144.26 and maximum of 212921.56 gallons
      5. Puncture cost between minimum of $5.59 and maximum of $9.80MM
      6. Puncture spill volume is between a minimum of 52770.13 and maximum of 55059.5 gallons
      7. Land use distributed as
         1. Forested: 1,302.96
         2. Water Course: 676.79
2. "UTIKUMA TO EDMONTON NPS 24
   1. Total Cumulative Length (m): 844.83
   2. Likelihood of failure distributed between minimum of 1.200e-03 and maximum of 9.000e-03.
      1. Geotechnical hazard POF between minimum of 1.200e-03 and maximum of 9.000e-03
      2. Geotechnical vulnerability between minimum of 9.000e-02 and maximum of 9.900e-02
      3. Geotechnical hazard ID of nan, 4285.0, 311.0
      4. Hydrotechnical hazard POF between minimum of 6.000e-07 and maximum of 6.000e-07
      5. Hydrotechnical vulnerability between minimum of 3.000e-04 and maximum of 3.100e-04
      6. Hydrotechnical hazard ID of nan, 1075.0, 4258.0
   3. Consequence of failure distributed between minimum of $10.68 and maximum of $38.95MM
   4. Total length driven by Environmental: 844.83 meters.
   5. Environmental Cost distributed between minimum of $7.83 and maximum of $36.10MM:
      1. Leak cost between minimum of $0.18 and maximum of $30.72MM
      2. Leak spill volume between a minimum of 1445.44 and maximum of 289833.47 gallons
      3. Rupture cost between minimum of $17.19 and maximum of $65.43MM
      4. Rupture spill volume is between a minimum of 96624.17 and maximum of 446525.9 gallons
      5. Puncture cost between minimum of $5.87 and maximum of $30.72MM
      6. Puncture spill volume is between a minimum of 47493.97 and maximum of 289833.47 gallons
      7. Land use distributed as
         1. Agricultural: 250.11
         2. Forested: 588.55
         3. Water Course: 6.17
3. "UNITY TO LONE ROCK NPS 4
   1. Total Cumulative Length (m): 449.9
   2. Likelihood of failure distributed between minimum of 2.800e-03 and maximum of 2.800e-03.
      1. Geotechnical hazard POF between minimum of 2.800e-03 and maximum of 2.800e-03
      2. Geotechnical vulnerability between minimum of 1.200e-01 and maximum of 1.200e-01
      3. Geotechnical hazard ID of nan, 511.0
      4. Hydrotechnical hazard POF between minimum of nan and maximum of nan
      5. Hydrotechnical vulnerability between minimum of nan and maximum of nan
      6. Hydrotechnical hazard ID of nan
   3. Consequence of failure distributed between minimum of $12.17 and maximum of $17.01MM
   4. Total length driven by Environmental: 449.9 meters.
   5. Environmental Cost distributed between minimum of $11.84 and maximum of $16.63MM:
      1. Leak cost between minimum of $0.21 and maximum of $0.28MM
      2. Leak spill volume between a minimum of 1983.24 and maximum of 2616.27 gallons
      3. Rupture cost between minimum of $27.46 and maximum of $36.23MM
      4. Rupture spill volume is between a minimum of 259100.53 and maximum of 341802.72 gallons
      5. Puncture cost between minimum of $6.91 and maximum of $9.11MM
      6. Puncture spill volume is between a minimum of 65164.85 and maximum of 85964.79 gallons
      7. Land use distributed as
         1. Agricultural: 116.50
         2. Remote: 333.40
4. "LONE ROCK TO KERROBERT NPS 10
   1. Total Cumulative Length (m): 396.12
   2. Likelihood of failure distributed between minimum of 2.800e-03 and maximum of 2.800e-03.
      1. Geotechnical hazard POF between minimum of 2.800e-03 and maximum of 2.800e-03
      2. Geotechnical vulnerability between minimum of 1.200e-01 and maximum of 1.200e-01
      3. Geotechnical hazard ID of 3247.0, nan
      4. Hydrotechnical hazard POF between minimum of nan and maximum of nan
      5. Hydrotechnical vulnerability between minimum of nan and maximum of nan
      6. Hydrotechnical hazard ID of nan
   3. Consequence of failure distributed between minimum of $10.12 and maximum of $12.63MM
   4. Total length driven by Environmental: 396.12 meters.
   5. Environmental Cost distributed between minimum of $9.80 and maximum of $12.29MM:
      1. Leak cost between minimum of $0.19 and maximum of $0.26MM
      2. Leak spill volume between a minimum of 1770.97 and maximum of 2408.19 gallons
      3. Rupture cost between minimum of $19.39 and maximum of $24.69MM
      4. Rupture spill volume is between a minimum of 182898.94 and maximum of 232935.95 gallons
      5. Puncture cost between minimum of $6.17 and maximum of $8.39MM
      6. Puncture spill volume is between a minimum of 58189.98 and maximum of 79127.55 gallons
      7. Land use distributed as
         1. Agricultural: 120.50
         2. Remote: 275.62
5. "RADIAL LAKE RIVER CROSSING NPS 8
   1. Total Cumulative Length (m): 281.86
   2. Likelihood of failure distributed between minimum of 1.200e-03 and maximum of 2.617e-02.
      1. Geotechnical hazard POF between minimum of 1.200e-03 and maximum of 1.200e-03
      2. Geotechnical vulnerability between minimum of 8.400e-03 and maximum of 8.400e-03
      3. Geotechnical hazard ID of nan, 2494.0
      4. Hydrotechnical hazard POF between minimum of 2.500e-02 and maximum of 2.500e-02
      5. Hydrotechnical vulnerability between minimum of 5.600e-02 and maximum of 5.600e-02
      6. Hydrotechnical hazard ID of nan, 1938.0
   3. Consequence of failure distributed between minimum of $20.85 and maximum of $34.60MM
   4. Total length driven by Safety: 225.49 meters.
   5. Safety Cost distributed between minimum of $9.88 and maximum of $22.32MM:
      1. Leak cost between minimum of $0.02 and maximum of $0.02MM
      2. Leak scenario yielded 0.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
      3. Leak hazard radius distributed between minimum of 11.33 and maximum of 11.33 meters.
      4. Rupture cost between minimum of $21.89 and maximum of $43.78MM
      5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 2.28 and maximum of 4.56 of population impacted
      6. Rupture hazard radius distributed between minimum of 144.9 and maximum of 144.9 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
      8. Puncture scenario yielded 2.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
      9. Puncture hazard radius distributed between minimum of 53.01 and maximum of 53.01 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0.
   6. Total length driven by Economic Loss: 56.37 meters.
   7. Economic Loss Cost distributed between minimum of $10.97 and maximum of $12.35MM:
      1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.26 and maximum of $0.30MM
      5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $48,231.06 and maximum of $48,231.06
      7. Rupture cost between minimum of $23.67 and maximum of $23.75MM
      8. Rupture scenario yielded 2.0 intersections with structures, with minimum of $269,868.00 and maximum of $355,118.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $23,147,943.65 and maximum of $23,147,943.65
      10. Puncture cost between minimum of $1.80 and maximum of $2.10MM
      11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $269,868.00 and maximum of $269,868.00 in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $1,584,762.99 and maximum of $1,584,762.99"
6. "NPS6 Station 8 to Buck Creek Frac Plant From 4-5-49-9W5 To 13-24-48-7W
   1. Total Cumulative Length (m): 207.01
   2. Likelihood of failure distributed between minimum of 2.400e-03 and maximum of 2.400e-03.
      1. Geotechnical hazard POF between minimum of 2.400e-03 and maximum of 2.400e-03
      2. Geotechnical vulnerability between minimum of 1.200e-01 and maximum of 1.200e-01
      3. Geotechnical hazard ID of nan, 2428.0
      4. Hydrotechnical hazard POF between minimum of nan and maximum of nan
      5. Hydrotechnical vulnerability between minimum of nan and maximum of nan
      6. Hydrotechnical hazard ID of nan
   3. Consequence of failure distributed between minimum of $31.93 and maximum of $62.91MM
   4. Total length driven by Safety: 207.01 meters.
   5. Safety Cost distributed between minimum of $26.07 and maximum of $57.02MM:
      1. Leak cost between minimum of $0.00 and maximum of $57.02MM
      2. Leak scenario yielded 6.0 intersections with structures, with minimum of 5.94 and maximum of 5.94 of population impacted.
      3. Leak hazard radius distributed between minimum of 10.87 and maximum of 10.87 meters.
      4. Rupture cost between minimum of $57.02 and maximum of $57.02MM
      5. Rupture scenario yielded 29.0 intersections with structures, with minimum of 5.94 and maximum of 5.94 of population impacted
      6. Rupture hazard radius distributed between minimum of 113.48 and maximum of 113.48 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $57.02MM
      8. Puncture scenario yielded 15.0 intersections with structures, with minimum of 5.94 and maximum of 5.94 of population impacted
      9. Puncture hazard radius distributed between minimum of 50.6 and maximum of 50.6 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 2.0.
7. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
   1. Total Cumulative Length (m): 149.99
   2. Likelihood of failure distributed between minimum of 1.700e-02 and maximum of 1.700e-02.
      1. Geotechnical hazard POF between minimum of 1.700e-02 and maximum of 1.700e-02
      2. Geotechnical vulnerability between minimum of 1.800e-02 and maximum of 1.800e-02
      3. Geotechnical hazard ID of nan, 514.0
      4. Hydrotechnical hazard POF between minimum of nan and maximum of nan
      5. Hydrotechnical vulnerability between minimum of nan and maximum of nan
      6. Hydrotechnical hazard ID of nan
   3. Consequence of failure distributed between minimum of $4.54 and maximum of $4.69MM
   4. Total length driven by Environmental: 149.99 meters.
   5. Environmental Cost distributed between minimum of $3.66 and maximum of $3.80MM:
      1. Leak cost between minimum of $0.17 and maximum of $0.17MM
      2. Leak spill volume between a minimum of 1614.2 and maximum of 1625.23 gallons
      3. Rupture cost between minimum of $6.23 and maximum of $6.55MM
      4. Rupture spill volume is between a minimum of 58761.24 and maximum of 61799.14 gallons
      5. Puncture cost between minimum of $5.62 and maximum of $5.66MM
      6. Puncture spill volume is between a minimum of 53038.79 and maximum of 53401.2 gallons
      7. Land use distributed as
         1. Agricultural: 149.99
8. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
   1. Total Cumulative Length (m): 119.98
   2. Likelihood of failure distributed between minimum of 1.600e-03 and maximum of 1.890e-03.
      1. Geotechnical hazard POF between minimum of 1.600e-03 and maximum of 1.600e-03
      2. Geotechnical vulnerability between minimum of 3.200e-02 and maximum of 3.200e-02
      3. Geotechnical hazard ID of nan, 9102.0
      4. Hydrotechnical hazard POF between minimum of 2.900e-04 and maximum of 2.900e-04
      5. Hydrotechnical vulnerability between minimum of 2.900e-03 and maximum of 2.900e-03
      6. Hydrotechnical hazard ID of nan, 1945.0
   3. Consequence of failure distributed between minimum of $13.00 and maximum of $18.70MM
   4. Total length driven by Economic Loss: 119.98 meters.
   5. Economic Loss Cost distributed between minimum of $13.00 and maximum of $18.70MM:
      1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.28 and maximum of $0.34MM
      5. Leak scenario yielded 16.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $59,691.29 and maximum of $59,691.29
      7. Rupture cost between minimum of $44.72 and maximum of $44.78MM
      8. Rupture scenario yielded 105.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $44,503,622.40 and maximum of $44,503,622.40
      10. Puncture cost between minimum of $2.18 and maximum of $2.24MM
      11. Puncture scenario yielded 60.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture Product Loss costs between minimum of $1,961,320.39 and maximum of $1,961,320.39"
9. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5
   1. Total Cumulative Length (m): 30.0
   2. Likelihood of failure distributed between minimum of 1.500e-03 and maximum of 1.500e-03.
      1. Geotechnical hazard POF between minimum of nan and maximum of nan
      2. Geotechnical vulnerability between minimum of nan and maximum of nan
      3. Geotechnical hazard ID of nan
      4. Hydrotechnical hazard POF between minimum of 1.500e-03 and maximum of 1.500e-03
      5. Hydrotechnical vulnerability between minimum of 1.500e-03 and maximum of 1.500e-03
      6. Hydrotechnical hazard ID of nan, 1041.0
   3. Consequence of failure distributed between minimum of $39.58 and maximum of $66.05MM
   4. Total length driven by Environmental: 30.0 meters.
   5. Environmental Cost distributed between minimum of $38.95 and maximum of $65.39MM:
      1. Leak cost between minimum of $0.22 and maximum of $0.37MM
      2. Leak spill volume between a minimum of 2093.25 and maximum of 2099.49 gallons
      3. Rupture cost between minimum of $106.48 and maximum of $178.74MM
      4. Rupture spill volume is between a minimum of 1004629.51 and maximum of 1007625.77 gallons
      5. Puncture cost between minimum of $7.29 and maximum of $12.24MM
      6. Puncture spill volume is between a minimum of 68779.31 and maximum of 68984.44 gallons
      7. Land use distributed as
         1. Forested: 26.02
         2. Water Course: 3.98
10. "PINCHER CREEK TO CARWAY NPS 12
    1. Total Cumulative Length (m): 1.62
    2. Likelihood of failure distributed between minimum of 1.533e-03 and maximum of 1.533e-03.
       1. Geotechnical hazard POF between minimum of 1.500e-03 and maximum of 1.500e-03
       2. Geotechnical vulnerability between minimum of 9.300e-03 and maximum of 9.300e-03
       3. Geotechnical hazard ID of 1079.0
       4. Hydrotechnical hazard POF between minimum of 2.300e-05 and maximum of 2.300e-05
       5. Hydrotechnical vulnerability between minimum of 1.800e-03 and maximum of 1.800e-03
       6. Hydrotechnical hazard ID of nan, 603.0
    3. Consequence of failure distributed between minimum of $15.60 and maximum of $15.61MM
    4. Total length driven by Environmental: 1.62 meters.
    5. Environmental Cost distributed between minimum of $14.53 and maximum of $14.67MM:
       1. Leak cost between minimum of $0.43 and maximum of $0.43MM
       2. Leak spill volume between a minimum of 2426.89 and maximum of 2428.0 gallons
       3. Rupture cost between minimum of $28.79 and maximum of $28.79MM
       4. Rupture spill volume is between a minimum of 161827.35 and maximum of 161827.35 gallons
       5. Puncture cost between minimum of $14.19 and maximum of $14.19MM
       6. Puncture spill volume is between a minimum of 79742.24 and maximum of 79778.59 gallons
       7. Land use distributed as
          1. Agricultural: 0.25
          2. Water Course: 1.37
11. "HARMATTAN TO SUNDRE NPS 6
    1. Total Cumulative Length (m): 0.001
    2. Likelihood of failure distributed between minimum of 1.310e-03 and maximum of 1.310e-03.
       1. Geotechnical hazard POF between minimum of 6.985e-04 and maximum of 6.985e-04
       2. Geotechnical vulnerability between minimum of 2.181e-02 and maximum of 2.181e-02
       3. Geotechnical hazard ID of 9087.0
       4. Hydrotechnical hazard POF between minimum of 1.400e-06 and maximum of 1.400e-06
       5. Hydrotechnical vulnerability between minimum of 7.000e-04 and maximum of 7.000e-04
       6. Hydrotechnical hazard ID of 768.0
    3. Consequence of failure distributed between minimum of $13.67 and maximum of $13.67MM
    4. Total length driven by Environmental: 0.001 meters.
    5. Environmental Cost distributed between minimum of $13.20 and maximum of $13.20MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.18MM
       2. Leak spill volume between a minimum of 2156.53 and maximum of 2156.53 gallons
       3. Rupture cost between minimum of $50.85 and maximum of $50.85MM
       4. Rupture spill volume is between a minimum of 610654.13 and maximum of 610654.13 gallons
       5. Puncture cost between minimum of $5.90 and maximum of $5.90MM
       6. Puncture spill volume is between a minimum of 70858.78 and maximum of 70858.78 gallons
       7. Land use distributed as
          1. Agricultural: 0.001

| Pipeline Name | Geotechnical Hazard ID | Begin Measure (m) | End Measure (m) | Length (m) |
| --- | --- | --- | --- | --- |
| RAINBOW LAKE TO CADOTTE NPS 20 | 258 | 176197.763 | 177477.849 | 1280.086 |
| UTIKUMA TO EDMONTON NPS 24 | 4285 | 43988.49 | 44504.259 | 515.769 |
| UNITY TO LONE ROCK NPS 4 | 511 | 71590.41 | 72005.897 | 415.487 |
| LONE ROCK TO KERROBERT NPS 10 | 3247 | 6473.39 | 6842.088 | 368.698 |
| UTIKUMA TO EDMONTON NPS 24 | 311 | 94320.404 | 94587.889 | 267.485 |
| NPS6 Station 8 to Buck Creek Frac Plant From 4-5-49-9W5 To 13-24-48-7W | 2428 | 24965.09 | 25157.977 | 192.887 |
| NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4 | 514 | 96878.175 | 97001.973 | 123.798 |
| RADIAL LAKE RIVER CROSSING NPS 8 | 2494 | 211.087 | 313.234 | 102.147 |
| ROCKY MOUNTAIN HOUSE TO BRETON NPS 10 | 9102 | 79476.192 | 79585.094 | 78.90612289 |
| PINCHER CREEK TO CARWAY NPS 12 | 1079 | 15189.831 | 15191.449 | 1.618 |
| HARMATTAN TO SUNDRE NPS 6 | 9087 | 17698.53 | 17698.531 | 0.001 |

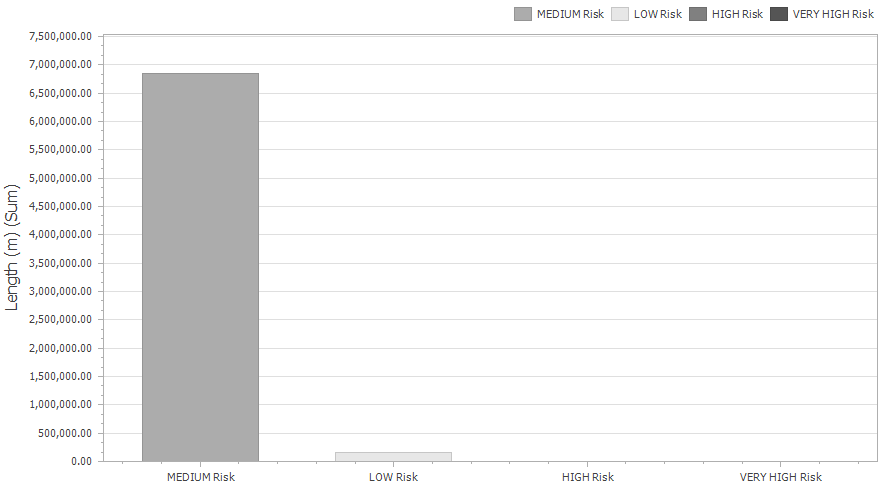
| Pipeline Name | Hydrotechnical Hazard ID | Begin Measure (m) | End Measure (m) | Length (m) |
| --- | --- | --- | --- | --- |
| RAINBOW LAKE TO CADOTTE NPS 20 | 260 | 177490.999 | 178141.404 | 650.405 |
| RADIAL LAKE RIVER CROSSING NPS 8 | 1938 | 61.337 | 219.648 | 158.311 |
| ROCKY MOUNTAIN HOUSE TO BRETON NPS 10 | 1945 | 79596.031 | 79603.948 | 7.917 |
| UTIKUMA TO EDMONTON NPS 24 | 1075 | 88921.314 | 88926.103 | 4.789 |
| NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5 | 1041 | 5873.301 | 5877.28 | 3.979 |
| PINCHER CREEK TO CARWAY NPS 12 | 603 | 15190.081 | 15191.449 | 1.368 |
| UTIKUMA TO EDMONTON NPS 24 | 4258 | 94570.992 | 94572.275 | 1.283 |
| HARMATTAN TO SUNDRE NPS 6 | 768 | 17698.53 | 17698.531 | 0.001 |

## Resident Damage and Total Consequence

### Assumptions of model

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

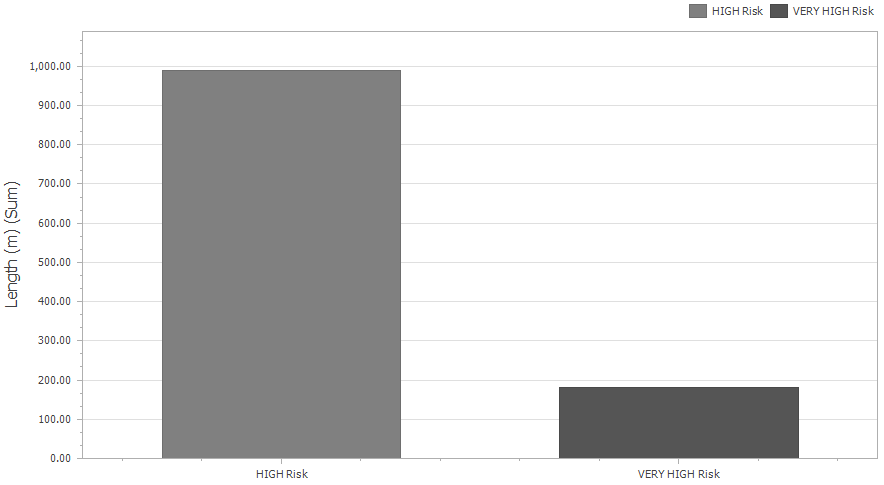


The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  | **Cumulative Length (m)** | | | | |
| --- | --- | --- | --- | --- | --- |
|  | **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| **Resident Damage** | 183,319.76 | 6,850,908.36 | 989.65 | 149.98 | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.



### Reportable Pipeline Segments

Resident Damage has 10 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below.

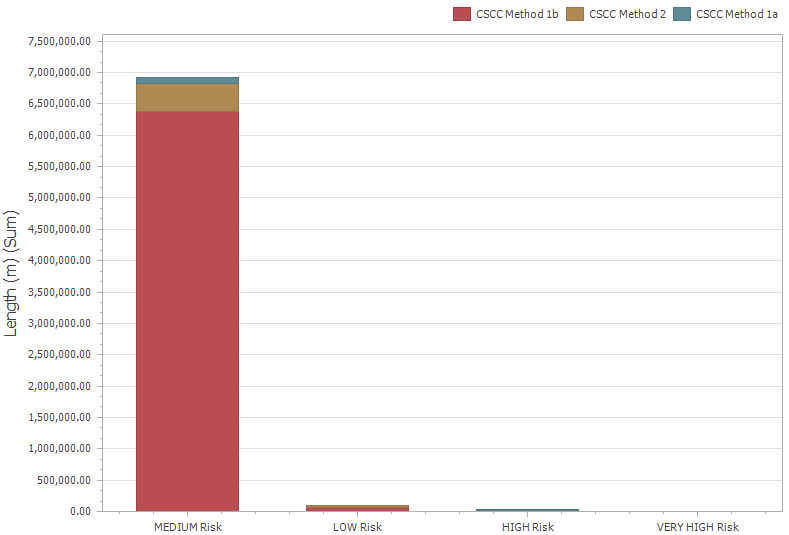
1. "SUNDRE TO HARTELL NPS 12
   1. Total Cumulative Length (m): 509.92
   2. Likelihood of failure distributed between minimum of 1.096e-02 and maximum of 9.559e-01.
      1. ILI Date of 2015-11-16
      2. ILI tool of MFL/Geometry
      3. Features identified 19.0
      4. Depth NPS fraction between 0.022 and 0.063
      5. Length between 107.0 mm and 513.0 mm
      6. Maximum subjected stress between minimum of 6760.0 and maximum of 9930.0 kPa
      7. Equivalent stress cycles at 72%SMYS of 24.0 per year
      8. Pipe installation date between minimum of 1966-01-01 and maximum of 1966-01-01
   3. Consequence of failure distributed between minimum of $1.36 and maximum of $2.81MM
   4. Total length driven by Environmental: 299.95 meters.
   5. Environmental Cost distributed between minimum of $0.51 and maximum of $1.95MM:
      1. Leak cost between minimum of $0.16 and maximum of $0.31MM
      2. Leak spill volume between a minimum of 1538.23 and maximum of 2151.04 gallons
      3. Rupture cost between minimum of $1.40 and maximum of $12.00MM
      4. Rupture spill volume is between a minimum of 13236.64 and maximum of 113222.36 gallons
      5. Puncture cost between minimum of $5.36 and maximum of $10.23MM
      6. Puncture spill volume is between a minimum of 50542.85 and maximum of 70678.39 gallons
      7. Land use distributed as
         1. Agricultural: 401.93
         2. Forested: 106.30
         3. Water Course: 1.69
   6. Total length driven by Economic Loss: 209.97 meters.
   7. Economic Loss Cost distributed between minimum of $0.85 and maximum of $0.99MM:
      1. Repair costs between minimum of $44,000.00 and maximum of $187,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.85 and maximum of $0.99MM
      5. Leak scenario yielded 2697.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,706.71 and maximum of $2,386.63
      7. Rupture cost between minimum of $0.86 and maximum of $1.04MM
      8. Rupture scenario yielded 293.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $14,686.37 and maximum of $125,622.90
      10. Puncture cost between minimum of $0.90 and maximum of $1.05MM
      11. Puncture scenario yielded 752.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $56,078.49 and maximum of $78,419.36"
2. "SPRINGDALE TO ELLERSLIE NPS 16
   1. Total Cumulative Length (m): 179.98
   2. Likelihood of failure distributed between minimum of 4.376e-02 and maximum of 5.573e-01.
      1. ILI Date of 2019-03-25
      2. ILI tool of MFL/Geometry
      3. Features identified 7.0
      4. Depth NPS fraction between 0.016 and 0.051
      5. Length between 90.0 mm and 386.0 mm
      6. Maximum subjected stress between minimum of 8080.0 and maximum of 8080.0 kPa
      7. Equivalent stress cycles at 72%SMYS of 24.0 per year
      8. Pipe installation date between minimum of 1994-01-01 and maximum of 1994-01-01
   3. Consequence of failure distributed between minimum of $1.66 and maximum of $2.35MM
   4. Total length driven by Environmental: 149.98 meters.
   5. Environmental Cost distributed between minimum of $0.81 and maximum of $1.50MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.22MM
      2. Leak spill volume between a minimum of 1711.68 and maximum of 2029.32 gallons
      3. Rupture cost between minimum of $5.47 and maximum of $13.17MM
      4. Rupture spill volume is between a minimum of 51628.26 and maximum of 124256.48 gallons
      5. Puncture cost between minimum of $5.96 and maximum of $7.07MM
      6. Puncture spill volume is between a minimum of 56241.97 and maximum of 66678.95 gallons
      7. Land use distributed as
         1. Agricultural: 179.98
   6. Total length driven by Economic Loss: 30.0 meters.
   7. Economic Loss Cost distributed between minimum of $0.85 and maximum of $0.86MM:
      1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.85 and maximum of $0.85MM
      5. Leak scenario yielded 40.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,899.15 and maximum of $2,251.58
      7. Rupture cost between minimum of $0.90 and maximum of $0.98MM
      8. Rupture scenario yielded 120.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $57,282.78 and maximum of $137,865.52
      10. Puncture cost between minimum of $0.91 and maximum of $0.92MM
      11. Puncture scenario yielded 99.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $62,401.80 and maximum of $73,981.88"
3. "SSPL MAINLINE NPS 16
   1. Total Cumulative Length (m): 120.0
   2. Likelihood of failure distributed between minimum of 4.862e-02 and maximum of 1.298e-01.
      1. ILI Date of 2018-06-26
      2. ILI tool of MFL/Geometry
      3. Features identified 4.0
      4. Depth NPS fraction between 0.025 and 0.033
      5. Length between 149.0 mm and 310.0 mm
      6. Maximum subjected stress between minimum of 7100.0 and maximum of 8900.0 kPa
      7. Equivalent stress cycles at 72%SMYS of 24.0 per year
      8. Pipe installation date between minimum of 1954-01-01 and maximum of 1954-01-01
   3. Consequence of failure distributed between minimum of $1.60 and maximum of $3.53MM
   4. Total length driven by Environmental: 90.0 meters.
   5. Environmental Cost distributed between minimum of $0.74 and maximum of $2.66MM:
      1. Leak cost between minimum of $0.19 and maximum of $0.27MM
      2. Leak spill volume between a minimum of 1760.22 and maximum of 2590.85 gallons
      3. Rupture cost between minimum of $5.20 and maximum of $18.56MM
      4. Rupture spill volume is between a minimum of 49072.63 and maximum of 175105.27 gallons
      5. Puncture cost between minimum of $6.13 and maximum of $9.02MM
      6. Puncture spill volume is between a minimum of 57836.68 and maximum of 85129.35 gallons
      7. Land use distributed as
         1. Agricultural: 30.00
         2. Remote: 90.00
   6. Total length driven by Economic Loss: 30.0 meters.
   7. Economic Loss Cost distributed between minimum of $0.85 and maximum of $0.87MM:
      1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.85 and maximum of $0.85MM
      5. Leak scenario yielded 15703.0 intersections with structures, with minimum of $0.00 and maximum of $0.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,953.00 and maximum of $2,874.61
      7. Rupture cost between minimum of $0.90 and maximum of $1.04MM
      8. Rupture scenario yielded 2642.0 intersections with structures, with minimum of $0.00 and maximum of $0.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $54,447.26 and maximum of $194,283.47
      10. Puncture cost between minimum of $0.91 and maximum of $0.94MM
      11. Puncture scenario yielded 15703.0 intersections with structures, with minimum of $0.00 and maximum of $0.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $64,171.18 and maximum of $94,453.04"
4. "NPS12 Medicine River Jct to Sundre From 9-27-39-3-W5 To 16-8-34-5-W5
   1. Total Cumulative Length (m): 89.97
   2. Likelihood of failure distributed between minimum of 2.679e-02 and maximum of 1.000e+00.
      1. ILI Date of 2016-03-09
      2. ILI tool of MFL/Geometry
      3. Features identified 3.0
      4. Depth NPS fraction between 0.038 and 0.076
      5. Length between 112.0 mm and 198.0 mm
      6. Maximum subjected stress between minimum of 7310.0 and maximum of 8270.0 kPa
      7. Equivalent stress cycles at 72%SMYS of 24.0 per year
      8. Pipe installation date between minimum of 1955-01-01 and maximum of 1955-01-01
   3. Consequence of failure distributed between minimum of $1.40 and maximum of $1.74MM
   4. Total length driven by Environmental: 29.99 meters.
   5. Environmental Cost distributed between minimum of $0.53 and maximum of $0.88MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.20MM
      2. Leak spill volume between a minimum of 1738.72 and maximum of 1915.01 gallons
      3. Rupture cost between minimum of $3.93 and maximum of $6.53MM
      4. Rupture spill volume is between a minimum of 37038.46 and maximum of 61630.77 gallons
      5. Puncture cost between minimum of $6.06 and maximum of $6.67MM
      6. Puncture spill volume is between a minimum of 57130.27 and maximum of 62922.92 gallons
      7. Land use distributed as
         1. Agricultural: 89.97
   6. Total length driven by Economic Loss: 59.98 meters.
   7. Economic Loss Cost distributed between minimum of $0.85 and maximum of $0.87MM:
      1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.85 and maximum of $0.87MM
      5. Leak scenario yielded 55.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,929.15 and maximum of $2,124.75
      7. Rupture cost between minimum of $0.89 and maximum of $0.91MM
      8. Rupture scenario yielded 97.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $41,095.06 and maximum of $68,380.81
      10. Puncture cost between minimum of $0.91 and maximum of $0.93MM
      11. Puncture scenario yielded 80.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $63,387.40 and maximum of $69,814.48"
5. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
   1. Total Cumulative Length (m): 60.0
   2. Likelihood of failure distributed between minimum of 4.828e-02 and maximum of 9.999e-01.
      1. ILI Date of 2018-07-18
      2. ILI tool of MFL/Geometry
      3. Features identified 3.0
      4. Depth NPS fraction between 0.015 and 0.089
      5. Length between 108.0 mm and 1222.0 mm
      6. Maximum subjected stress between minimum of 6750.0 and maximum of 6760.0 kPa
      7. Equivalent stress cycles at 72%SMYS of 24.0 per year
      8. Pipe installation date between minimum of 1966-01-01 and maximum of 1966-01-01
   3. Consequence of failure distributed between minimum of $1.84 and maximum of $2.35MM
   4. Total length driven by Environmental: 60.0 meters.
   5. Environmental Cost distributed between minimum of $0.99 and maximum of $1.36MM:
      1. Leak cost between minimum of $0.17 and maximum of $0.29MM
      2. Leak spill volume between a minimum of 1645.86 and maximum of 1692.82 gallons
      3. Rupture cost between minimum of $5.00 and maximum of $8.67MM
      4. Rupture spill volume is between a minimum of 47216.36 and maximum of 81778.62 gallons
      5. Puncture cost between minimum of $5.73 and maximum of $9.64MM
      6. Puncture spill volume is between a minimum of 54079.39 and maximum of 55622.28 gallons
      7. Land use distributed as
         1. Agricultural: 58.70
         2. Water Course: 1.29
6. "ZAMA TO RAINBOW STATION NPS 20
   1. Total Cumulative Length (m): 59.99
   2. Likelihood of failure distributed between minimum of 2.984e-01 and maximum of 1.000e+00.
      1. ILI Date of 2019-02-14
      2. ILI tool of MFL/Geometry
      3. Features identified 3.0
      4. Depth NPS fraction between 0.018 and 0.055
      5. Length between 317.0 mm and 510.0 mm
      6. Maximum subjected stress between minimum of 5650.0 and maximum of 5650.0 kPa
      7. Equivalent stress cycles at 72%SMYS of 24.0 per year
      8. Pipe installation date between minimum of 1967-01-01 and maximum of 1967-01-01
   3. Consequence of failure distributed between minimum of $1.26 and maximum of $1.63MM
   4. Total length driven by Economic Loss: 59.99 meters.
   5. Economic Loss Cost distributed between minimum of $0.86 and maximum of $0.86MM:
      1. Repair costs between minimum of $57,000.00 and maximum of $57,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.86 and maximum of $0.86MM
      5. Leak scenario yielded 3.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,566.25 and maximum of $1,569.88
      7. Rupture cost between minimum of $0.89 and maximum of $0.93MM
      8. Rupture scenario yielded 13.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $29,172.30 and maximum of $70,179.29
      10. Puncture cost between minimum of $0.91 and maximum of $0.91MM
      11. Puncture scenario yielded 7.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $51,463.29 and maximum of $51,582.78"
7. "UTIKUMA TO EDMONTON NPS 24
   1. Total Cumulative Length (m): 30.0
   2. Likelihood of failure distributed between minimum of 3.303e-01 and maximum of 3.303e-01.
      1. ILI Date of 2017-03-09
      2. ILI tool of MFL/Geometry
      3. Features identified 1.0
      4. Depth NPS fraction between 0.032 and 0.032
      5. Length between 142.0 mm and 142.0 mm
      6. Maximum subjected stress between minimum of 5380.0 and maximum of 5380.0 kPa
      7. Equivalent stress cycles at 72%SMYS of 24.0 per year
      8. Pipe installation date between minimum of 1967-01-01 and maximum of 1967-01-01
   3. Consequence of failure distributed between minimum of $3.79 and maximum of $3.80MM
   4. Total length driven by Economic Loss: 30.0 meters.
   5. Economic Loss Cost distributed between minimum of $2.82 and maximum of $2.82MM:
      1. Repair costs between minimum of $404,000.00 and maximum of $404,000.00.
      2. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $2.81 and maximum of $2.81MM
      5. Leak scenario yielded 644.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,721.44 and maximum of $1,724.05
      7. Rupture cost between minimum of $2.96 and maximum of $2.96MM
      8. Rupture scenario yielded 346.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $157,310.91 and maximum of $157,310.91
      10. Puncture cost between minimum of $2.86 and maximum of $2.86MM
      11. Puncture scenario yielded 730.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $56,562.74 and maximum of $56,648.47"
8. "RAINBOW LAKE TO CADOTTE NPS 20
   1. Total Cumulative Length (m): 30.0
   2. Likelihood of failure distributed between minimum of 1.342e-01 and maximum of 1.342e-01.
      1. ILI Date of 2016-03-05
      2. ILI tool of MFL/Geometry
      3. Features identified 1.0
      4. Depth NPS fraction between 0.029 and 0.029
      5. Length between 238.0 mm and 238.0 mm
      6. Maximum subjected stress between minimum of 7260.0 and maximum of 7260.0 kPa
      7. Equivalent stress cycles at 72%SMYS of 24.0 per year
      8. Pipe installation date between minimum of 1967-01-01 and maximum of 1967-01-01
   3. Consequence of failure distributed between minimum of $3.09 and maximum of $3.09MM
   4. Total length driven by Environmental: 30.0 meters.
   5. Environmental Cost distributed between minimum of $2.21 and maximum of $2.21MM:
      1. Leak cost between minimum of $0.19 and maximum of $0.19MM
      2. Leak spill volume between a minimum of 1769.29 and maximum of 1769.29 gallons
      3. Rupture cost between minimum of $17.89 and maximum of $17.89MM
      4. Rupture spill volume is between a minimum of 168766.61 and maximum of 168766.61 gallons
      5. Puncture cost between minimum of $6.16 and maximum of $6.16MM
      6. Puncture spill volume is between a minimum of 58134.84 and maximum of 58134.84 gallons
      7. Land use distributed as
         1. Agricultural: 30.00
9. "ELLERSLIE TO STRATHCONA NPS 12
   1. Total Cumulative Length (m): 29.98
   2. Likelihood of failure distributed between minimum of 1.798e-02 and maximum of 1.798e-02.
      1. ILI Date of 2016-03-15
      2. ILI tool of MFL/Geometry
      3. Features identified 1.0
      4. Depth NPS fraction between 0.037 and 0.037
      5. Length between 194.0 mm and 194.0 mm
      6. Maximum subjected stress between minimum of 7272.0 and maximum of 7272.0 kPa
      7. Equivalent stress cycles at 72%SMYS of 24.0 per year
      8. Pipe installation date between minimum of 1960-01-01 and maximum of 1960-01-01
   3. Consequence of failure distributed between minimum of $1.36 and maximum of $1.40MM
   4. Total length driven by Economic Loss: 29.98 meters.
   5. Economic Loss Cost distributed between minimum of $0.99 and maximum of $0.99MM:
      1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.99 and maximum of $0.99MM
      5. Leak scenario yielded 90.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,850.91 and maximum of $1,850.91
      7. Rupture cost between minimum of $1.03 and maximum of $1.03MM
      8. Rupture scenario yielded 163.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $40,889.26 and maximum of $40,889.26
      10. Puncture cost between minimum of $1.05 and maximum of $1.05MM
      11. Puncture scenario yielded 187.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $60,816.67 and maximum of $60,816.67"
10. "SS-07 NPS 6
    1. Total Cumulative Length (m): 29.8
    2. Likelihood of failure distributed between minimum of 3.765e-02 and maximum of 3.765e-02.
       1. ILI Date of 2017-05-23
       2. ILI tool of MFL/Geometry
       3. Features identified 1.0
       4. Depth NPS fraction between 0.075 and 0.075
       5. Length between 138.0 mm and 138.0 mm
       6. Maximum subjected stress between minimum of 9825.0 and maximum of 9825.0 kPa
       7. Equivalent stress cycles at 72%SMYS of 24.0 per year
       8. Pipe installation date between minimum of 1965-01-01 and maximum of 1965-01-01
    3. Consequence of failure distributed between minimum of $5.97 and maximum of $6.21MM
    4. Total length driven by Environmental: 29.8 meters.
    5. Environmental Cost distributed between minimum of $5.69 and maximum of $5.94MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1880.05 and maximum of 1880.05 gallons
       3. Rupture cost between minimum of $56.43 and maximum of $56.43MM
       4. Rupture spill volume is between a minimum of 532364.03 and maximum of 532364.03 gallons
       5. Puncture cost between minimum of $6.55 and maximum of $6.55MM
       6. Puncture spill volume is between a minimum of 61774.19 and maximum of 61774.19 gallons
       7. Land use distributed as
          1. Agricultural: 29.80

## Circumferential Stress Corrosion Cracking and Total Consequence

### Assumptions of model

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

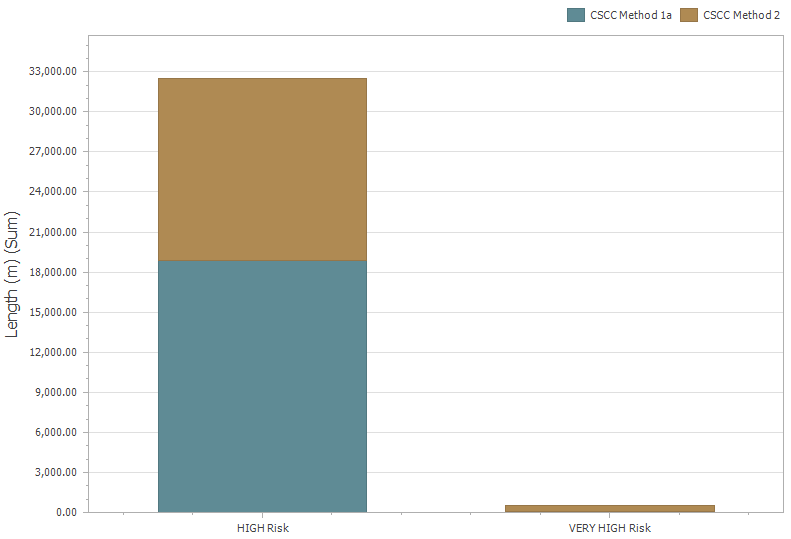


The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **CSCC Method Used** | **Cumulative Length (m)** | | | | |
| **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| Method 1a | 0.00 | 85,072.61 | 18,868.97 | 72.84 | **104,014.43** |
| Method 2 | 22,817.15 | 445,628.44 | 13,602.45 | 445.80 | **482,493.83** |
| Method 1b | 64,973.14 | 6,383,888.47 | 0.00 | 0.00 | **6,448,861.61** |
| **Grand Total** | **87,790.29** | **6,914,589.52** | **32,471.42** | **518.65** | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.



### Reportable Pipeline Segments: CSCC Method 1a

CSCC Method 1a has 36 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below.

1. "SS-15 NPS 6
   1. Total Cumulative Length (m): 5229.36
   2. Likelihood of failure distributed between minimum of 2.002e-02 and maximum of 8.503e-02.
      1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
      2. Mainline coating type of Coal Tar
      3. Wall thickness between minimum of 5.16 and maximum of 7.11 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 4.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $1.63 and maximum of $1.83MM
   4. Total length driven by Environmental: 5229.36 meters.
   5. Environmental Cost distributed between minimum of $1.39 and maximum of $1.59MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.21MM
      2. Leak spill volume between a minimum of 1853.91 and maximum of 1962.4 gallons
      3. Rupture cost between minimum of $55.64 and maximum of $58.90MM
      4. Rupture spill volume is between a minimum of 524962.0 and maximum of 555682.93 gallons
      5. Puncture cost between minimum of $6.46 and maximum of $6.83MM
      6. Puncture spill volume is between a minimum of 60915.28 and maximum of 64480.05 gallons
      7. Land use distributed as
         1. Agricultural: 5,229.36
2. "COED BV 203 TO EST NPS 8
   1. Total Cumulative Length (m): 2259.9
   2. Likelihood of failure distributed between minimum of 3.090e-02 and maximum of 1.312e-01.
      1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
      2. Mainline coating type of Tape
      3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 2.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $5.08 and maximum of $158.72MM
   4. Total length driven by Safety: 1694.93 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $150.03MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $513.60MM
      5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 53.5 of population impacted
      6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $392.54MM
      8. Puncture scenario yielded 46.0 intersections with structures, with minimum of 0.0 and maximum of 40.89 of population impacted
      9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
      10. Product type is Condensate.
      11. Class area location is/are 2.0.
   6. Total length driven by Environmental: 564.97 meters.
   7. Environmental Cost distributed between minimum of $4.66 and maximum of $13.35MM:
      1. Leak cost between minimum of $0.13 and maximum of $0.35MM
      2. Leak spill volume between a minimum of 1973.38 and maximum of 2019.77 gallons
      3. Rupture cost between minimum of $64.53 and maximum of $169.76MM
      4. Rupture spill volume is between a minimum of 947101.66 and maximum of 969363.57 gallons
      5. Puncture cost between minimum of $4.42 and maximum of $11.62MM
      6. Puncture spill volume is between a minimum of 64840.82 and maximum of 66364.92 gallons
      7. Land use distributed as
         1. Commercial/Industrial: 2,256.78
         2. Water Course: 3.12
3. "BATCH TRANSFER LINE NPS 24
   1. Total Cumulative Length (m): 1622.82
   2. Likelihood of failure distributed between minimum of 1.123e-02 and maximum of 4.768e-02.
      1. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
      2. Mainline coating type of Extruded Polyethylene
      3. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 3.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $15.34 and maximum of $164.89MM
   4. Total length driven by Safety: 1217.12 meters.
   5. Safety Cost distributed between minimum of $4.31 and maximum of $128.31MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 32.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 2.91 and maximum of 2.91 meters.
      4. Rupture cost between minimum of $121.06 and maximum of $968.45MM
      5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 100.88 of population impacted
      6. Rupture hazard radius distributed between minimum of 99.14 and maximum of 99.14 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
      8. Puncture scenario yielded 34.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 11.53 and maximum of 11.53 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 405.7 meters.
   7. Environmental Cost distributed between minimum of $7.72 and maximum of $13.50MM:
      1. Leak cost between minimum of $0.06 and maximum of $0.06MM
      2. Leak spill volume between a minimum of 850.32 and maximum of 883.99 gallons
      3. Rupture cost between minimum of $215.31 and maximum of $223.83MM
      4. Rupture spill volume is between a minimum of 3159898.85 and maximum of 3285013.13 gallons
      5. Puncture cost between minimum of $1.90 and maximum of $1.98MM
      6. Puncture spill volume is between a minimum of 27939.64 and maximum of 29045.89 gallons
      7. Land use distributed as
         1. Commercial/Industrial: 1,622.82
4. "NPS4 SS-35 From 5-34-11-19-W3 To 5-35-11-19-W3
   1. Total Cumulative Length (m): 1532.63
   2. Likelihood of failure distributed between minimum of 1.297e-02 and maximum of 5.510e-02.
      1. Installation date between minimum of 1968-01-01 and maximum of 1968-01-01
      2. Mainline coating type of Extruded Polyethylene
      3. Wall thickness between minimum of 3.17 and maximum of 3.17 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 2.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $1.17 and maximum of $1.22MM
   4. Total length driven by Environmental: 1532.63 meters.
   5. Environmental Cost distributed between minimum of $0.96 and maximum of $0.98MM:
      1. Leak cost between minimum of $0.16 and maximum of $0.17MM
      2. Leak spill volume between a minimum of 1545.39 and maximum of 1577.19 gallons
      3. Rupture cost between minimum of $21.40 and maximum of $21.84MM
      4. Rupture spill volume is between a minimum of 201897.55 and maximum of 206051.63 gallons
      5. Puncture cost between minimum of $5.38 and maximum of $5.49MM
      6. Puncture spill volume is between a minimum of 50778.06 and maximum of 51822.83 gallons
      7. Land use distributed as
         1. Agricultural: 1,532.63
5. "NPS20 ENBRIDGE CONDENSATE TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
   1. Total Cumulative Length (m): 1144.92
   2. Likelihood of failure distributed between minimum of 2.674e-02 and maximum of 1.136e-01.
      1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
      2. Mainline coating type of Tape
      3. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 1.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $7.91 and maximum of $12.14MM
   4. Total length driven by Environmental: 1144.92 meters.
   5. Environmental Cost distributed between minimum of $6.86 and maximum of $8.60MM:
      1. Leak cost between minimum of $0.06 and maximum of $0.06MM
      2. Leak spill volume between a minimum of 529.42 and maximum of 541.3 gallons
      3. Rupture cost between minimum of $144.81 and maximum of $148.06MM
      4. Rupture spill volume is between a minimum of 1366242.13 and maximum of 1396891.33 gallons
      5. Puncture cost between minimum of $1.84 and maximum of $1.89MM
      6. Puncture spill volume is between a minimum of 17395.54 and maximum of 17785.77 gallons
      7. Land use distributed as
         1. Agricultural: 474.19
         2. Remote: 670.73
6. "NPS20 ENBRIDGE BLEND TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
   1. Total Cumulative Length (m): 896.89
   2. Likelihood of failure distributed between minimum of 1.123e-02 and maximum of 4.768e-02.
      1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
      2. Mainline coating type of Yellow Jacket
      3. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 1.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $4.34 and maximum of $7.77MM
   4. Total length driven by Environmental: 896.89 meters.
   5. Environmental Cost distributed between minimum of $3.14 and maximum of $6.82MM:
      1. Leak cost between minimum of $0.03 and maximum of $0.05MM
      2. Leak spill volume between a minimum of 501.53 and maximum of 510.83 gallons
      3. Rupture cost between minimum of $89.82 and maximum of $139.73MM
      4. Rupture spill volume is between a minimum of 1294263.27 and maximum of 1318272.77 gallons
      5. Puncture cost between minimum of $1.14 and maximum of $1.78MM
      6. Puncture spill volume is between a minimum of 16479.07 and maximum of 16784.77 gallons
      7. Land use distributed as
         1. Agricultural: 430.45
         2. Commercial/Industrial: 97.02
         3. Remote: 369.42
7. "16-19-037-03W5 TO 10-19-037-03W5 NPS 4
   1. Total Cumulative Length (m): 761.03
   2. Likelihood of failure distributed between minimum of 1.733e-02 and maximum of 1.733e-02.
      1. Installation date between minimum of 1991-01-01 and maximum of 1991-01-01
      2. Mainline coating type of Unknown
      3. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 0.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $1.65 and maximum of $1.66MM
   4. Total length driven by Environmental: 761.03 meters.
   5. Environmental Cost distributed between minimum of $1.41 and maximum of $1.43MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.20MM
      2. Leak spill volume between a minimum of 1854.82 and maximum of 1869.87 gallons
      3. Rupture cost between minimum of $25.68 and maximum of $25.89MM
      4. Rupture spill volume is between a minimum of 242322.23 and maximum of 244289.53 gallons
      5. Puncture cost between minimum of $6.46 and maximum of $6.51MM
      6. Puncture spill volume is between a minimum of 60945.04 and maximum of 61439.82 gallons
      7. Land use distributed as
         1. Agricultural: 761.03
8. "16 EST to Enbridge 7-5-53-23W4 to 2-5-53-23W4
   1. Total Cumulative Length (m): 482.65
   2. Likelihood of failure distributed between minimum of 9.715e-03 and maximum of 9.715e-03.
      1. Installation date between minimum of 1979-01-01 and maximum of 1979-01-01
      2. Mainline coating type of Yellow Jacket
      3. Wall thickness between minimum of 5.6 and maximum of 5.6 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 0.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $125.09 and maximum of $125.43MM
   4. Total length driven by Safety: 482.65 meters.
   5. Safety Cost distributed between minimum of $120.27 and maximum of $120.61MM:
      1. Leak cost between minimum of $121.06 and maximum of $121.06MM
      2. Leak scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 9.03 and maximum of 9.03 meters.
      4. Rupture cost between minimum of $121.06 and maximum of $133.16MM
      5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 12.61 and maximum of 13.87 of population impacted
      6. Rupture hazard radius distributed between minimum of 178.36 and maximum of 178.36 meters.
      7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
      8. Puncture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 28.91 and maximum of 28.91 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0.
9. "Sarnia 6 inch tied into 6 inch E/P line
   1. Total Cumulative Length (m): 469.08
   2. Likelihood of failure distributed between minimum of 7.275e-03 and maximum of 3.090e-02.
      1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
      2. Mainline coating type of Yellow Jacket
      3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 2.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $12.56 and maximum of $12.64MM
   4. Total length driven by Safety: 469.08 meters.
   5. Safety Cost distributed between minimum of $11.97 and maximum of $12.04MM:
      1. Leak cost between minimum of $12.11 and maximum of $12.11MM
      2. Leak scenario yielded 40.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
      4. Rupture cost between minimum of $12.11 and maximum of $24.21MM
      5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 1.26 and maximum of 2.52 of population impacted
      6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
      7. Puncture cost between minimum of $12.11 and maximum of $12.11MM
      8. Puncture scenario yielded 47.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0.
10. "C3 FROM ESSO NPS 6
    1. Total Cumulative Length (m): 433.94
    2. Likelihood of failure distributed between minimum of 7.821e-03 and maximum of 1.221e-01.
       1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       2. Mainline coating type of Single-wrap Tape, Yellow Jacket, Liquid Epoxy
       3. Wall thickness between minimum of 4.8 and maximum of 7.1 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 5.0
       7. Count of water crossings is 2.0
    3. Consequence of failure distributed between minimum of $0.31 and maximum of $15.29MM
    4. Total length driven by Safety: 401.69 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $14.71MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 15.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 9.02 and maximum of 9.02 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $398.23MM
       5. Rupture scenario yielded 18.0 intersections with structures, with minimum of 0.0 and maximum of 41.48 of population impacted
       6. Rupture hazard radius distributed between minimum of 91.99 and maximum of 91.99 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 28.89 and maximum of 28.89 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 32.26 meters.
    7. Economic Loss Cost distributed between minimum of $0.29 and maximum of $0.58MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.24 and maximum of $0.50MM
       5. Leak scenario yielded 15.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $24,336.15 and maximum of $24,336.15
       7. Rupture cost between minimum of $7.13 and maximum of $11.97MM
       8. Rupture scenario yielded 18.0 intersections with structures, with minimum of $25,000.00 and maximum of $4,871,372.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $6,891,140.89 and maximum of $6,891,140.89
       10. Puncture cost between minimum of $1.01 and maximum of $1.28MM
       11. Puncture scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $799,630.73 and maximum of $799,630.73"
11. "EDS OPERATIVE NPS 12
    1. Total Cumulative Length (m): 409.09
    2. Likelihood of failure distributed between minimum of 1.123e-02 and maximum of 1.123e-02.
       1. Installation date between minimum of 1974-01-01 and maximum of 1974-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 6.22 and maximum of 6.22 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.30 and maximum of $1.40MM
    4. Total length driven by Economic Loss: 409.09 meters.
    5. Economic Loss Cost distributed between minimum of $0.92 and maximum of $0.99MM:
       1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.89 and maximum of $0.89MM
       5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $44,566.23 and maximum of $44,566.23
       7. Rupture cost between minimum of $47.58 and maximum of $48.15MM
       8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $318,825.00 and maximum of $562,650.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $46,740,539.02 and maximum of $46,740,539.02
       10. Puncture cost between minimum of $2.31 and maximum of $2.31MM
       11. Puncture scenario yielded 1.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $1,464,345.16 and maximum of $1,464,345.16"
12. "Access C5 Line 36
    1. Total Cumulative Length (m): 404.28
    2. Likelihood of failure distributed between minimum of 1.612e-02 and maximum of 6.845e-02.
       1. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
       2. Mainline coating type of Double Wrap Polyken
       3. Wall thickness between minimum of 7.09 and maximum of 7.09 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.47 and maximum of $1.60MM
    4. Total length driven by Environmental: 404.28 meters.
    5. Environmental Cost distributed between minimum of $1.21 and maximum of $1.24MM:
       1. Leak cost between minimum of $0.13 and maximum of $0.14MM
       2. Leak spill volume between a minimum of 1973.44 and maximum of 1981.77 gallons
       3. Rupture cost between minimum of $38.08 and maximum of $38.24MM
       4. Rupture spill volume is between a minimum of 558809.69 and maximum of 561166.98 gallons
       5. Puncture cost between minimum of $4.42 and maximum of $4.44MM
       6. Puncture spill volume is between a minimum of 64842.88 and maximum of 65116.41 gallons
       7. Land use distributed as
          1. Commercial/Industrial: 404.28
13. "Access C5 Line 37
    1. Total Cumulative Length (m): 404.14
    2. Likelihood of failure distributed between minimum of 1.612e-02 and maximum of 6.845e-02.
       1. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
       2. Mainline coating type of Double Wrap Polyken
       3. Wall thickness between minimum of 7.09 and maximum of 7.09 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.47 and maximum of $1.60MM
    4. Total length driven by Environmental: 404.14 meters.
    5. Environmental Cost distributed between minimum of $1.21 and maximum of $1.24MM:
       1. Leak cost between minimum of $0.13 and maximum of $0.14MM
       2. Leak spill volume between a minimum of 1973.44 and maximum of 1981.77 gallons
       3. Rupture cost between minimum of $38.08 and maximum of $38.24MM
       4. Rupture spill volume is between a minimum of 558809.69 and maximum of 561166.19 gallons
       5. Puncture cost between minimum of $4.42 and maximum of $4.44MM
       6. Puncture spill volume is between a minimum of 64842.88 and maximum of 65116.32 gallons
       7. Land use distributed as
          1. Commercial/Industrial: 404.14
14. "ESSO ETHANE NPS 6
    1. Total Cumulative Length (m): 349.73
    2. Likelihood of failure distributed between minimum of 7.275e-03 and maximum of 3.090e-02.
       1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 2.0
       7. Count of water crossings is 1.0
    3. Consequence of failure distributed between minimum of $1.42 and maximum of $15.39MM
    4. Total length driven by Safety: 349.73 meters.
    5. Safety Cost distributed between minimum of $1.05 and maximum of $14.76MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 10.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
       4. Rupture cost between minimum of $145.27 and maximum of $456.43MM
       5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 15.13 and maximum of 47.54 of population impacted
       6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $221.29MM
       8. Puncture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 23.05 of population impacted
       9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 2.0.
15. "NIPISI 11-02 TO 14-02 NPS 16
    1. Total Cumulative Length (m): 339.6
    2. Likelihood of failure distributed between minimum of 1.733e-02 and maximum of 1.733e-02.
       1. Installation date between minimum of 1996-08-01 and maximum of 1996-08-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.28 and maximum of $1.67MM
    4. Total length driven by Economic Loss: 339.6 meters.
    5. Economic Loss Cost distributed between minimum of $0.86 and maximum of $0.87MM:
       1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is Crude Oil.
       4. Leak cost between minimum of $0.87 and maximum of $0.87MM
       5. Leak scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $903.67 and maximum of $907.58
       7. Rupture cost between minimum of $2.39 and maximum of $2.44MM
       8. Rupture scenario yielded 5.0 intersections with structures, with minimum of $50,000.00 and maximum of $100,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $1,492,510.39 and maximum of $1,498,965.83
       10. Puncture cost between minimum of $0.90 and maximum of $0.92MM
       11. Puncture scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $29,692.55 and maximum of $29,820.98"
16. "14-02 to 12-02 NPS 24
    1. Total Cumulative Length (m): 317.4
    2. Likelihood of failure distributed between minimum of 1.733e-02 and maximum of 1.733e-02.
       1. Installation date between minimum of 1998-01-01 and maximum of 1998-01-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $11.88 and maximum of $11.95MM
    4. Total length driven by Environmental: 317.4 meters.
    5. Environmental Cost distributed between minimum of $9.30 and maximum of $9.37MM:
       1. Leak cost between minimum of $0.09 and maximum of $0.09MM
       2. Leak spill volume between a minimum of 825.78 and maximum of 832.0 gallons
       3. Rupture cost between minimum of $325.26 and maximum of $327.70MM
       4. Rupture spill volume is between a minimum of 3068711.06 and maximum of 3091803.54 gallons
       5. Puncture cost between minimum of $2.88 and maximum of $2.90MM
       6. Puncture spill volume is between a minimum of 27133.36 and maximum of 27337.55 gallons
       7. Land use distributed as
          1. Agricultural: 317.40
17. "BUCK CREEK TO STATION 1 NPS 3
    1. Total Cumulative Length (m): 259.22
    2. Likelihood of failure distributed between minimum of 1.733e-02 and maximum of 7.358e-02.
       1. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 2.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.21 and maximum of $122.64MM
    4. Total length driven by Safety: 259.22 meters.
    5. Safety Cost distributed between minimum of $0.88 and maximum of $119.66MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 5.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.7 and maximum of 11.7 meters.
       4. Rupture cost between minimum of $121.06 and maximum of $121.06MM
       5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 57.3 and maximum of 57.3 meters.
       7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
       8. Puncture scenario yielded 8.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 42.7 and maximum of 42.7 meters.
       10. Product type is Ethane.
       11. Class area location is/are 1.0.
18. "SS-27 NPS 4
    1. Total Cumulative Length (m): 201.64
    2. Likelihood of failure distributed between minimum of 2.314e-02 and maximum of 2.314e-02.
       1. Installation date between minimum of 1956-01-01 and maximum of 1956-01-01
       2. Mainline coating type of Coal Tar
       3. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.13 and maximum of $2.23MM
    4. Total length driven by Environmental: 201.64 meters.
    5. Environmental Cost distributed between minimum of $0.90 and maximum of $2.00MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1861.88 and maximum of 1861.88 gallons
       3. Rupture cost between minimum of $25.78 and maximum of $25.78MM
       4. Rupture spill volume is between a minimum of 243245.68 and maximum of 243245.68 gallons
       5. Puncture cost between minimum of $6.48 and maximum of $6.48MM
       6. Puncture spill volume is between a minimum of 61177.29 and maximum of 61177.29 gallons
       7. Land use distributed as
          1. Agricultural: 201.64
19. "PETRO VERA TO LONE ROCK NPS 8
    1. Total Cumulative Length (m): 198.84
    2. Likelihood of failure distributed between minimum of 2.674e-02 and maximum of 1.136e-01.
       1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       2. Mainline coating type of Tape
       3. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.34 and maximum of $13.31MM
    4. Total length driven by Safety: 82.62 meters.
    5. Safety Cost distributed between minimum of $0.34 and maximum of $12.03MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 2.28 and maximum of 2.28 meters.
       4. Rupture cost between minimum of $12.11 and maximum of $12.11MM
       5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 30.46 and maximum of 30.46 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 8.99 and maximum of 8.99 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 116.21 meters.
    7. Environmental Cost distributed between minimum of $0.77 and maximum of $0.81MM:
       1. Leak cost between minimum of $0.05 and maximum of $0.05MM
       2. Leak spill volume between a minimum of 492.74 and maximum of 497.38 gallons
       3. Rupture cost between minimum of $25.07 and maximum of $25.30MM
       4. Rupture spill volume is between a minimum of 236487.22 and maximum of 238712.16 gallons
       5. Puncture cost between minimum of $1.72 and maximum of $1.73MM
       6. Puncture spill volume is between a minimum of 16190.47 and maximum of 16342.8 gallons
       7. Land use distributed as
          1. Agricultural: 198.84
20. "NPS4 ENBRIDGE TRANSFER from 2-34-33-22W3 to 10-34-33-22W3
    1. Total Cumulative Length (m): 164.18
    2. Likelihood of failure distributed between minimum of 1.123e-02 and maximum of 4.768e-02.
       1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.00 and maximum of $1.37MM
    4. Total length driven by Environmental: 164.18 meters.
    5. Environmental Cost distributed between minimum of $0.76 and maximum of $1.12MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1935.35 and maximum of 1935.35 gallons
       3. Rupture cost between minimum of $26.80 and maximum of $26.80MM
       4. Rupture spill volume is between a minimum of 252844.1 and maximum of 252844.1 gallons
       5. Puncture cost between minimum of $6.74 and maximum of $6.74MM
       6. Puncture spill volume is between a minimum of 63591.33 and maximum of 63591.33 gallons
       7. Land use distributed as
          1. Agricultural: 164.18
21. "SPEED CORNER TO FORT SASKATCHEWAN INLET (KEYSPAN) NPS 16
    1. Total Cumulative Length (m): 137.97
    2. Likelihood of failure distributed between minimum of 3.090e-02 and maximum of 6.367e-02.
       1. Installation date between minimum of 1995-01-01 and maximum of 1995-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 5.56 and maximum of 10.31 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: Y, nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.43 and maximum of $1.59MM
    4. Total length driven by Economic Loss: 137.97 meters.
    5. Economic Loss Cost distributed between minimum of $1.43 and maximum of $1.59MM:
       1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $1.02 and maximum of $1.10MM
       5. Leak scenario yielded 15.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $35,177.42 and maximum of $35,177.42
       7. Rupture cost between minimum of $59.11 and maximum of $59.26MM
       8. Rupture scenario yielded 8.0 intersections with structures, with minimum of $25,000.00 and maximum of $175,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $58,099,358.13 and maximum of $58,099,358.13
       10. Puncture cost between minimum of $2.14 and maximum of $2.27MM
       11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $100,000.00 and maximum of $125,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $1,155,850.00 and maximum of $1,155,850.00"
22. "SS-28 NPS 4
    1. Total Cumulative Length (m): 128.4
    2. Likelihood of failure distributed between minimum of 2.314e-02 and maximum of 2.314e-02.
       1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
       2. Mainline coating type of Coal Tar
       3. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.49 and maximum of $3.37MM
    4. Total length driven by Environmental: 128.4 meters.
    5. Environmental Cost distributed between minimum of $1.27 and maximum of $3.11MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 1859.61 gallons
       3. Rupture cost between minimum of $25.67 and maximum of $25.75MM
       4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242948.7 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.48MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61102.6 gallons
       7. Land use distributed as
          1. Agricultural: 128.40
23. "KERROBERT TO SASK ENERGY FUEL GAS NPS 2
    1. Total Cumulative Length (m): 117.91
    2. Likelihood of failure distributed between minimum of 3.090e-02 and maximum of 3.090e-02.
       1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
       2. Mainline coating type of Single-wrap Tape
       3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $22.24 and maximum of $22.28MM
    4. Total length driven by Safety: 117.91 meters.
    5. Safety Cost distributed between minimum of $21.62 and maximum of $21.65MM:
       1. Leak cost between minimum of $21.89 and maximum of $21.89MM
       2. Leak scenario yielded 20.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 10.69 and maximum of 10.69 meters.
       4. Rupture cost between minimum of $21.89 and maximum of $21.89MM
       5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
       6. Rupture hazard radius distributed between minimum of 39.77 and maximum of 39.77 meters.
       7. Puncture cost between minimum of $21.89 and maximum of $21.89MM
       8. Puncture scenario yielded 22.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 38.44 and maximum of 38.44 meters.
       10. Product type is FG.
       11. Class area location is/are 1.0.
24. "NPS8 Petro Vera to Lone Rock From 13-11-47-27-W3 To 16-10-47-27-W3
    1. Total Cumulative Length (m): 83.82
    2. Likelihood of failure distributed between minimum of 2.674e-02 and maximum of 1.136e-01.
       1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       2. Mainline coating type of Tape
       3. Wall thickness between minimum of 5.6 and maximum of 5.6 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.34 and maximum of $13.28MM
    4. Total length driven by Safety: 31.87 meters.
    5. Safety Cost distributed between minimum of $0.34 and maximum of $12.03MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 5.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 2.28 and maximum of 2.28 meters.
       4. Rupture cost between minimum of $12.11 and maximum of $12.11MM
       5. Rupture scenario yielded 3.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 30.46 and maximum of 30.46 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 6.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 8.99 and maximum of 8.99 meters.
       10. Product type is Blend.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 51.95 meters.
    7. Environmental Cost distributed between minimum of $0.77 and maximum of $0.80MM:
       1. Leak cost between minimum of $0.05 and maximum of $0.05MM
       2. Leak spill volume between a minimum of 492.22 and maximum of 492.22 gallons
       3. Rupture cost between minimum of $25.04 and maximum of $25.04MM
       4. Rupture spill volume is between a minimum of 236237.43 and maximum of 236237.43 gallons
       5. Puncture cost between minimum of $1.71 and maximum of $1.71MM
       6. Puncture spill volume is between a minimum of 16173.37 and maximum of 16173.37 gallons
       7. Land use distributed as
          1. Agricultural: 83.82
25. "STRATHCONA AOSPL CONNECTION NPS 12
    1. Total Cumulative Length (m): 78.6
    2. Likelihood of failure distributed between minimum of 1.044e-02 and maximum of 4.436e-02.
       1. Installation date between minimum of 2010-01-01 and maximum of 2010-01-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 9.52 and maximum of 9.52 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.34 and maximum of $1.60MM
    4. Total length driven by Economic Loss: 78.6 meters.
    5. Economic Loss Cost distributed between minimum of $0.98 and maximum of $1.01MM:
       1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is Crude Oil.
       4. Leak cost between minimum of $0.99 and maximum of $1.01MM
       5. Leak scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $2,057.56 and maximum of $2,058.77
       7. Rupture cost between minimum of $3.17 and maximum of $3.17MM
       8. Rupture scenario yielded 1.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $2,157,946.29 and maximum of $2,159,210.24
       10. Puncture cost between minimum of $1.05 and maximum of $1.08MM
       11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $67,606.80 and maximum of $67,646.40"

### Reportable Pipeline Segments: CSCC Method 1b

CSCC Method 1b has 0 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below.

### Reportable Pipeline Segments: CSCC Method 2

CSCC Method 2 has 3 pipelines with segments that fall within the risk reportable category. These pipelines and their high risk drivers are presented in Table xxx below:

1. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
   1. Total Cumulative Length (m): 11514.43
   2. Likelihood of failure distributed between minimum of 6.050e-03 and maximum of 7.684e-01.
      1. ILI Date of 2016-02-05
      2. ILI tool of CFD
      3. Cracks identified 614.0
      4. Depth fraction between 0.12 and 0.48
      5. Width between 10.0 mm and 245.0 mm
   3. Consequence of failure distributed between minimum of $2.35 and maximum of $90.00MM
   4. Total length driven by Safety: 570.65 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $85.16MM:
      1. Leak cost between minimum of $0.00 and maximum of $38.23MM
      2. Leak scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 3.98 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.39 and maximum of 12.24 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $872.95MM
      5. Rupture scenario yielded 105.0 intersections with structures, with minimum of 0.0 and maximum of 90.93 of population impacted
      6. Rupture hazard radius distributed between minimum of 171.98 and maximum of 186.5 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $38.23MM
      8. Puncture scenario yielded 60.0 intersections with structures, with minimum of 0.0 and maximum of 3.98 of population impacted
      9. Puncture hazard radius distributed between minimum of 53.34 and maximum of 57.84 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Economic Loss: 10943.77 meters.
   7. Economic Loss Cost distributed between minimum of $2.35 and maximum of $7.28MM:
      1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.27 and maximum of $0.62MM
      5. Leak scenario yielded 16.0 intersections with structures, with minimum of $25,000.00 and maximum of $339,600.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $49,027.76 and maximum of $60,855.70
      7. Rupture cost between minimum of $36.77 and maximum of $73.79MM
      8. Rupture scenario yielded 105.0 intersections with structures, with minimum of $25,000.00 and maximum of $29,065,968.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $36,553,283.29 and maximum of $45,371,762.88
      10. Puncture cost between minimum of $1.83 and maximum of $2.52MM
      11. Puncture scenario yielded 60.0 intersections with structures, with minimum of $25,000.00 and maximum of $339,600.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $1,610,940.77 and maximum of $1,999,580.23"
2. "BRETON TO EDMONTON NPS 10
   1. Total Cumulative Length (m): 2120.58
   2. Likelihood of failure distributed between minimum of 3.304e-03 and maximum of 5.516e-01.
      1. ILI Date of 2016-02-10
      2. ILI tool of CFD
      3. Cracks identified 117.0
      4. Depth fraction between 0.17 and 0.44
      5. Width between 20.0 mm and 367.0 mm
   3. Consequence of failure distributed between minimum of $0.26 and maximum of $2,933.92MM
   4. Total length driven by Safety: 1504.47 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $2,908.08MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 105.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 10.9 and maximum of 12.16 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $7,710.65MM
      5. Rupture scenario yielded 220.0 intersections with structures, with minimum of 0.0 and maximum of 803.19 of population impacted
      6. Rupture hazard radius distributed between minimum of 163.58 and maximum of 185.15 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $2,222.78MM
      8. Puncture scenario yielded 318.0 intersections with structures, with minimum of 0.0 and maximum of 231.54 of population impacted
      9. Puncture hazard radius distributed between minimum of 50.73 and maximum of 57.42 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0, 3.0.
   6. Total length driven by Economic Loss: 616.11 meters.
   7. Economic Loss Cost distributed between minimum of $0.26 and maximum of $41.36MM:
      1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.26 and maximum of $3.01MM
      5. Leak scenario yielded 105.0 intersections with structures, with minimum of $18,600.00 and maximum of $2,688,250.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $42,899.29 and maximum of $59,691.29
      7. Rupture cost between minimum of $0.24 and maximum of $112.47MM
      8. Rupture scenario yielded 220.0 intersections with structures, with minimum of $18,600.00 and maximum of $112,171,733.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $20,210.95 and maximum of $45,805.27
      10. Puncture cost between minimum of $1.63 and maximum of $27.43MM
      11. Puncture scenario yielded 318.0 intersections with structures, with minimum of $18,600.00 and maximum of $25,738,465.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $1,409,573.18 and maximum of $1,961,320.39"
3. "UTIKUMA TO EDMONTON NPS 24
   1. Total Cumulative Length (m): 290.46
   2. Likelihood of failure distributed between minimum of 1.031e-03 and maximum of 3.090e-02.
      1. ILI Date of 2016-03-23
      2. ILI tool of CFD
      3. Cracks identified 14.0
      4. Depth fraction between 0.16 and 0.26
      5. Width between 43.0 mm and 288.0 mm
   3. Consequence of failure distributed between minimum of $5.63 and maximum of $129.23MM
   4. Total length driven by Safety: 57.24 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 644.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.59 and maximum of 3.59 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $262.66MM
      5. Rupture scenario yielded 346.0 intersections with structures, with minimum of 12.61 and maximum of 27.36 of population impacted
      6. Rupture hazard radius distributed between minimum of 122.95 and maximum of 122.95 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
      8. Puncture scenario yielded 730.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 14.3 and maximum of 14.3 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 233.22 meters.
   7. Environmental Cost distributed between minimum of $1.81 and maximum of $106.45MM:
      1. Leak cost between minimum of $0.10 and maximum of $70.45MM
      2. Leak spill volume between a minimum of 1410.38 and maximum of 395980.2 gallons
      3. Rupture cost between minimum of $5.83 and maximum of $156.03MM
      4. Rupture spill volume is between a minimum of 74476.68 and maximum of 877018.37 gallons
      5. Puncture cost between minimum of $3.24 and maximum of $70.45MM
      6. Puncture spill volume is between a minimum of 46341.77 and maximum of 395980.2 gallons
      7. Land use distributed as
         1. Agricultural: 124.44
         2. Commercial/Industrial: 30.00
         3. Forested: 46.03
         4. Remote: 71.75
         5. Water Course: 18.25

## Incorrect Operations and Total Consequence

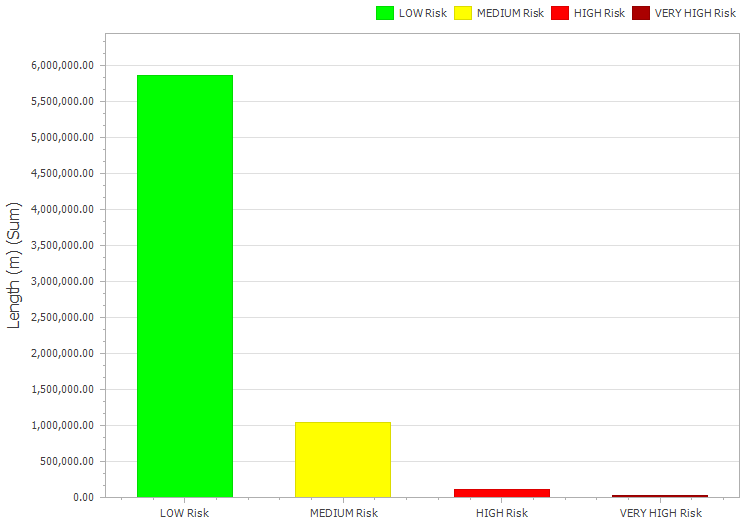
202 pipelines for 1,107,269.63 meters of pipe in the reportable region of the risk matrix.

## Total Likelihood and Safety Consequence

### Assumptions of model

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

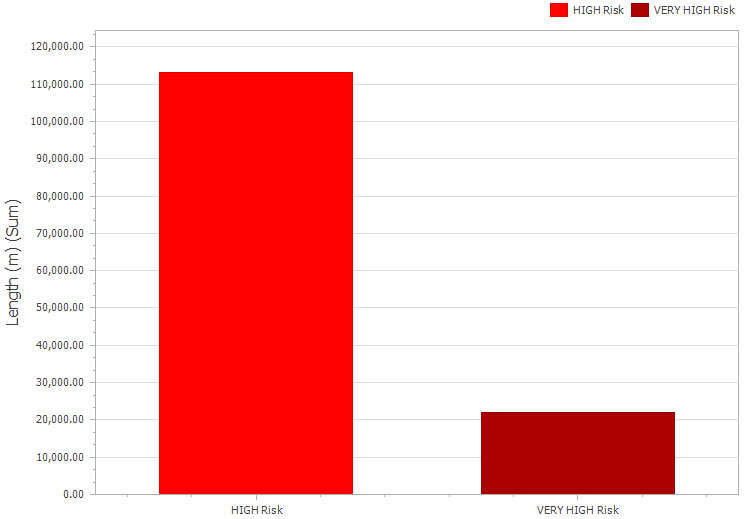


The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Cumulative Length (m)** | | | | |
| **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| Safety Cost | 5,856,994.59 | 1,043,426.65 | 113,086.86 | 21,861.77 | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.



### Reportable Pipeline Segments

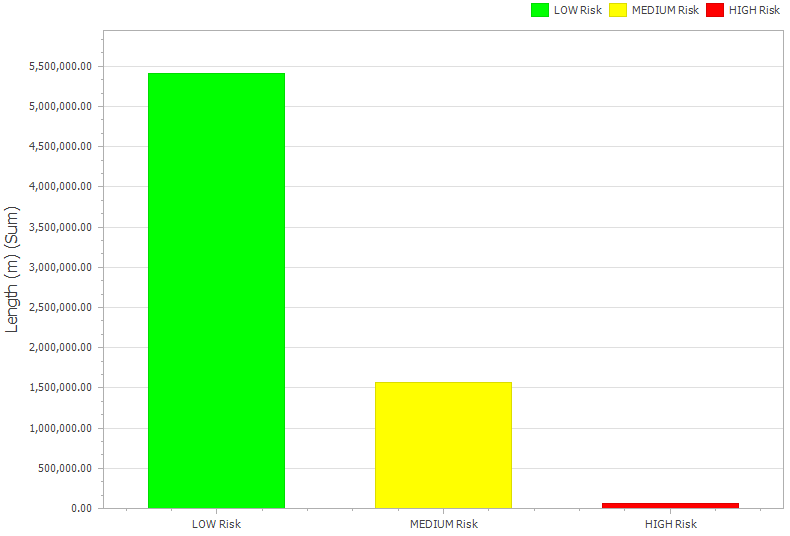
1. "BRETON TO EDMONTON NPS 10
   1. Total Cumulative Length (m): 15129.54
      1. SCC Method 2 : 13142.2
      2. TPD : 545.43
      3. MD Method 2 : 769.23
      4. CSCC Method 2 : 672.68
   2. Likelihood of failure distributed between minimum of 1.026e-03 and maximum of 1.000e+00.
   3. Leak scenario:
      1. No. of intersections with structures is 105.0, with minimum of 0.0 and maximum of 25.22 of population impacted
      2. Hazard area distributed between minimum of 10.9 and maximum of 12.16 meters.
   4. Rupture scenario:
      1. No. of intersections with structures is 220.0, with minimum of 1.26 and maximum of 1072.29 of population impacted
      2. Hazard area distributed between minimum of 163.58 and maximum of 185.15 meters.
   5. Puncture scenario:
      1. No. of intersections with structures is 318.0, with minimum of 0.0 and maximum of 450.0 of population impacted
      2. Hazard area distributed between minimum of 50.73 and maximum of 57.42 meters.
   6. Product type is HVP Product.
   7. Class area location is/are 1.0, 2.0, 3.0, 4.0."
2. "EASTERN DELIVERY SYSTEM (EDS) NORTH NPS 10/12
   1. Total Cumulative Length (m): 8962.4
      1. TPD : 8962.4
   2. Likelihood of failure distributed between minimum of 1.245e-03 and maximum of 6.218e-03.
   3. Leak scenario:
      1. No. of intersections with structures is 27.0, with minimum of 1.26 and maximum of 19.51 of population impacted
      2. Hazard area distributed between minimum of 11.52 and maximum of 11.52 meters.
   4. Rupture scenario:
      1. No. of intersections with structures is 299.0, with minimum of 1.26 and maximum of 351.26 of population impacted
      2. Hazard area distributed between minimum of 174.17 and maximum of 197.94 meters.
   5. Puncture scenario:
      1. No. of intersections with structures is 167.0, with minimum of 1.26 and maximum of 28.63 of population impacted
      2. Hazard area distributed between minimum of 54.02 and maximum of 54.02 meters.
   6. Product type is NGL.
   7. Class area location is/are 1.0, 2.0, 3.0."
3. "WINDSOR TO SARNIA NPS 12
   1. Total Cumulative Length (m): 6964.38
      1. TPD : 6964.38
   2. Likelihood of failure distributed between minimum of 1.018e-03 and maximum of 1.159e-02.
   3. Leak scenario:
      1. No. of intersections with structures is 18.0, with minimum of 1.26 and maximum of 2.97 of population impacted
      2. Hazard area distributed between minimum of 11.71 and maximum of 11.71 meters.
   4. Rupture scenario:
      1. No. of intersections with structures is 300.0, with minimum of 1.26 and maximum of 330.74 of population impacted
      2. Hazard area distributed between minimum of 201.6 and maximum of 201.6 meters.
   5. Puncture scenario:
      1. No. of intersections with structures is 157.0, with minimum of 1.26 and maximum of 32.61 of population impacted
      2. Hazard area distributed between minimum of 55.01 and maximum of 55.01 meters.
   6. Product type is NGL.
   7. Class area location is/are 1.0, 2.0, 3.0."
4. "COCHRANE TO ROCKY MOUNTAIN HOUSE NPS 8
   1. Total Cumulative Length (m): 6667.24
      1. TPD : 6577.24
      2. MD Method 2 : 90.0
   2. Likelihood of failure distributed between minimum of 1.812e-03 and maximum of 9.577e-01.
   3. Leak scenario:
      1. No. of intersections with structures is 52.0, with minimum of 0.0 and maximum of 14.14 of population impacted
      2. Hazard area distributed between minimum of 11.58 and maximum of 12.24 meters.
   4. Rupture scenario:
      1. No. of intersections with structures is 225.0, with minimum of 1.26 and maximum of 49.23 of population impacted
      2. Hazard area distributed between minimum of 148.55 and maximum of 158.1 meters.
   5. Puncture scenario:
      1. No. of intersections with structures is 133.0, with minimum of 1.26 and maximum of 17.23 of population impacted
      2. Hazard area distributed between minimum of 54.35 and maximum of 57.84 meters.
   6. Product type is NGL.
   7. Class area location is/are 1.0, 2.0."
5. "SS-15 NPS 6
   1. Total Cumulative Length (m): 5229.36
      1. IC Method 1 : 5229.36
   2. Likelihood of failure distributed between minimum of 9.211e-01 and maximum of 9.263e-01.
   3. Leak scenario:
      1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
      2. Hazard area distributed between minimum of 4.11 and maximum of 4.11 meters.
   4. Rupture scenario:
      1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
      2. Hazard area distributed between minimum of 43.81 and maximum of 43.81 meters.
   5. Puncture scenario:
      1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
      2. Hazard area distributed between minimum of 16.44 and maximum of 16.44 meters.
   6. Product type is Crude Oil.
   7. Class area location is/are nan."
6. "UTIKUMA TO EDMONTON NPS 24
   1. Total Cumulative Length (m): 4713.92
      1. EC Method 2 : 30.0
      2. SCC Method 2 : 4065.67
      3. TPD : 291.03
      4. MD Method 2 : 60.0
      5. CT : 209.99
      6. RES : 30.0
      7. CSCC Method 2 : 27.25
   2. Likelihood of failure distributed between minimum of 1.071e-03 and maximum of 8.734e-01.
   3. Leak scenario:
      1. No. of intersections with structures is 644.0, with minimum of 0.0 and maximum of 12.61 of population impacted
      2. Hazard area distributed between minimum of 3.59 and maximum of 3.59 meters.
   4. Rupture scenario:
      1. No. of intersections with structures is 346.0, with minimum of 1.26 and maximum of 451.26 of population impacted
      2. Hazard area distributed between minimum of 122.95 and maximum of 122.95 meters.
   5. Puncture scenario:
      1. No. of intersections with structures is 730.0, with minimum of 0.0 and maximum of 12.61 of population impacted
      2. Hazard area distributed between minimum of 14.3 and maximum of 14.3 meters.
   6. Product type is Crude Oil.
   7. Class area location is/are 1.0, 2.0, 3.0."
7. "UTILITY NPS 8
   1. Total Cumulative Length (m): 4668.03
      1. MD Method 1 : 4668.03
   2. Likelihood of failure distributed between minimum of 1.005e-01 and maximum of 1.262e-01.
   3. Leak scenario:
      1. No. of intersections with structures is 16.0, with minimum of 0.0 and maximum of 1.26 of population impacted
      2. Hazard area distributed between minimum of 10.66 and maximum of 10.66 meters.
   4. Rupture scenario:
      1. No. of intersections with structures is 40.0, with minimum of 1.26 and maximum of 59.22 of population impacted
      2. Hazard area distributed between minimum of 135.26 and maximum of 135.26 meters.
   5. Puncture scenario:
      1. No. of intersections with structures is 45.0, with minimum of 0.0 and maximum of 33.38 of population impacted
      2. Hazard area distributed between minimum of 49.48 and maximum of 49.48 meters.
   6. Product type is HVP Product.
   7. Class area location is/are 1.0, 2.0."
8. "NPS8 SARNIA CONDENSATE TO SUNCOR
   1. Total Cumulative Length (m): 4227.46
      1. MD Method 1 : 4227.46
   2. Likelihood of failure distributed between minimum of 1.026e-02 and maximum of 1.226e-01.
   3. Leak scenario:
      1. No. of intersections with structures is 21.0, with minimum of 0.0 and maximum of 1.26 of population impacted
      2. Hazard area distributed between minimum of 11.8 and maximum of 11.8 meters.
   4. Rupture scenario:
      1. No. of intersections with structures is 38.0, with minimum of 1.26 and maximum of 56.94 of population impacted
      2. Hazard area distributed between minimum of 135.89 and maximum of 135.89 meters.
   5. Puncture scenario:
      1. No. of intersections with structures is 49.0, with minimum of 0.0 and maximum of 23.05 of population impacted
      2. Hazard area distributed between minimum of 47.76 and maximum of 47.76 meters.
   6. Product type is Condensate.
   7. Class area location is/are 1.0, 2.0."
9. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
   1. Total Cumulative Length (m): 4215.61
      1. TPD : 2239.99
      2. MD Method 2 : 372.11
      3. CSCC Method 2 : 1603.5
   2. Likelihood of failure distributed between minimum of 1.182e-03 and maximum of 6.139e-01.
   3. Leak scenario:
      1. No. of intersections with structures is 16.0, with minimum of 2.28 and maximum of 35.98 of population impacted
      2. Hazard area distributed between minimum of 11.39 and maximum of 12.16 meters.
   4. Rupture scenario:
      1. No. of intersections with structures is 105.0, with minimum of 2.28 and maximum of 90.93 of population impacted
      2. Hazard area distributed between minimum of 171.98 and maximum of 185.15 meters.
   5. Puncture scenario:
      1. No. of intersections with structures is 60.0, with minimum of 0.0 and maximum of 35.98 of population impacted
      2. Hazard area distributed between minimum of 53.34 and maximum of 57.42 meters.
   6. Product type is HVP Product.
   7. Class area location is/are 1.0, 2.0."
10. "BRETON TO EDMONTON NPS 8
    1. Total Cumulative Length (m): 4207.67
       1. EC Method 2 : 383.72
       2. IC Method 2 : 698.03
       3. TPD : 2207.0
       4. MD Method 2 : 918.92
    2. Likelihood of failure distributed between minimum of 1.006e-03 and maximum of 7.594e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 117.0, with minimum of 0.0 and maximum of 171.0 of population impacted
       2. Hazard area distributed between minimum of 11.13 and maximum of 12.03 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 236.0, with minimum of 2.28 and maximum of 697.68 of population impacted
       2. Hazard area distributed between minimum of 129.12 and maximum of 138.23 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 355.0, with minimum of 0.0 and maximum of 344.28 of population impacted
       2. Hazard area distributed between minimum of 45.37 and maximum of 48.58 meters.
    6. Product type is Condensate.
    7. Class area location is/are 1.0, 2.0, 3.0, 4.0."
11. "SECT 1 EMPRESS TO CABRI NPS 6
    1. Total Cumulative Length (m): 2343.62
       1. TPD : 118.02
       2. MD Method 1 : 2225.61
    2. Likelihood of failure distributed between minimum of 6.440e-03 and maximum of 1.085e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 18.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.34 and maximum of 12.34 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 45.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 130.83 and maximum of 130.83 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 41.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 58.33 and maximum of 58.33 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0."
12. "AMERADA FERRIER 1-6 TO 10-33 JUNCTION NPS 4
    1. Total Cumulative Length (m): 2330.38
       1. MD Method 1 : 2330.38
    2. Likelihood of failure distributed between minimum of 1.707e-02 and maximum of 1.138e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 4.0, with minimum of 0.0 and maximum of 2.28 of population impacted
       2. Hazard area distributed between minimum of 11.55 and maximum of 11.55 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 38.0, with minimum of 2.28 and maximum of 31.92 of population impacted
       2. Hazard area distributed between minimum of 80.3 and maximum of 80.3 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 28.0, with minimum of 2.28 and maximum of 29.64 of population impacted
       2. Hazard area distributed between minimum of 46.87 and maximum of 46.87 meters.
    6. Product type is LVP Products.
    7. Class area location is/are 1.0, 2.0."
13. "STRACHAN TO ROCKY MOUNTAIN HOUSE NGL NPS 6
    1. Total Cumulative Length (m): 2273.89
       1. TPD : 2273.89
    2. Likelihood of failure distributed between minimum of 1.101e-03 and maximum of 2.701e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 20.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 10.89 and maximum of 10.89 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 77.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 113.66 and maximum of 113.66 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 50.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 50.68 and maximum of 50.68 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0."
14. "SUNDRE TO BENTLEY NPS 8
    1. Total Cumulative Length (m): 2116.74
       1. TPD : 2116.74
    2. Likelihood of failure distributed between minimum of 1.646e-03 and maximum of 1.094e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 40.0, with minimum of 1.26 and maximum of 5.25 of population impacted
       2. Hazard area distributed between minimum of 20.4 and maximum of 20.4 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 132.0, with minimum of 2.28 and maximum of 8.1 of population impacted
       2. Hazard area distributed between minimum of 135.46 and maximum of 135.46 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 98.0, with minimum of 1.26 and maximum of 5.25 of population impacted
       2. Hazard area distributed between minimum of 55.42 and maximum of 55.42 meters.
    6. Product type is Butane/Condensate.
    7. Class area location is/are 1.0, 2.0."
15. "BUCK CREEK FRAC PLANT TO BRETON NPS 6
    1. Total Cumulative Length (m): 2093.98
       1. TPD : 112.72
       2. MD Method 1 : 1981.26
    2. Likelihood of failure distributed between minimum of 4.161e-03 and maximum of 1.068e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 6.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 9.71 and maximum of 9.71 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 33.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 99.99 and maximum of 99.99 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 15.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 44.58 and maximum of 44.58 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0."
16. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
    1. Total Cumulative Length (m): 1898.37
       1. TPD : 833.25
       2. MD Method 2 : 1065.11
    2. Likelihood of failure distributed between minimum of 5.150e-03 and maximum of 9.714e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 24.0, with minimum of 32.0 and maximum of 32.0 of population impacted
       2. Hazard area distributed between minimum of 3.77 and maximum of 4.11 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 60.0, with minimum of 2.28 and maximum of 32.0 of population impacted
       2. Hazard area distributed between minimum of 72.8 and maximum of 79.49 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 56.0, with minimum of 0.0 and maximum of 32.0 of population impacted
       2. Hazard area distributed between minimum of 15.06 and maximum of 16.44 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0, 2.0."
17. "STRACHAN TO ROCKY MOUNTAIN HOUSE CONDENSATE NPS 6
    1. Total Cumulative Length (m): 1875.33
       1. TPD : 1875.33
    2. Likelihood of failure distributed between minimum of 1.108e-03 and maximum of 2.534e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 21.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 11.12 and maximum of 11.12 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 80.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 105.04 and maximum of 105.04 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 47.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 45.35 and maximum of 45.35 meters.
    6. Product type is Condensate.
    7. Class area location is/are 1.0, 2.0."
18. "COED BV 203 TO EST NPS 8
    1. Total Cumulative Length (m): 1694.93
       1. IC Method 1 : 1694.93
    2. Likelihood of failure distributed between minimum of 9.299e-01 and maximum of 9.718e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 44.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 16.0, with minimum of 12.61 and maximum of 53.5 of population impacted
       2. Hazard area distributed between minimum of 138.23 and maximum of 138.23 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 46.0, with minimum of 0.0 and maximum of 40.89 of population impacted
       2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
    6. Product type is Condensate.
    7. Class area location is/are 2.0."
19. "KALKASKA MARYSVILLE TO SARNIA NPS 8
    1. Total Cumulative Length (m): 1681.51
       1. TPD : 1681.51
    2. Likelihood of failure distributed between minimum of 1.206e-03 and maximum of 4.380e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 10.0, with minimum of 1.26 and maximum of 12.0 of population impacted
       2. Hazard area distributed between minimum of 11.99 and maximum of 11.99 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 40.0, with minimum of 3.78 and maximum of 154.59 of population impacted
       2. Hazard area distributed between minimum of 154.44 and maximum of 154.44 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 52.0, with minimum of 1.26 and maximum of 28.56 of population impacted
       2. Hazard area distributed between minimum of 56.5 and maximum of 56.5 meters.
    6. Product type is Liquid petroleum gas (LPG).
    7. Class area location is/are 2.0, 3.0."
20. "WEST PEMBINA TO BRAZEAU NPS 3
    1. Total Cumulative Length (m): 1647.26
       1. TPD : 1647.26
    2. Likelihood of failure distributed between minimum of 7.182e-03 and maximum of 1.104e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 24.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 53.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 80.38 and maximum of 80.38 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 50.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0."
21. "BATCH TRANSFER LINE NPS 24
    1. Total Cumulative Length (m): 1622.82
       1. CSCC Method 1a : 1622.82
    2. Likelihood of failure distributed between minimum of 1.440e-02 and maximum of 6.015e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 32.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 2.91 and maximum of 2.91 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 16.0, with minimum of 12.61 and maximum of 100.88 of population impacted
       2. Hazard area distributed between minimum of 99.14 and maximum of 99.14 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 34.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 11.53 and maximum of 11.53 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0, 2.0."
22. "SUNDRE TO HARTELL NPS 12
    1. Total Cumulative Length (m): 1416.56
       1. SCC Method 2 : 59.99
       2. TPD : 775.67
       3. MD Method 1 : 399.97
       4. MD Method 2 : 180.93
    2. Likelihood of failure distributed between minimum of 1.082e-03 and maximum of 1.016e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 2697.0, with minimum of 0.0 and maximum of 32.0 of population impacted
       2. Hazard area distributed between minimum of 3.64 and maximum of 4.11 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 293.0, with minimum of 2.28 and maximum of 51.51 of population impacted
       2. Hazard area distributed between minimum of 70.19 and maximum of 79.49 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 752.0, with minimum of 0.0 and maximum of 32.0 of population impacted
       2. Hazard area distributed between minimum of 14.52 and maximum of 16.44 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0, 2.0, 3.0."
23. "C3 FROM ESSO NPS 6
    1. Total Cumulative Length (m): 1389.25
       1. IC Method 1 : 1389.25
    2. Likelihood of failure distributed between minimum of 9.108e-01 and maximum of 9.210e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 15.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 9.02 and maximum of 9.02 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 18.0, with minimum of 1.26 and maximum of 41.48 of population impacted
       2. Hazard area distributed between minimum of 91.99 and maximum of 91.99 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 20.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 28.89 and maximum of 28.89 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0."
24. "KALKASKA SARNIA TO PUMP STATION NPS 8
    1. Total Cumulative Length (m): 1330.88
       1. IC Method 1 : 1330.88
    2. Likelihood of failure distributed between minimum of 9.015e-01 and maximum of 9.044e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 11.01 and maximum of 11.01 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 2.0, with minimum of 0.0 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 140.37 and maximum of 140.37 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 1.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 51.35 and maximum of 51.35 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0."
25. "EDS OPERATIVE NPS 12
    1. Total Cumulative Length (m): 1330.76
       1. IC Method 1 : 1330.76
    2. Likelihood of failure distributed between minimum of 9.015e-01 and maximum of 9.039e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 11.04 and maximum of 11.04 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 3.0, with minimum of 1.26 and maximum of 2.52 of population impacted
       2. Hazard area distributed between minimum of 188.59 and maximum of 188.59 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 1.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 51.46 and maximum of 51.46 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0."

## Total Likelihood and Environmental Consequence

### Assumptions of model

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

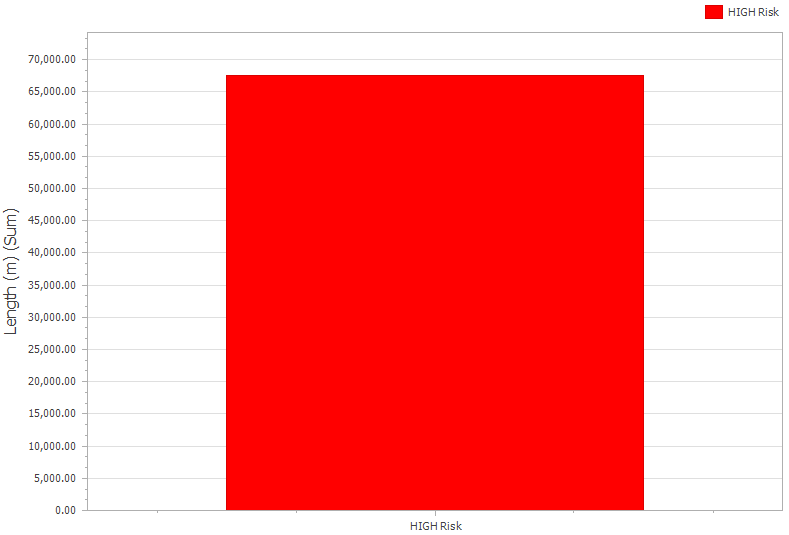


The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Cumulative Length (m)** | | | | |
| **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| Environmental Cost | 5,403,631.16 | 1,564,278.75 | 67,459.96 | 0.00 | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.



### Reportable Pipeline Segments

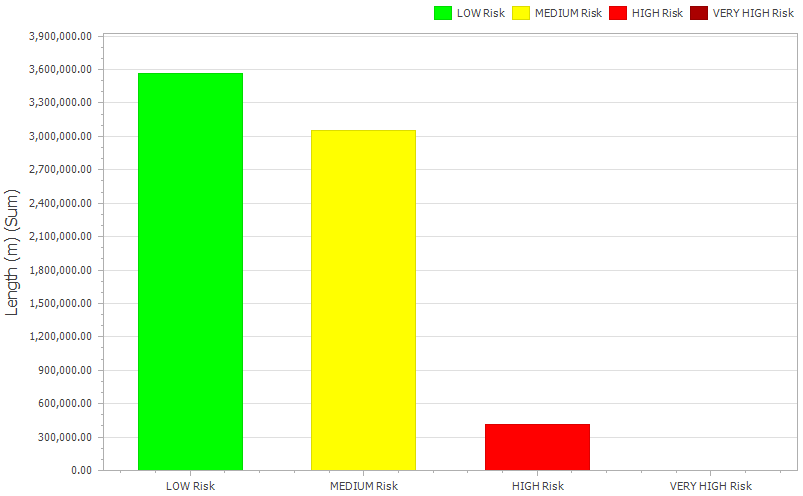
1. "UTIKUMA TO EDMONTON NPS 24,
   1. Total Cumulative Length (m): 17896.03,
      1. EC Method 2 : 30.0
      2. SCC Method 2 : 17866.03
   2. Likelihood of failure distributed between minimum of 9.116e-02 and maximum of 7.106e-01.,
   3. Consequence of failure distributed between minimum of $10.01 and maximum of $106.45 Millions of dollars,
   4. Leak scenario:
      1. Environmental cost between minimum of $0.15 and maximum of $70.45 Millions of dollars
      2. Spill volume is between a minimum of 1394.24 and maximum of 463178.48 gallons,
   5. Rupture scenario:
      1. Environmental cost between minimum of $15.84 and maximum of $156.03 Millions of dollars
      2. Spill volume is between a minimum of 134802.13 and maximum of 877018.37 gallons,
   6. Puncture scenario:
      1. Environmental cost between minimum of $2.96 and maximum of $70.45 Millions of dollars
      2. Spill volume is between a minimum of 27917.27 and maximum of 463178.48 gallons,
   7. Product type is Crude Oil.
   8. Land Use is distributed as follows
      1. Agricultural: 9,160.62, Commercial/Industrial: 0.10, Forested: 3,982.77, High Density Residential: 3.51, Low Density Residential: 0.10, Remote: 4,636.77, Water Course: 112.16"
2. "ZN-70/ZN-89/ZN-90 NPS 8,
   1. Total Cumulative Length (m): 16073.65,
      1. MD Method 1 : 16073.65
   2. Likelihood of failure distributed between minimum of 1.018e-01 and maximum of 1.019e-01.,
   3. Consequence of failure distributed between minimum of $11.92 and maximum of $20.72 Millions of dollars,
   4. Leak scenario:
      1. Environmental cost between minimum of $0.15 and maximum of $0.26 Millions of dollars
      2. Spill volume is between a minimum of 1398.53 and maximum of 1606.02 gallons,
   5. Rupture scenario:
      1. Environmental cost between minimum of $71.14 and maximum of $123.62 Millions of dollars
      2. Spill volume is between a minimum of 671208.81 and maximum of 770790.15 gallons,
   6. Puncture scenario:
      1. Environmental cost between minimum of $4.87 and maximum of $8.46 Millions of dollars
      2. Spill volume is between a minimum of 45952.54 and maximum of 52770.12 gallons,
   7. Product type is Crude Oil.
   8. Land Use is distributed as follows
      1. Forested: 7,263.99, Remote: 8,769.80, Water Course: 39.86"
3. "SSPL TRUNK LINE NPS 12,
   1. Total Cumulative Length (m): 8577.99,
      1. MD Method 2 : 8577.99
   2. Likelihood of failure distributed between minimum of 9.008e-01 and maximum of 1.000e+00.,
   3. Consequence of failure distributed between minimum of $1.00 and maximum of $2.84 Millions of dollars,
   4. Leak scenario:
      1. Environmental cost between minimum of $0.18 and maximum of $0.39 Millions of dollars
      2. Spill volume is between a minimum of 1715.23 and maximum of 2217.74 gallons,
   5. Rupture scenario:
      1. Environmental cost between minimum of $4.81 and maximum of $15.45 Millions of dollars
      2. Spill volume is between a minimum of 45418.47 and maximum of 127296.67 gallons,
   6. Puncture scenario:
      1. Environmental cost between minimum of $5.97 and maximum of $12.65 Millions of dollars
      2. Spill volume is between a minimum of 56358.71 and maximum of 72869.87 gallons,
   7. Product type is Crude Oil.
   8. Land Use is distributed as follows
      1. Agricultural: 6,348.83, Remote: 2,035.23, Water Course: 193.92"
4. "NPS8 SARNIA CONDENSATE TO SUNCOR,
   1. Total Cumulative Length (m): 7547.74,
      1. MD Method 1 : 7547.74
   2. Likelihood of failure distributed between minimum of 1.003e-01 and maximum of 1.796e-01.,
   3. Consequence of failure distributed between minimum of $15.82 and maximum of $29.41 Millions of dollars,
   4. Leak scenario:
      1. Environmental cost between minimum of $0.20 and maximum of $0.35 Millions of dollars
      2. Spill volume is between a minimum of 1889.11 and maximum of 1989.97 gallons,
   5. Rupture scenario:
      1. Environmental cost between minimum of $96.10 and maximum of $169.14 Millions of dollars
      2. Spill volume is between a minimum of 906656.27 and maximum of 955064.68 gallons,
   6. Puncture scenario:
      1. Environmental cost between minimum of $6.58 and maximum of $11.58 Millions of dollars
      2. Spill volume is between a minimum of 62071.83 and maximum of 65385.99 gallons,
   7. Product type is Condensate.
   8. Land Use is distributed as follows
      1. Agricultural: 1,826.34, Forested: 1,528.89, Utility Corridor: 4,191.21, Water Course: 1.30"
5. "SS-15 NPS 6,
   1. Total Cumulative Length (m): 5229.36,
      1. IC Method 1 : 5229.36
   2. Likelihood of failure distributed between minimum of 9.211e-01 and maximum of 9.263e-01.,
   3. Consequence of failure distributed between minimum of $1.39 and maximum of $1.59 Millions of dollars,
   4. Leak scenario:
      1. Environmental cost between minimum of $0.20 and maximum of $0.21 Millions of dollars
      2. Spill volume is between a minimum of 1853.91 and maximum of 1962.4 gallons,
   5. Rupture scenario:
      1. Environmental cost between minimum of $55.64 and maximum of $58.90 Millions of dollars
      2. Spill volume is between a minimum of 524962.0 and maximum of 555682.93 gallons,
   6. Puncture scenario:
      1. Environmental cost between minimum of $6.46 and maximum of $6.83 Millions of dollars
      2. Spill volume is between a minimum of 60915.28 and maximum of 64480.05 gallons,
   7. Product type is Crude Oil.
   8. Land Use is distributed as follows
      1. Agricultural: 5,229.36"
6. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4,
   1. Total Cumulative Length (m): 4863.2,
      1. MD Method 2 : 4863.2
   2. Likelihood of failure distributed between minimum of 9.005e-01 and maximum of 1.000e+00.,
   3. Consequence of failure distributed between minimum of $1.01 and maximum of $3.97 Millions of dollars,
   4. Leak scenario:
      1. Environmental cost between minimum of $0.16 and maximum of $0.35 Millions of dollars
      2. Spill volume is between a minimum of 1529.63 and maximum of 2279.8 gallons,
   5. Rupture scenario:
      1. Environmental cost between minimum of $5.03 and maximum of $22.46 Millions of dollars
      2. Spill volume is between a minimum of 40565.87 and maximum of 211909.33 gallons,
   6. Puncture scenario:
      1. Environmental cost between minimum of $5.33 and maximum of $11.64 Millions of dollars
      2. Spill volume is between a minimum of 50260.28 and maximum of 74909.09 gallons,
   7. Product type is Crude Oil.
   8. Land Use is distributed as follows
      1. Agricultural: 4,600.43, Forested: 162.68, Remote: 90.00, Water Course: 10.10"
7. "COED BV 203 TO EST NPS 8,
   1. Total Cumulative Length (m): 2259.9,
      1. IC Method 1 : 2259.9
   2. Likelihood of failure distributed between minimum of 9.299e-01 and maximum of 9.718e-01.,
   3. Consequence of failure distributed between minimum of $4.66 and maximum of $13.35 Millions of dollars,
   4. Leak scenario:
      1. Environmental cost between minimum of $0.13 and maximum of $0.35 Millions of dollars
      2. Spill volume is between a minimum of 1973.38 and maximum of 2019.77 gallons,
   5. Rupture scenario:
      1. Environmental cost between minimum of $64.53 and maximum of $169.76 Millions of dollars
      2. Spill volume is between a minimum of 947101.66 and maximum of 969363.57 gallons,
   6. Puncture scenario:
      1. Environmental cost between minimum of $4.42 and maximum of $11.62 Millions of dollars
      2. Spill volume is between a minimum of 64840.82 and maximum of 66364.92 gallons,
   7. Product type is Condensate.
   8. Land Use is distributed as follows
      1. Commercial/Industrial: 2,256.78, Water Course: 3.12"
8. "MADDEN 13-30 TO SUNDRE 16-8 NPS 8,
   1. Total Cumulative Length (m): 1391.33,
      1. MD Method 1 : 1391.33
   2. Likelihood of failure distributed between minimum of 9.003e-01 and maximum of 9.167e-01.,
   3. Consequence of failure distributed between minimum of $1.00 and maximum of $1.83 Millions of dollars,
   4. Leak scenario:
      1. Environmental cost between minimum of $0.16 and maximum of $0.31 Millions of dollars
      2. Spill volume is between a minimum of 1464.95 and maximum of 1739.6 gallons,
   5. Rupture scenario:
      1. Environmental cost between minimum of $2.36 and maximum of $9.17 Millions of dollars
      2. Spill volume is between a minimum of 22230.68 and maximum of 51528.46 gallons,
   6. Puncture scenario:
      1. Environmental cost between minimum of $5.10 and maximum of $10.15 Millions of dollars
      2. Spill volume is between a minimum of 48134.95 and maximum of 57159.28 gallons,
   7. Product type is Crude Oil.
   8. Land Use is distributed as follows
      1. Agricultural: 167.18, Water Course: 1,224.15"
9. "16-19-037-03W5 TO 10-19-037-03W5 NPS 4,
   1. Total Cumulative Length (m): 761.03,
      1. IC Method 1 : 761.03
   2. Likelihood of failure distributed between minimum of 9.214e-01 and maximum of 9.214e-01.,
   3. Consequence of failure distributed between minimum of $1.41 and maximum of $1.43 Millions of dollars,
   4. Leak scenario:
      1. Environmental cost between minimum of $0.20 and maximum of $0.20 Millions of dollars
      2. Spill volume is between a minimum of 1854.82 and maximum of 1869.87 gallons,
   5. Rupture scenario:
      1. Environmental cost between minimum of $25.68 and maximum of $25.89 Millions of dollars
      2. Spill volume is between a minimum of 242322.23 and maximum of 244289.53 gallons,
   6. Puncture scenario:
      1. Environmental cost between minimum of $6.46 and maximum of $6.51 Millions of dollars
      2. Spill volume is between a minimum of 60945.04 and maximum of 61439.82 gallons,
   7. Product type is Crude Oil.
   8. Land Use is distributed as follows
      1. Agricultural: 761.03"
10. "RAINBOW LAKE TO CADOTTE NPS 20,
    1. Total Cumulative Length (m): 556.81,
       1. SCC Method 2 : 209.97
       2. MD Method 2 : 329.96
       3. CT : 16.87
    2. Likelihood of failure distributed between minimum of 1.053e-01 and maximum of 3.939e-01.,
    3. Consequence of failure distributed between minimum of $12.01 and maximum of $52.13 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.21 and maximum of $0.37 Millions of dollars
       2. Spill volume is between a minimum of 1673.49 and maximum of 2554.65 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $32.90 and maximum of $120.84 Millions of dollars
       2. Spill volume is between a minimum of 184947.54 and maximum of 1140132.84 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $6.96 and maximum of $12.22 Millions of dollars
       2. Spill volume is between a minimum of 54987.09 and maximum of 83939.9 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Agricultural: 170.37, Forested: 210.49, Remote: 149.98, Water Course: 25.97"
11. "Access C5 Line 36,
    1. Total Cumulative Length (m): 404.28,
       1. EC Method 1 : 404.28
    2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.907e-01.,
    3. Consequence of failure distributed between minimum of $1.21 and maximum of $1.24 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.13 and maximum of $0.14 Millions of dollars
       2. Spill volume is between a minimum of 1973.44 and maximum of 1981.77 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $38.08 and maximum of $38.24 Millions of dollars
       2. Spill volume is between a minimum of 558809.69 and maximum of 561166.98 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $4.42 and maximum of $4.44 Millions of dollars
       2. Spill volume is between a minimum of 64842.88 and maximum of 65116.41 gallons,
    7. Product type is LVP Products.
    8. Land Use is distributed as follows
       1. Commercial/Industrial: 404.28"
12. "Access C5 Line 37,
    1. Total Cumulative Length (m): 404.14,
       1. EC Method 1 : 404.14
    2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.907e-01.,
    3. Consequence of failure distributed between minimum of $1.21 and maximum of $1.24 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.13 and maximum of $0.14 Millions of dollars
       2. Spill volume is between a minimum of 1973.44 and maximum of 1981.77 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $38.08 and maximum of $38.24 Millions of dollars
       2. Spill volume is between a minimum of 558809.69 and maximum of 561166.19 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $4.42 and maximum of $4.44 Millions of dollars
       2. Spill volume is between a minimum of 64842.88 and maximum of 65116.32 gallons,
    7. Product type is LVP Products.
    8. Land Use is distributed as follows
       1. Commercial/Industrial: 404.14"
13. "CADOTTE LAKE TO UTIKUMA STATION NPS 20,
    1. Total Cumulative Length (m): 320.83,
       1. SCC Method 2 : 260.84
       2. MD Method 2 : 59.99
    2. Likelihood of failure distributed between minimum of 1.276e-01 and maximum of 9.895e-01.,
    3. Consequence of failure distributed between minimum of $1.94 and maximum of $25.90 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.20 and maximum of $0.39 Millions of dollars
       2. Spill volume is between a minimum of 1848.94 and maximum of 2973.33 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $10.59 and maximum of $59.30 Millions of dollars
       2. Spill volume is between a minimum of 99872.03 and maximum of 559504.4 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $6.44 and maximum of $12.86 Millions of dollars
       2. Spill volume is between a minimum of 60751.93 and maximum of 97696.98 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Agricultural: 29.99, Forested: 152.98, Remote: 136.99, Water Course: 0.86"
14. "14-02 to 12-02 NPS 24,
    1. Total Cumulative Length (m): 317.4,
       1. EC Method 1 : 317.4
    2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.902e-01.,
    3. Consequence of failure distributed between minimum of $9.30 and maximum of $9.37 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.09 and maximum of $0.09 Millions of dollars
       2. Spill volume is between a minimum of 825.78 and maximum of 832.0 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $325.26 and maximum of $327.70 Millions of dollars
       2. Spill volume is between a minimum of 3068711.06 and maximum of 3091803.54 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $2.88 and maximum of $2.90 Millions of dollars
       2. Spill volume is between a minimum of 27133.36 and maximum of 27337.55 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Agricultural: 317.40"
15. "CROMER DELIVERY LATERAL NPS 8,
    1. Total Cumulative Length (m): 218.89,
       1. EC Method 1 : 27.36
       2. MD Method 1 : 191.53
    2. Likelihood of failure distributed between minimum of 1.020e-01 and maximum of 9.931e-01.,
    3. Consequence of failure distributed between minimum of $12.33 and maximum of $26.57 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.20 and maximum of $0.33 Millions of dollars
       2. Spill volume is between a minimum of 1854.53 and maximum of 1858.45 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $94.54 and maximum of $158.69 Millions of dollars
       2. Spill volume is between a minimum of 890061.32 and maximum of 891942.44 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $6.47 and maximum of $10.86 Millions of dollars
       2. Spill volume is between a minimum of 60935.7 and maximum of 61064.49 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Agricultural: 51.66, Bush/Creek: 167.23"
16. "UNITY TO LONE ROCK NPS 4,
    1. Total Cumulative Length (m): 119.97,
       1. SCC Method 1b : 119.97
    2. Likelihood of failure distributed between minimum of 1.190e-01 and maximum of 4.814e-01.,
    3. Consequence of failure distributed between minimum of $12.15 and maximum of $13.77 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.21 and maximum of $0.24 Millions of dollars
       2. Spill volume is between a minimum of 1972.39 and maximum of 2232.64 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $27.31 and maximum of $30.92 Millions of dollars
       2. Spill volume is between a minimum of 257682.32 and maximum of 291682.48 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $6.87 and maximum of $7.78 Millions of dollars
       2. Spill volume is between a minimum of 64808.16 and maximum of 73359.34 gallons,
    7. Product type is Condensate.
    8. Land Use is distributed as follows
       1. Agricultural: 119.97"
17. "NI-95 NPS 8,
    1. Total Cumulative Length (m): 107.19,
       1. SCC Method 1b : 107.19
    2. Likelihood of failure distributed between minimum of 2.171e-01 and maximum of 6.961e-01.,
    3. Consequence of failure distributed between minimum of $39.65 and maximum of $40.69 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.19 and maximum of $0.19 Millions of dollars
       2. Spill volume is between a minimum of 1800.82 and maximum of 1810.77 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $91.61 and maximum of $92.11 Millions of dollars
       2. Spill volume is between a minimum of 864282.66 and maximum of 869059.11 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $6.27 and maximum of $6.31 Millions of dollars
       2. Spill volume is between a minimum of 59170.84 and maximum of 59497.84 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Agricultural: 107.19"
18. "SS-11 NPS 6,
    1. Total Cumulative Length (m): 89.97,
       1. SCC Method 1b : 89.97
    2. Likelihood of failure distributed between minimum of 1.145e-01 and maximum of 5.500e-01.,
    3. Consequence of failure distributed between minimum of $25.66 and maximum of $26.10 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.20 and maximum of $0.21 Millions of dollars
       2. Spill volume is between a minimum of 1933.12 and maximum of 1958.94 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $58.02 and maximum of $58.79 Millions of dollars
       2. Spill volume is between a minimum of 547391.09 and maximum of 554702.8 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $6.73 and maximum of $6.82 Millions of dollars
       2. Spill volume is between a minimum of 63517.89 and maximum of 64366.32 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Remote: 89.97"
19. "SS-03 NPS 6,
    1. Total Cumulative Length (m): 59.06,
       1. SCC Method 1b : 59.06
    2. Likelihood of failure distributed between minimum of 3.816e-01 and maximum of 9.522e-01.,
    3. Consequence of failure distributed between minimum of $22.25 and maximum of $23.96 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.19 and maximum of $0.19 Millions of dollars
       2. Spill volume is between a minimum of 1815.99 and maximum of 1815.99 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $54.50 and maximum of $54.50 Millions of dollars
       2. Spill volume is between a minimum of 514224.45 and maximum of 514224.45 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $6.32 and maximum of $6.32 Millions of dollars
       2. Spill volume is between a minimum of 59669.32 and maximum of 59669.32 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Agricultural: 59.06"
20. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5,
    1. Total Cumulative Length (m): 30.0,
       1. SCC Method 1b : 30.0
    2. Likelihood of failure distributed between minimum of 9.984e-01 and maximum of 9.984e-01.,
    3. Consequence of failure distributed between minimum of $48.84 and maximum of $48.89 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.22 and maximum of $0.22 Millions of dollars
       2. Spill volume is between a minimum of 2045.08 and maximum of 2047.2 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $104.03 and maximum of $104.14 Millions of dollars
       2. Spill volume is between a minimum of 981512.08 and maximum of 982532.16 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $7.12 and maximum of $7.13 Millions of dollars
       2. Spill volume is between a minimum of 67196.64 and maximum of 67266.48 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Remote: 30.00"
21. "WASCANA MAINLINE NPS 12,
    1. Total Cumulative Length (m): 30.0,
       1. MD Method 2 : 30.0
    2. Likelihood of failure distributed between minimum of 1.369e-01 and maximum of 1.394e-01.,
    3. Consequence of failure distributed between minimum of $11.78 and maximum of $11.80 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.26 and maximum of $0.26 Millions of dollars
       2. Spill volume is between a minimum of 2406.46 and maximum of 2406.46 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $69.54 and maximum of $69.54 Millions of dollars
       2. Spill volume is between a minimum of 656052.52 and maximum of 656052.52 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $8.38 and maximum of $8.38 Millions of dollars
       2. Spill volume is between a minimum of 79070.96 and maximum of 79070.96 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Agricultural: 30.00"
22. "NPS8 Red Earth to Rainbow P/L tie-in From 9-18-87-8-W5 To 15-29-81-9-W,
    1. Total Cumulative Length (m): 29.99,
       1. SCC Method 1b : 29.99
    2. Likelihood of failure distributed between minimum of 1.927e-01 and maximum of 1.927e-01.,
    3. Consequence of failure distributed between minimum of $33.21 and maximum of $33.21 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.19 and maximum of $0.19 Millions of dollars
       2. Spill volume is between a minimum of 1816.46 and maximum of 1816.54 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $92.40 and maximum of $92.41 Millions of dollars
       2. Spill volume is between a minimum of 871790.09 and maximum of 871826.89 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $6.33 and maximum of $6.33 Millions of dollars
       2. Spill volume is between a minimum of 59684.81 and maximum of 59687.33 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Forested: 29.99"
23. "CACTUS LAKE TO KERROBERT NPS 10,
    1. Total Cumulative Length (m): 29.99,
       1. SCC Method 1b : 29.99
    2. Likelihood of failure distributed between minimum of 9.090e-01 and maximum of 9.090e-01.,
    3. Consequence of failure distributed between minimum of $1.14 and maximum of $1.14 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.23 and maximum of $0.23 Millions of dollars
       2. Spill volume is between a minimum of 2216.94 and maximum of 2216.94 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $2.25 and maximum of $2.25 Millions of dollars
       2. Spill volume is between a minimum of 21243.81 and maximum of 21243.81 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $7.72 and maximum of $7.72 Millions of dollars
       2. Spill volume is between a minimum of 72843.58 and maximum of 72843.58 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Remote: 29.99"
24. "BRETON TO EDMONTON NPS 8,
    1. Total Cumulative Length (m): 29.99,
       1. MD Method 2 : 29.99
    2. Likelihood of failure distributed between minimum of 9.239e-01 and maximum of 9.239e-01.,
    3. Consequence of failure distributed between minimum of $1.52 and maximum of $1.52 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.28 and maximum of $0.28 Millions of dollars
       2. Spill volume is between a minimum of 2636.76 and maximum of 2638.57 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $7.35 and maximum of $7.35 Millions of dollars
       2. Spill volume is between a minimum of 69321.25 and maximum of 69321.25 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $9.18 and maximum of $9.19 Millions of dollars
       2. Spill volume is between a minimum of 86637.92 and maximum of 86697.32 gallons,
    7. Product type is Condensate.
    8. Land Use is distributed as follows
       1. Agricultural: 29.99"
25. "SS-48 NPS 6,
    1. Total Cumulative Length (m): 29.96,
       1. SCC Method 1b : 29.96
    2. Likelihood of failure distributed between minimum of 1.018e-01 and maximum of 1.018e-01.,
    3. Consequence of failure distributed between minimum of $21.63 and maximum of $21.63 Millions of dollars,
    4. Leak scenario:
       1. Environmental cost between minimum of $0.17 and maximum of $0.17 Millions of dollars
       2. Spill volume is between a minimum of 1650.03 and maximum of 1650.03 gallons,
    5. Rupture scenario:
       1. Environmental cost between minimum of $49.52 and maximum of $49.52 Millions of dollars
       2. Spill volume is between a minimum of 467229.46 and maximum of 467229.46 gallons,
    6. Puncture scenario:
       1. Environmental cost between minimum of $5.75 and maximum of $5.75 Millions of dollars
       2. Spill volume is between a minimum of 54216.14 and maximum of 54216.14 gallons,
    7. Product type is Crude Oil.
    8. Land Use is distributed as follows
       1. Remote: 29.96"

## Total Likelihood and Economic Loss Consequence

### Assumptions of model

### Distribution of pipe length

The length distribution of the entire pipeline system according to risk ranking, for total risk, is presented in Figure xxx.

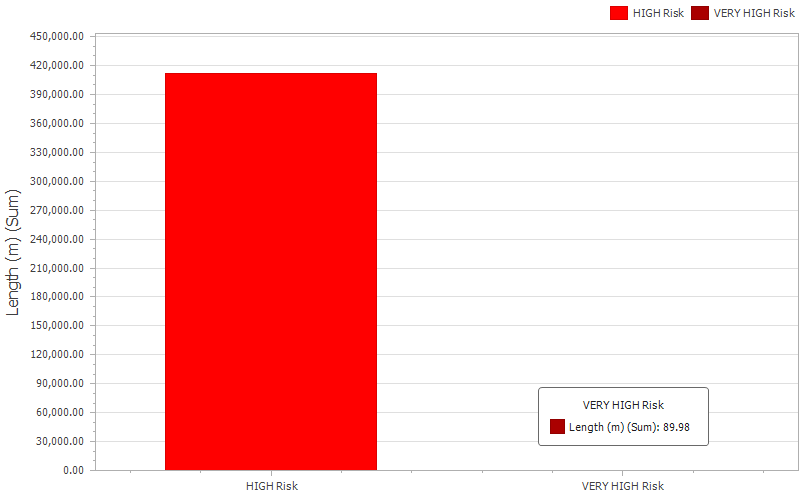


The risk ranking distribution in Figure xxx above shows that most of the pipeline segments are in the LOW RISK category, with only 25 km ranked as VERY HIGH RISK, and 154 km as HIGH RISK.

The cumulative pipeline lengths of each threat driver categorized according to risk ranking is presented in Table XXX.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Cumulative Length (m)** | | | | |
| **LOW Risk** | **MEDIUM Risk** | **HIGH Risk** | **VERY HIGH Risk** | **Grand Total** |
| Economic Loss Cost | 3,567,337.68 | 3,055,841.36 | 412,100.85 | 89.98 | **7,035,369.87** |

The cumulative lengths in each risk rank, categorized according to threat drivers as shown in Figure xxx.



### Reportable Pipeline Segments

1. "SECT 7 MANSON TO RAPID CITY NPS 6
   1. Total Cumulative Length (m): 106821.69
      1. MD Method 1 : 106821.69
   2. Likelihood of failure distributed between minimum of 1.008e-01 and maximum of 1.789e-01.
   3. Consequence of failure distributed between minimum of $3.17 and maximum of $6.00 Millions of dollars
   4. Leak scenario:
      1. Economic Loss cost between minimum of $0.27 and maximum of $2.96 Millions of dollars
      2. No. of intersections with structures is 17.0, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
      3. Damage radius distributed between minimum of 2.48 and maximum of 2.48 meters.
      4. Product Loss costs between minimum of $62,251.66 and maximum of $62,251.66
   5. Rupture scenario:
      1. Economic Loss cost between minimum of $17.84 and maximum of $20.55 Millions of dollars
      2. No. of intersections with structures is 55.0, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 75.8 and maximum of 75.8 meters.
      4. Product Loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
   6. Puncture scenario:
      1. Economic Loss cost between minimum of $2.26 and maximum of $4.95 Millions of dollars
      2. No. of intersections with structures is 39.0, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 34.91 and maximum of 34.91 meters.
      4. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13
   7. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
   8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
   9. Product type is NGL."
2. "SECT 1 EMPRESS TO CABRI NPS 6
   1. Total Cumulative Length (m): 93694.11
      1. MD Method 1 : 93694.11
   2. Likelihood of failure distributed between minimum of 1.006e-01 and maximum of 1.085e-01.
   3. Consequence of failure distributed between minimum of $3.18 and maximum of $23.54 Millions of dollars
   4. Leak scenario:
      1. Economic Loss cost between minimum of $0.27 and maximum of $20.62 Millions of dollars
      2. No. of intersections with structures is 18.0, with minimum of $25,000.00 and maximum of $20,349,375.00 in cost of structures impacted.
      3. Damage radius distributed between minimum of 2.48 and maximum of 2.48 meters.
      4. Product Loss costs between minimum of $62,251.66 and maximum of $62,251.66
   5. Rupture scenario:
      1. Economic Loss cost between minimum of $17.84 and maximum of $38.21 Millions of dollars
      2. No. of intersections with structures is 45.0, with minimum of $25,000.00 and maximum of $20,374,375.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 75.8 and maximum of 75.8 meters.
      4. Product Loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
   6. Puncture scenario:
      1. Economic Loss cost between minimum of $2.26 and maximum of $22.63 Millions of dollars
      2. No. of intersections with structures is 41.0, with minimum of $25,000.00 and maximum of $20,374,375.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 34.91 and maximum of 34.91 meters.
      4. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13
   7. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
   8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
   9. Product type is NGL."
3. "UTIKUMA TO EDMONTON NPS 24
   1. Total Cumulative Length (m): 32296.4
      1. EC Method 2 : 60.0
      2. SCC Method 2 : 32116.41
      3. MD Method 2 : 60.0
      4. RES : 60.0
   2. Likelihood of failure distributed between minimum of 8.629e-02 and maximum of 8.734e-01.
   3. Consequence of failure distributed between minimum of $2.50 and maximum of $12.92 Millions of dollars
   4. Leak scenario:
      1. Economic Loss cost between minimum of $2.47 and maximum of $5.49 Millions of dollars
      2. No. of intersections with structures is 644.0, with minimum of $18,600.00 and maximum of $2,688,250.00 in cost of structures impacted.
      3. Damage radius distributed between minimum of 2.15 and maximum of 2.15 meters.
      4. Product Loss costs between minimum of $1,514.19 and maximum of $513,907.55
   5. Rupture scenario:
      1. Economic Loss cost between minimum of $2.54 and maximum of $25.63 Millions of dollars
      2. No. of intersections with structures is 346.0, with minimum of $25,000.00 and maximum of $22,663,000.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 72.08 and maximum of 72.08 meters.
      4. Product Loss costs between minimum of $69,532.38 and maximum of $973,072.76
   6. Puncture scenario:
      1. Economic Loss cost between minimum of $2.48 and maximum of $5.57 Millions of dollars
      2. No. of intersections with structures is 730.0, with minimum of $18,600.00 and maximum of $2,713,250.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 8.39 and maximum of 8.39 meters.
      4. Product Loss costs between minimum of $3,183.95 and maximum of $513,907.55
   7. Repair costs between minimum of $73,000.00 and maximum of $404,000.00.
   8. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
   9. Product type is Crude Oil."
4. "BUCK CREEK FRAC PLANT TO BRETON NPS 6
   1. Total Cumulative Length (m): 30302.96
      1. MD Method 1 : 30302.96
   2. Likelihood of failure distributed between minimum of 1.017e-01 and maximum of 1.082e-01.
   3. Consequence of failure distributed between minimum of $1.66 and maximum of $4.35 Millions of dollars
   4. Leak scenario:
      1. Economic Loss cost between minimum of $0.24 and maximum of $2.93 Millions of dollars
      2. No. of intersections with structures is 6.0, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
      3. Damage radius distributed between minimum of 1.73 and maximum of 1.73 meters.
      4. Product Loss costs between minimum of $30,397.21 and maximum of $30,397.21
   5. Rupture scenario:
      1. Economic Loss cost between minimum of $8.82 and maximum of $15.40 Millions of dollars
      2. No. of intersections with structures is 33.0, with minimum of $18,600.00 and maximum of $6,579,225.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 58.56 and maximum of 58.56 meters.
      4. Product Loss costs between minimum of $8,607,418.48 and maximum of $8,607,418.48
   6. Puncture scenario:
      1. Economic Loss cost between minimum of $1.21 and maximum of $3.90 Millions of dollars
      2. No. of intersections with structures is 15.0, with minimum of $18,600.00 and maximum of $2,688,250.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 26.97 and maximum of 26.97 meters.
      4. Product Loss costs between minimum of $998,783.28 and maximum of $998,783.28
   7. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
   8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
   9. Product type is HVP Product."
5. "SSPL TRUNK LINE NPS 12
   1. Total Cumulative Length (m): 10786.69
      1. MD Method 2 : 10786.69
   2. Likelihood of failure distributed between minimum of 1.067e-01 and maximum of 1.000e+00.
   3. Consequence of failure distributed between minimum of $0.85 and maximum of $1.13 Millions of dollars
   4. Leak scenario:
      1. Economic Loss cost between minimum of $0.85 and maximum of $1.12 Millions of dollars
      2. No. of intersections with structures is 53.0, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted.
      3. Damage radius distributed between minimum of 2.38 and maximum of 2.38 meters.
      4. Product Loss costs between minimum of $1,903.09 and maximum of $2,460.63
   5. Rupture scenario:
      1. Economic Loss cost between minimum of $0.89 and maximum of $1.17 Millions of dollars
      2. No. of intersections with structures is 77.0, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 44.98 and maximum of 44.98 meters.
      4. Product Loss costs between minimum of $41,880.03 and maximum of $141,238.69
   6. Puncture scenario:
      1. Economic Loss cost between minimum of $0.91 and maximum of $1.18 Millions of dollars
      2. No. of intersections with structures is 84.0, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 9.3 and maximum of 9.3 meters.
      4. Product Loss costs between minimum of $62,531.33 and maximum of $80,850.86
   7. Repair costs between minimum of $44,000.00 and maximum of $187,000.00.
   8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
   9. Product type is Crude Oil."
6. "BRETON TO EDMONTON NPS 10
   1. Total Cumulative Length (m): 10681.94
      1. SCC Method 2 : 9872.15
      2. MD Method 2 : 629.84
      3. CSCC Method 2 : 179.95
   2. Likelihood of failure distributed between minimum of 1.053e-02 and maximum of 1.000e+00.
   3. Consequence of failure distributed between minimum of $0.26 and maximum of $89.50 Millions of dollars
   4. Leak scenario:
      1. Economic Loss cost between minimum of $0.26 and maximum of $5.70 Millions of dollars
      2. No. of intersections with structures is 105.0, with minimum of $18,600.00 and maximum of $5,376,500.00 in cost of structures impacted.
      3. Damage radius distributed between minimum of 2.06 and maximum of 2.43 meters.
      4. Product Loss costs between minimum of $42,899.29 and maximum of $59,691.29
   5. Rupture scenario:
      1. Economic Loss cost between minimum of $0.24 and maximum of $201.26 Millions of dollars
      2. No. of intersections with structures is 220.0, with minimum of $25,000.00 and maximum of $200,956,075.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 93.93 and maximum of 105.79 meters.
      4. Product Loss costs between minimum of $20,118.82 and maximum of $48,667.11
   6. Puncture scenario:
      1. Economic Loss cost between minimum of $1.63 and maximum of $98.76 Millions of dollars
      2. No. of intersections with structures is 318.0, with minimum of $0.00 and maximum of $97,071,340.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 30.53 and maximum of 34.38 meters.
      4. Product Loss costs between minimum of $1,409,573.18 and maximum of $1,961,320.39
   7. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
   8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
   9. Product type is HVP Product."
7. "MADDEN 13-30 TO SUNDRE 16-8 NPS 8
   1. Total Cumulative Length (m): 10660.51
      1. MD Method 1 : 10660.51
   2. Likelihood of failure distributed between minimum of 1.085e-01 and maximum of 9.167e-01.
   3. Consequence of failure distributed between minimum of $0.22 and maximum of $2.07 Millions of dollars
   4. Leak scenario:
      1. Economic Loss cost between minimum of $0.22 and maximum of $2.06 Millions of dollars
      2. No. of intersections with structures is 53.0, with minimum of $25,000.00 and maximum of $1,839,600.00 in cost of structures impacted.
      3. Damage radius distributed between minimum of 2.22 and maximum of 2.22 meters.
      4. Product Loss costs between minimum of $1,625.35 and maximum of $1,930.93
   5. Rupture scenario:
      1. Economic Loss cost between minimum of $0.22 and maximum of $2.11 Millions of dollars
      2. No. of intersections with structures is 44.0, with minimum of $25,000.00 and maximum of $1,839,600.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 29.34 and maximum of 29.34 meters.
      4. Product Loss costs between minimum of $7,155.80 and maximum of $57,172.05
   6. Puncture scenario:
      1. Economic Loss cost between minimum of $0.27 and maximum of $2.12 Millions of dollars
      2. No. of intersections with structures is 70.0, with minimum of $25,000.00 and maximum of $1,839,600.00 in cost of structures impacted
      3. Damage radius distributed between minimum of 8.66 and maximum of 8.66 meters.
      4. Product Loss costs between minimum of $53,405.26 and maximum of $63,445.91
   7. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
   8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
   9. Product type is Crude Oil."
8. "Empress 8 inch Water
   1. Total Cumulative Length (m): 10119.82
      1. EC Method 1 : 10119.82
   2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.904e-01.
   3. Consequence of failure distributed between minimum of $0.20 and maximum of $0.22 Millions of dollars
   4. Leak scenario:
      1. Economic Loss cost between minimum of $0.21 and maximum of $0.22 Millions of dollars
      2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
      3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
      4. Product Loss costs between minimum of $0.00 and maximum of $0.00
   5. Rupture scenario:
      1. Economic Loss cost between minimum of $0.21 and maximum of $0.22 Millions of dollars
      2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
      3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
      4. Product Loss costs between minimum of $0.00 and maximum of $0.00
   6. Puncture scenario:
      1. Economic Loss cost between minimum of $0.21 and maximum of $0.22 Millions of dollars
      2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
      3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
      4. Product Loss costs between minimum of $0.00 and maximum of $0.00
   7. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
   8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
   9. Product type is Fresh Water."
9. "Empress 10 inch Water
   1. Total Cumulative Length (m): 10102.58
      1. EC Method 1 : 10102.58
   2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.906e-01.
   3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28 Millions of dollars
   4. Leak scenario:
      1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
      2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
      3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
      4. Product Loss costs between minimum of $0.00 and maximum of $0.00
   5. Rupture scenario:
      1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
      2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
      3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
      4. Product Loss costs between minimum of $0.00 and maximum of $0.00
   6. Puncture scenario:
      1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
      2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
      3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
      4. Product Loss costs between minimum of $0.00 and maximum of $0.00
   7. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
   8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
   9. Product type is Fresh Water."
10. "Sarnia 8 inch Fresh Water
    1. Total Cumulative Length (m): 7977.89
       1. EC Method 1 : 7977.89
    2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.906e-01.
    3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.25 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.21 and maximum of $0.25 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $0.21 and maximum of $0.25 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $0.21 and maximum of $0.25 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    7. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is Fresh Water."
11. "UTILITY NPS 8
    1. Total Cumulative Length (m): 7825.84
       1. MD Method 1 : 7825.84
    2. Likelihood of failure distributed between minimum of 1.005e-01 and maximum of 1.262e-01.
    3. Consequence of failure distributed between minimum of $2.97 and maximum of $4.66 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.25 and maximum of $0.52 Millions of dollars
       2. No. of intersections with structures is 16.0, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
       3. Damage radius distributed between minimum of 1.99 and maximum of 1.99 meters.
       4. Product Loss costs between minimum of $40,141.48 and maximum of $40,141.48
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $19.48 and maximum of $25.75 Millions of dollars
       2. No. of intersections with structures is 40.0, with minimum of $25,000.00 and maximum of $6,266,540.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 78.26 and maximum of 78.26 meters.
       4. Product Loss costs between minimum of $19,265,442.30 and maximum of $19,265,442.30
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $1.53 and maximum of $5.33 Millions of dollars
       2. No. of intersections with structures is 45.0, with minimum of $25,000.00 and maximum of $3,792,943.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 29.81 and maximum of 29.81 meters.
       4. Product Loss costs between minimum of $1,318,957.76 and maximum of $1,318,957.76
    7. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is HVP Product."
12. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
    1. Total Cumulative Length (m): 7207.95
       1. SCC Method 2 : 59.99
       2. MD Method 2 : 1716.89
       3. CSCC Method 2 : 5431.07
    2. Likelihood of failure distributed between minimum of 1.008e-01 and maximum of 8.709e-01.
    3. Consequence of failure distributed between minimum of $2.35 and maximum of $19.93 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.27 and maximum of $0.62 Millions of dollars
       2. No. of intersections with structures is 16.0, with minimum of $25,000.00 and maximum of $339,600.00 in cost of structures impacted.
       3. Damage radius distributed between minimum of 2.2 and maximum of 2.43 meters.
       4. Product Loss costs between minimum of $49,027.76 and maximum of $59,691.29
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $36.77 and maximum of $73.79 Millions of dollars
       2. No. of intersections with structures is 105.0, with minimum of $25,000.00 and maximum of $29,065,968.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 98.56 and maximum of 105.79 meters.
       4. Product Loss costs between minimum of $36,553,283.29 and maximum of $44,503,622.40
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $1.83 and maximum of $2.52 Millions of dollars
       2. No. of intersections with structures is 60.0, with minimum of $25,000.00 and maximum of $339,600.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 32.03 and maximum of 34.38 meters.
       4. Product Loss costs between minimum of $1,610,940.77 and maximum of $1,961,320.39
    7. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is HVP Product."
13. "EMPRESS WATER LINE NPS 10
    1. Total Cumulative Length (m): 6987.6
       1. EC Method 1 : 6987.6
    2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.904e-01.
    3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    7. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is Fresh Water."
14. "EMPRESS WASTE WATER DISCHARGE NPS 10
    1. Total Cumulative Length (m): 6957.2
       1. IC Method 1 : 6957.2
    2. Likelihood of failure distributed between minimum of 9.458e-01 and maximum of 9.484e-01.
    3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    7. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is WATER DISPOSAL."
15. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
    1. Total Cumulative Length (m): 5921.75
       1. MD Method 2 : 5891.75
       2. RES : 30.0
    2. Likelihood of failure distributed between minimum of 1.108e-01 and maximum of 1.000e+00.
    3. Consequence of failure distributed between minimum of $0.85 and maximum of $1.11 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.85 and maximum of $0.99 Millions of dollars
       2. No. of intersections with structures is 24.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
       3. Damage radius distributed between minimum of 2.18 and maximum of 2.47 meters.
       4. Product Loss costs between minimum of $1,697.16 and maximum of $2,711.24
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $0.88 and maximum of $2.44 Millions of dollars
       2. No. of intersections with structures is 60.0, with minimum of $25,000.00 and maximum of $1,500,000.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 41.16 and maximum of 46.6 meters.
       4. Product Loss costs between minimum of $32,292.36 and maximum of $276,046.39
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $0.90 and maximum of $1.08 Millions of dollars
       2. No. of intersections with structures is 56.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 8.51 and maximum of 9.64 meters.
       4. Product Loss costs between minimum of $55,764.98 and maximum of $89,085.14
    7. Repair costs between minimum of $44,000.00 and maximum of $187,000.00.
    8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
    9. Product type is Crude Oil."
16. "MARSHALL TO DULWICH BUTANE NPS 4
    1. Total Cumulative Length (m): 5476.82
       1. TPD : 5476.82
    2. Likelihood of failure distributed between minimum of 1.395e-02 and maximum of 1.395e-02.
    3. Consequence of failure distributed between minimum of $11.15 and maximum of $11.20 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.51 and maximum of $0.53 Millions of dollars
       2. No. of intersections with structures is 4.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       3. Damage radius distributed between minimum of 2.63 and maximum of 2.63 meters.
       4. Product Loss costs between minimum of $297,296.59 and maximum of $297,296.59
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $39.05 and maximum of $39.10 Millions of dollars
       2. No. of intersections with structures is 12.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 59.81 and maximum of 59.81 meters.
       4. Product Loss costs between minimum of $38,840,282.94 and maximum of $38,840,282.94
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $9.98 and maximum of $10.03 Millions of dollars
       2. No. of intersections with structures is 9.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 36.39 and maximum of 36.39 meters.
       4. Product Loss costs between minimum of $9,768,490.70 and maximum of $9,768,490.70
    7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is Butane."
17. "SS-15 NPS 6
    1. Total Cumulative Length (m): 5229.36
       1. IC Method 1 : 5229.36
    2. Likelihood of failure distributed between minimum of 9.211e-01 and maximum of 9.263e-01.
    3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.23 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.21 and maximum of $0.21 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
       3. Damage radius distributed between minimum of 2.47 and maximum of 2.47 meters.
       4. Product Loss costs between minimum of $2,056.96 and maximum of $2,177.33
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $0.80 and maximum of $0.83 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 25.68 and maximum of 25.68 meters.
       4. Product Loss costs between minimum of $582,457.84 and maximum of $616,543.44
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $0.28 and maximum of $0.28 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 9.64 and maximum of 9.64 meters.
       4. Product Loss costs between minimum of $67,586.95 and maximum of $71,542.16
    7. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is Crude Oil."
18. "C3 FROM ESSO NPS 6
    1. Total Cumulative Length (m): 4075.15
       1. IC Method 1 : 4075.15
    2. Likelihood of failure distributed between minimum of 9.108e-01 and maximum of 9.211e-01.
    3. Consequence of failure distributed between minimum of $0.28 and maximum of $0.58 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.24 and maximum of $0.50 Millions of dollars
       2. No. of intersections with structures is 15.0, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
       3. Damage radius distributed between minimum of 1.55 and maximum of 1.55 meters.
       4. Product Loss costs between minimum of $24,336.15 and maximum of $24,336.15
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $7.10 and maximum of $11.97 Millions of dollars
       2. No. of intersections with structures is 18.0, with minimum of $25,000.00 and maximum of $4,871,372.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 54.05 and maximum of 54.05 meters.
       4. Product Loss costs between minimum of $6,891,140.89 and maximum of $6,891,140.89
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $1.01 and maximum of $1.28 Millions of dollars
       2. No. of intersections with structures is 20.0, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 8.89 and maximum of 8.89 meters.
       4. Product Loss costs between minimum of $799,630.73 and maximum of $799,630.73
    7. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is HVP Product."
19. "RICHARDSON GAS LINE NPS 3
    1. Total Cumulative Length (m): 3703.21
       1. EC Method 1 : 3703.21
    2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.907e-01.
    3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.24 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.21 and maximum of $0.23 Millions of dollars
       2. No. of intersections with structures is 1.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       3. Damage radius distributed between minimum of 0.58 and maximum of 0.58 meters.
       4. Product Loss costs between minimum of $3,382.92 and maximum of $3,382.92
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $0.47 and maximum of $0.51 Millions of dollars
       2. No. of intersections with structures is 3.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 5.14 and maximum of 5.14 meters.
       4. Product Loss costs between minimum of $267,358.90 and maximum of $267,358.90
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $0.32 and maximum of $0.34 Millions of dollars
       2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 3.31 and maximum of 3.31 meters.
       4. Product Loss costs between minimum of $111,154.91 and maximum of $111,154.91
    7. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is NGL."
20. "Sarnia 6 inch tied into 6 inch E/P line
    1. Total Cumulative Length (m): 2501.78
       1. IC Method 1 : 2501.78
    2. Likelihood of failure distributed between minimum of 9.107e-01 and maximum of 9.129e-01.
    3. Consequence of failure distributed between minimum of $0.33 and maximum of $0.65 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.26 and maximum of $0.58 Millions of dollars
       2. No. of intersections with structures is 40.0, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted.
       3. Damage radius distributed between minimum of 2.09 and maximum of 2.09 meters.
       4. Product Loss costs between minimum of $44,363.99 and maximum of $44,363.99
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $12.80 and maximum of $13.31 Millions of dollars
       2. No. of intersections with structures is 21.0, with minimum of $25,000.00 and maximum of $537,650.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 67.1 and maximum of 67.1 meters.
       4. Product Loss costs between minimum of $12,562,319.03 and maximum of $12,562,319.03
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $1.67 and maximum of $1.99 Millions of dollars
       2. No. of intersections with structures is 47.0, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 30.9 and maximum of 30.9 meters.
       4. Product Loss costs between minimum of $1,457,700.03 and maximum of $1,457,700.03
    7. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is HVP Product."
21. "Kerrbert 4 inch Water
    1. Total Cumulative Length (m): 2341.68
       1. EC Method 1 : 2341.68
    2. Likelihood of failure distributed between minimum of 9.904e-01 and maximum of 9.914e-01.
    3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.23 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.21 and maximum of $0.23 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $0.21 and maximum of $0.23 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $0.21 and maximum of $0.23 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
       4. Product Loss costs between minimum of $0.00 and maximum of $0.00
    7. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is Fresh Water."
22. "10-36 LACT TO CROOKED LAKE NPS 6
    1. Total Cumulative Length (m): 2315.46
       1. IC Method 1 : 2315.46
    2. Likelihood of failure distributed between minimum of 9.060e-01 and maximum of 9.063e-01.
    3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.21 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.21 and maximum of $0.21 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
       3. Damage radius distributed between minimum of 2.37 and maximum of 2.37 meters.
       4. Product Loss costs between minimum of $1,877.22 and maximum of $1,928.94
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $0.74 and maximum of $0.76 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 24.64 and maximum of 24.64 meters.
       4. Product Loss costs between minimum of $531,561.71 and maximum of $546,207.16
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $0.27 and maximum of $0.28 Millions of dollars
       2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
       3. Damage radius distributed between minimum of 9.25 and maximum of 9.25 meters.
       4. Product Loss costs between minimum of $61,681.09 and maximum of $63,380.51
    7. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is Crude Oil."
23. "COED BV 203 TO EST NPS 8
    1. Total Cumulative Length (m): 2259.9
       1. IC Method 1 : 2259.9
    2. Likelihood of failure distributed between minimum of 9.299e-01 and maximum of 9.718e-01.
    3. Consequence of failure distributed between minimum of $0.34 and maximum of $3.62 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.25 and maximum of $2.97 Millions of dollars
       2. No. of intersections with structures is 44.0, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted.
       3. Damage radius distributed between minimum of 7.14 and maximum of 7.14 meters.
       4. Product Loss costs between minimum of $2,189.51 and maximum of $2,240.98
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $1.41 and maximum of $12.13 Millions of dollars
       2. No. of intersections with structures is 16.0, with minimum of $100,000.00 and maximum of $10,828,000.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 80.9 and maximum of 80.9 meters.
       4. Product Loss costs between minimum of $1,050,831.84 and maximum of $1,075,531.96
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $0.35 and maximum of $8.44 Millions of dollars
       2. No. of intersections with structures is 46.0, with minimum of $25,000.00 and maximum of $8,114,750.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 28.43 and maximum of 28.43 meters.
       4. Product Loss costs between minimum of $71,942.43 and maximum of $73,633.46
    7. Repair costs between minimum of $50,000.00 and maximum of $50,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is Condensate."
24. "SPEED CORNER TO FORT SASKATCHEWAN INLET (KEYSPAN) NPS 16
    1. Total Cumulative Length (m): 1771.15
       1. IC Method 1 : 1771.15
    2. Likelihood of failure distributed between minimum of 9.106e-01 and maximum of 9.158e-01.
    3. Consequence of failure distributed between minimum of $1.36 and maximum of $1.59 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $1.02 and maximum of $1.10 Millions of dollars
       2. No. of intersections with structures is 15.0, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
       3. Damage radius distributed between minimum of 1.86 and maximum of 1.86 meters.
       4. Product Loss costs between minimum of $35,177.42 and maximum of $35,177.42
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $59.11 and maximum of $59.26 Millions of dollars
       2. No. of intersections with structures is 8.0, with minimum of $25,000.00 and maximum of $175,000.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 116.45 and maximum of 116.45 meters.
       4. Product Loss costs between minimum of $58,099,358.13 and maximum of $58,099,358.13
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $2.14 and maximum of $2.27 Millions of dollars
       2. No. of intersections with structures is 23.0, with minimum of $25,000.00 and maximum of $125,000.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 28.42 and maximum of 28.42 meters.
       4. Product Loss costs between minimum of $1,155,850.00 and maximum of $1,155,850.00
    7. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
    8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
    9. Product type is HVP Product."
25. "BUCK CREEK TO STATION 1 NPS 3
    1. Total Cumulative Length (m): 1684.92
       1. IC Method 1 : 1684.92
    2. Likelihood of failure distributed between minimum of 9.053e-01 and maximum of 9.624e-01.
    3. Consequence of failure distributed between minimum of $0.30 and maximum of $2.98 Millions of dollars
    4. Leak scenario:
       1. Economic Loss cost between minimum of $0.28 and maximum of $2.97 Millions of dollars
       2. No. of intersections with structures is 5.0, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
       3. Damage radius distributed between minimum of 2.09 and maximum of 2.09 meters.
       4. Product Loss costs between minimum of $74,968.65 and maximum of $74,968.65
    5. Rupture scenario:
       1. Economic Loss cost between minimum of $6.13 and maximum of $8.82 Millions of dollars
       2. No. of intersections with structures is 7.0, with minimum of $269,868.00 and maximum of $2,688,250.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 41.28 and maximum of 41.28 meters.
       4. Product Loss costs between minimum of $5,924,929.50 and maximum of $5,924,929.50
    6. Puncture scenario:
       1. Economic Loss cost between minimum of $2.67 and maximum of $5.36 Millions of dollars
       2. No. of intersections with structures is 8.0, with minimum of $269,868.00 and maximum of $2,688,250.00 in cost of structures impacted
       3. Damage radius distributed between minimum of 30.76 and maximum of 30.76 meters.
       4. Product Loss costs between minimum of $2,463,299.44 and maximum of $2,463,299.44
    7. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
    8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
    9. Product type is Ethane."

# Risk Algorithm Comparison

An assessment of overall risk can be presented in a number of different ways, recognizing that the presentation of results is often dictated by the objective for performing the analysis. Within this presentation of the results, the overall risk considers the risk for each of the 326 pipelines and also considers the risk associated with dynamic segments along each pipeline. The 2018 and 2017 risk results for the Plains pipelines are summarized and mapped to the Plains ORM presented in Figure 2 and Figure 3, respectively. The 2018 and 2017 dynamic segments are also presented in Figure 4 and Figure 5, respectively, to provide additional granularity.

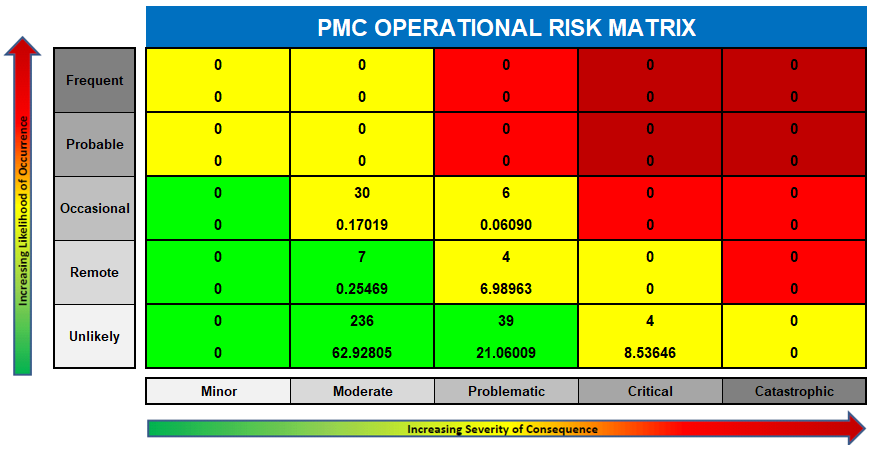


Figure 5 – 2018 Plains ORM (Pipeline Level) by Pipeline and Percentage of System Length

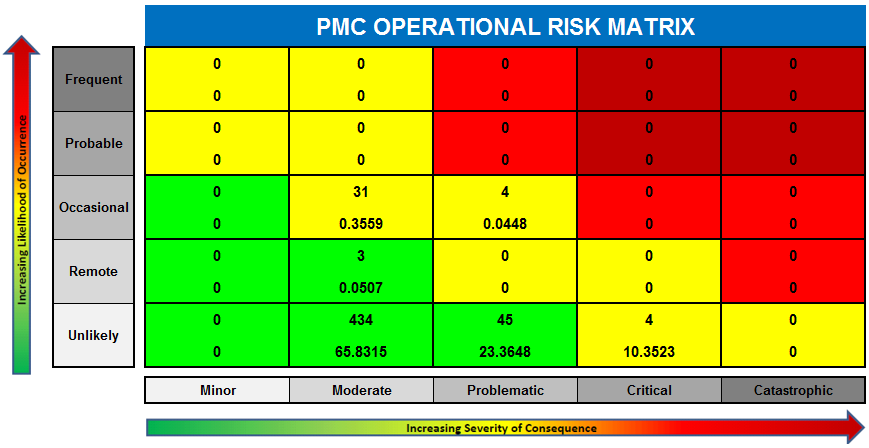


Figure 6 – 2017 Plains ORM (Pipeline Level) by Pipeline and Percentage of System Length

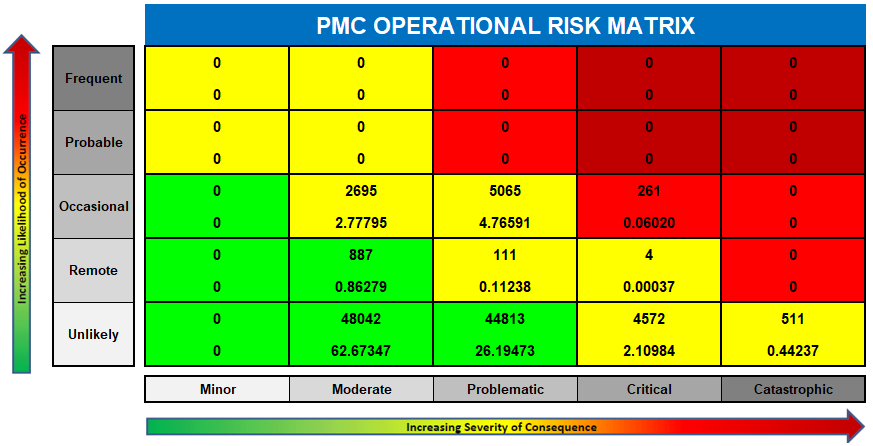


Figure 7 – 2018 Plains ORM (Dynamic Segment Level) by Segment Count and Percentage of System Length

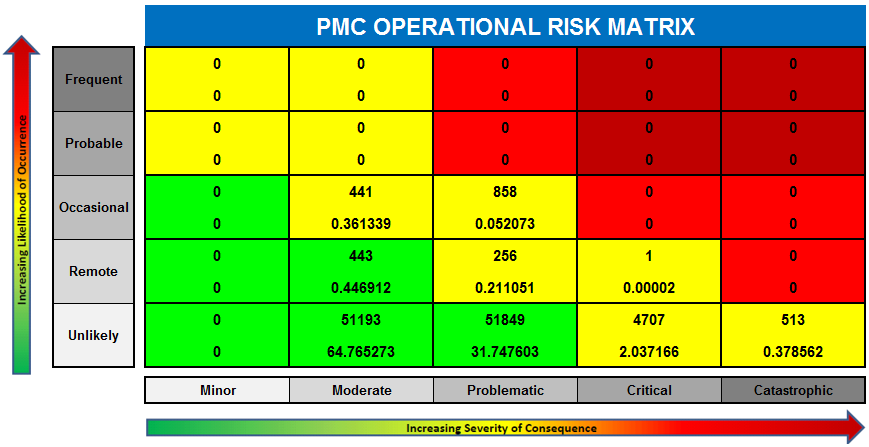


Figure 8 – 2017 Plains ORM (Dynamic Segment Level) by Segment Count and Percentage of System Length

The overall risk profile, as seen in Figure 6, has increased from the 2017 results to the 2018 results. On a pipeline level, the number of pipelines that are reportable medium risk have increased from four pipelines in 2017 to ten pipelines in 2018. The number of pipeline segments with reportable medium risk has increased from 18 pipelines to 24 pipelines. The length of pipe across all systems in the reportable high and medium risk section has also increased from 0.3% (22 km) to 4.8% (350 km). The increase in risk scores from 2017 to 2018 is mainly attributed to:

* The number of crack-like anomalies identified through the first crack detection ILI survey. The ILI data enables a quantitative approach by eliminating assumptions that are inherent to qualitative methodology for the MD and SCC threat (failure pressure calculations[[12]](#footnote-12) vs susceptibility).
* Historic ILI surveys nearing their scheduled re-inspection dates (Likelihood increases in time dependent threats such as EC and IC)
* The addition of a number of non-piggable pipelines into IRAS has also contributed to higher likelihood scores.

Details identifying the primary and secondary risk drivers for reportable segments are listed in Sections 5.1 through 5.24.  The most severe anomalies have been identified and reported to Plains, which have been commented as either been repaired or planned to be addressed in the near future.

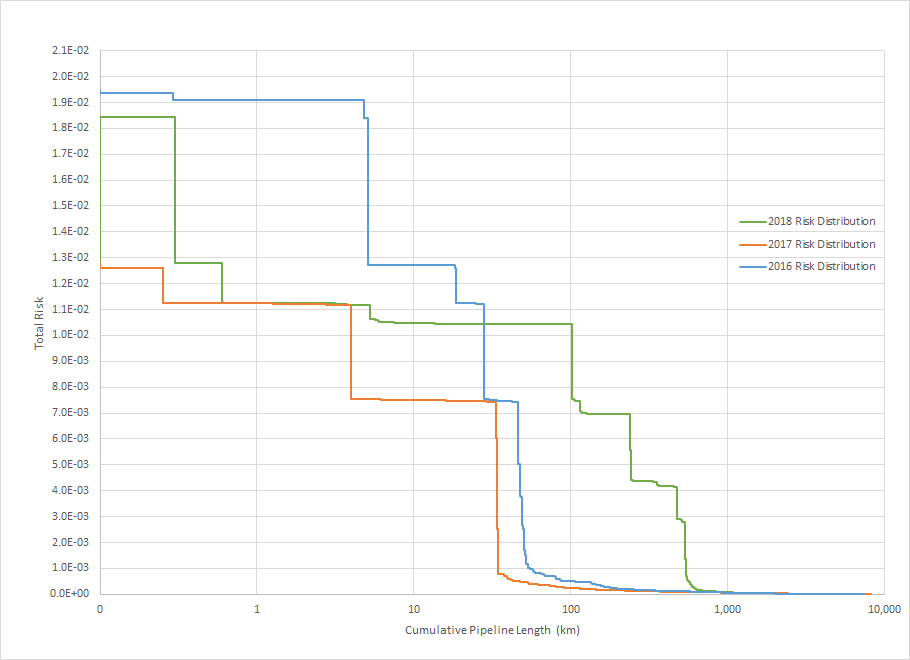


Figure 9 – Annual Trending Risk Distribution

In 2017, 521 operating pipelines (a total of 8,265 kilometers) were assessed; while in 2018, 326 operating pipelines (a total of 7,091 kilometers) were assessed. While some non-piggable lines were added in 2018, the primary reason for the significant decrease in the number of pipelines and pipeline lengths from the 2017 results to the 2018 results is the removal of the Steelman pipeline system. In addition, multiple pipelines across several pipeline systems had their operating status updated to an inactive state (i.e. discontinued or abandoned).

In the 2018 results, there are ten pipelines falling into the upper right 4 x 3 “reportable” portion of the Plains ORM at the pipeline level:

* Four non-piggable pipelines from the 2017 risk results:
  + ENBRIDGE TRANSFER LINE NPS 30
  + NPS20 ENBRIDGE BLEND TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
  + NPS20 ENBRIDGE CONDENSATE TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
  + BATCH TRANSFER LINE NPS 24
* Three pipelines added in the 2018 Plains database:
  + KERROBERT UNIT RAIL TRANSFER NPS 20
  + 14-02 to 12-02 NPS 24 (non-piggable)
  + NIPISI 14-02 TO 11-02 NPS24 (non-piggable)
* Three pipelines with the majority of length being “reportable”:
  + NPS10 Lone Rock to Unity From 9-10-47-27-W3 To 14-2-40-24-W3
  + NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
  + SSPL MAINLINE NPS 16

In 2018, there are three pipelines with “High” risk segments identified, primarily driven by the “Occasional” MD threat and the “Critical” environmental consequences; while in 2017, no pipelines had “High” risk segments. These three pipelines are listed below:

* + CADOTTE LAKE TO UTIKUMA STATION NPS 20
  + UTIKUMA TO EDMONTON NPS 24
  + SSPL MAINLINE NPS 16

In 2018, a total of 24 pipelines have segments (346 kilometers or 4.9% of the total 2018 system-wide length) with risk falling into the “reportable” portion of the Plains ORM. In 2017, a total of 18 pipelines had segments (21.7 kilometers or 0.3% of the total 2017 system wide length) with risk falling into the “reportable” portion of the Plains ORM.

* 12 pipelines from the 2017 risk results:
  + ENBRIDGE TRANSFER LINE NPS 30
  + NPS20 ENBRIDGE BLEND TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
  + NPS20 ENBRIDGE CONDENSATE TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
  + CADOTTE LAKE TO UTIKUMA STATION NPS 20
  + UTIKUMA TO EDMONTON NPS 24
  + NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
  + PINCHER CREEK TO CARWAY NPS 12
  + SUNDRE TO HARTELL NPS 12
  + NPS8 SARNIA CONDENSATE TO SUNCOR
  + SSPL MAINLINE NPS 16
  + SSPL TRUNK LINE NPS 12
  + BATCH TRANSFER LINE NPS 24
* 12 new “Reportable” pipelines for 2018
  + BRETON TO EDMONTON NPS 8
  + MADDEN 13-30 TO SUNDRE 16-8 NPS 8
  + KERROBERT UNIT RAIL TRANSFER NPS 20
  + NPS10 Lone Rock to Unity From 9-10-47-27-W3 To 14-2-40-24-W3
  + NPS10 Unity to Kerrobert From 14-2-40-24-W3 To 10-34-33-22-W3
  + 14-02 to 12-02 NPS 24
  + NIPISI 14-02 TO 11-02 NPS24
  + NPS10 RPII Mainline From 10-36-54-24W4 To 11-02-80-8W5
  + NPS12 Medicine River Jct to Sundre From 9-27-39-3-W5 To 16-8-34-5-W5
  + NPS12 Rimbey to Medicine River Jct From 13-23-42-2-W5 To 9-27-39-3-W5
  + NPS8 SS-1 From 10-21-18-17-W3 To 2-27-16-17-W3
  + SS-49 NPS 6

There are six pipelines from the 2017 risk results that are no longer part of the “Reportable” sections. A brief summary is below.

* EASTERN DELIVERY SYSTEM (EDS) NORTH NPS 10/12
  + Lower SCC Method 1 Score due to updated pipe properties (wall thickness and grade) and lower operating pressure
* NPS8 Laporte to Kerrobert from 4-2-27-26W3 to 4-34-33-22W3
  + Lower Economic Score due to updated product type
* NPS8 Empress to Laporte from 5-12-20-1W4 to 4-2-27-26W3
  + Lower Economic Score due to updated product type
* DULWICH TO LONE ROCK BLEND NPS 10
  + Lower Environmental Score due to updated outflow volume study
* LONE ROCK TO DULWICH NPS 6
  + Lower Environmental Score due to updated outflow volume study
* ELLERSLIE TO STRATHCONA NPS 12
  + Lower Environmental Score due to updated outflow volume study

## Third Party Damage and Total Consequence

## Manufacturing Defects and Total Consequence

## Stress Corrosion Cracking and Total Consequence

## Internal Corrosion and Total Consequence

## External Corrosion and Total Consequence

## Construction Threat and Total Consequence

## Natural Forces and Total Consequence

## Incorrect Operations and Total Consequence

## Total Likelihood and Safety Consequence

## Total Likelihood and Environmental Consequence

## Total Likelihood and Economic Loss Consequence

# Summary of Findings

# Revision History

Table 5 – Report Revision

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Version** | **By** | **Description** |
| July 12, 2018 | 0.1 | Dynamic Risk | Date of Issue |
| September 27, 2018 | 0.2 | Dynamic Risk | Update DRAFT report based on Plains’ feedback |
| November 14, 2018 | 0.3 | Dynamic Risk | Update DRAFT report based on Plains’ feedback |
| November 21, 2018 | 0.4 | Dynamic Risk | Update DRAFT report based on Plains’ feedback |
| November 28, 2018 | 0.5 | Dynamic Risk | Update Executive Summary and Risk Comparison based on Plains’ feedback |
| December 13, 2018 | 1.0 | Dynamic Risk | Date of Finalization |

1. – 2019 quantitative algorithm outputs

Leak vs. rupture results

Leak vs. rupture results mapped to Plains ORM

1. – Steps to Map Risk Results to the Plains ORM

The Plains ORM is a 5 x 5 structure that includes Severity of Consequence on the X-axis and Likelihood of Occurrence on the Y-axis. The resulting combination of consequence and likelihood leads to a risk rating of “Low”, “Medium”, “High” or “Very High”. The Plains ORM is shown in the figure below along with the detailed description:

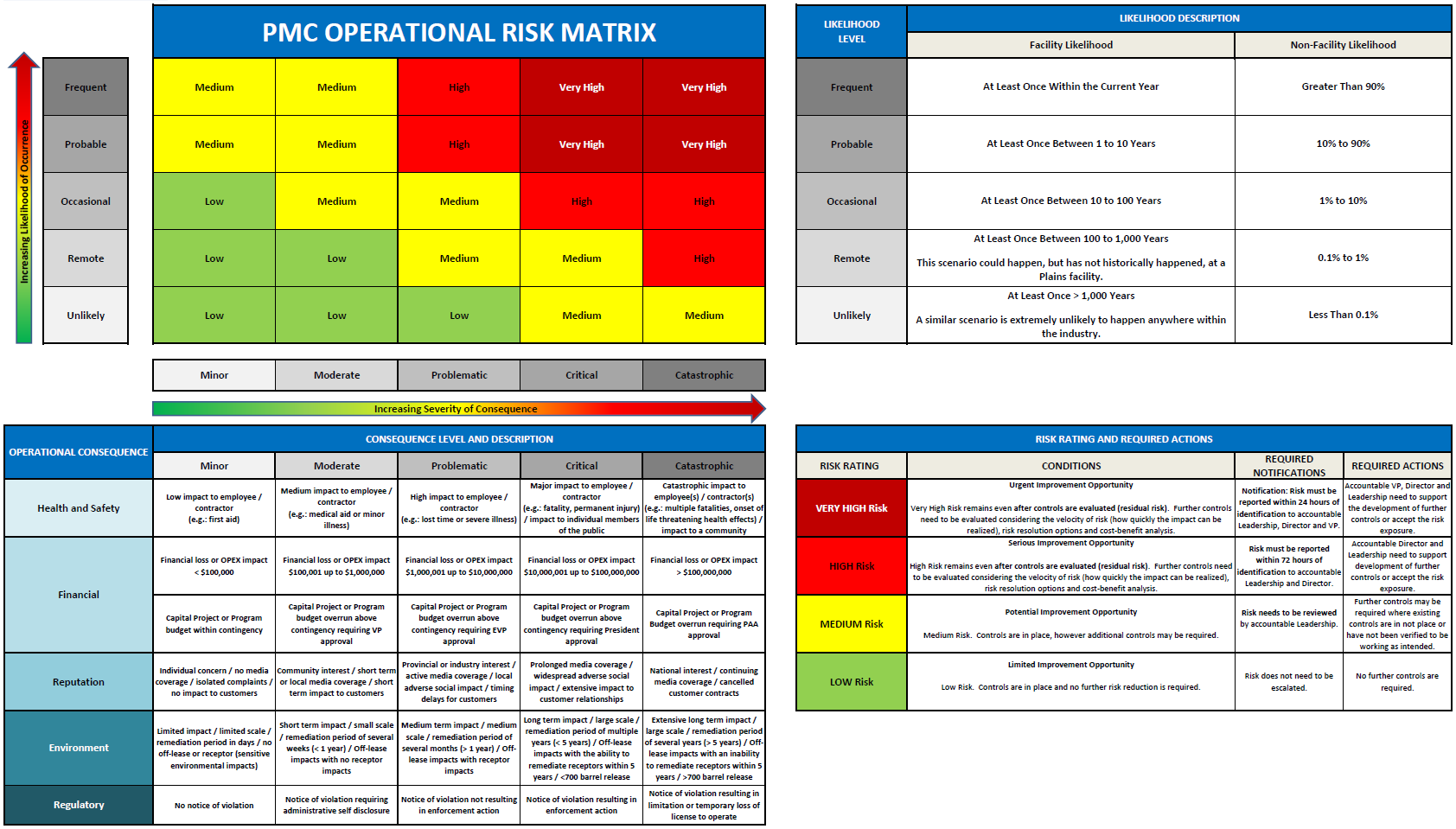


Figure 10 – Plains Operational Risk Matrix

The following steps are applied to map the qualitative risk results calculated through the pipeline integrity management risk algorithm to the Plains ORM:

1. Convert the ORM Frequency Description to a failure frequency per unit length (failures/km\*yr):

* It was necessary to relate these frequency descriptions to a linear pipeline asset with a reasonable length.
* The Plains system had approximately 900 pipelines with a total length of approximately 9,000 km. Therefore, an average “asset” length of 10 km was justified on this basis.

The resulting Failure Frequency Mapping table was thereby generated as follows:

Table 6 – Failure Frequency Mapping

| **Failure Frequency (/km.yr)** | **Plains Likelihood of Occurrence** | **Frequency Description per 10 km Segment** |
| --- | --- | --- |
| < 0.0001 | Unlikely | Greater than once in 1,000 years |
| >=0.0001 and < 0.001 | Remote | At least once between 100 to 1,000 years |
| >=0.001 and < 0.01 | Occasional | At least once between 10 to 100 years |
| >= 0.01 and < 0.1 | Probable | At least once between 1 to 10 years |
| 0.1 and up | Frequent | At least once within current year |

1. Convert the qualitative Failure Likelihood scores (0-10) to Failure Frequency values by the following equation:

****

Equation 1

Where,

FFThreat = Failure Frequency (failures/km.yr) for each threat

FFBaseline,Threat = Baseline Failure Frequency for each threat, based on review of PHMSA[[13]](#footnote-13) Hazardous Liquids Incident Data (failures/km.yr)

=7.719x10-06 (Incorrect Operations)

= 2.557x10-05 (Equipment Failure)

= 3.474x10-05 (Materials Defects)

= 1.882x10-05 (Construction Defects)

= 3.860x10-06 (Stress Corrosion Cracking)

= 1.254x10-05 (Outside Force)

= 6.127x10-05 (External Corrosion)

= 3.715x10-05 (Internal Corrosion)

= 8.636x10-05 (3rd Party Damage)

SThreat = Failure likelihood score for the threat of interest (0 - 10) as determined from the results based on the Plains Risk Algorithm Document

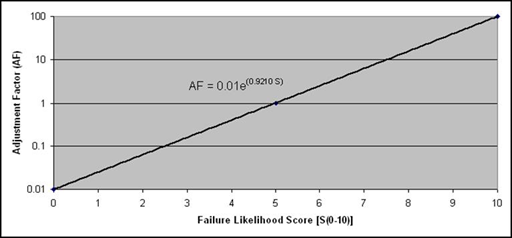


Figure 11 – Mapping Adjustment Factor for Likelihood

1. Map the Failure Frequency values obtained in Step 2 to the five Plains ORM Likelihood of Occurrence categories (Unlikely, Remote, Occasional, Probable and Frequent) based on their associated failure frequencies as established in Step 1.
2. Map the Consequence Scores (0 to 10) from the pipeline integrity management risk algorithm to the five Plains ORM Severity of Consequence categories: Minor, Moderate, Problematic, Critical and Catastrophic:
   1. Safety – fatalities commence at “Critical” in the Plains ORM or at “4” in the RiskAnalyst results; multiple fatalities commence at “Catastrophic” in the Plains ORM or at “5” and higher in the RiskAnalyst results
   2. Environment – the Plains ORM Environmental threshold description of 700 bbl (currently under review by Plains) was not factored into the current mapping analysis but, rather, the impact descriptions were used as the main guide since these were well aligned with the current risk algorithm. The RiskAnalyst dollar values were matched to the Plains ORM Environmental consequence descriptions for impact.
   3. Economic –considered anything greater than $1M in RiskAnalyst as “Problematic” and assumed that it was not expected to hit the Plains ORM categories of “Critical” (over $10M) or “Catastrophic” (over $100M) based on the current risk model (current risk model has a $10M threshold for Economic consequences)

The following table summarizes the Consequence conversion:

Table 7 – Consequence Conversion

| **Consequence** | **Qualitative Consequence Scores** | **Plains Severity of Consequence** | **Consequence Scores for Generating Risk Distribution Plot** |
| --- | --- | --- | --- |
| Safety | <= 1 | Minor | 1 |
| >1 to 2 | Moderate | 2 |
| >2 to 3 | Problematic | 3 |
| > 3 to 4 | Critical | 4 |
| > 4 | Catastrophic | 5 |
| Economic | <2 | Moderate | 2 |
| >= 2 | Problematic | 3 |
| Environmental | <= 2 | Minor | 1 |
| > 2 to 4 | Moderate | 2 |
| > 4 to 6 | Problematic | 3 |
| > 6 to 8 | Critical | 4 |
| > 8 | Catastrophic | 5 |

1. Test the mappings by performing initial checks on benchmark pipelines (*Sarnia Downstream Pipeline - Sarnia 24 inch NGL from Enbridge* and *Rangeland - NPS12 MAPL Ellerslie to Strathcona-Terminal*) to ensure the results are reasonable.

1. ­ Dynamic Risk Outflow Model Methodology

**Outflow Modeling**

The potential impact of a loss of containment is a major driving factor for the overall risk associated with the operation of liquids pipelines. The process of assessing such an impact requires a conservative and useful prediction of the amount of product that may be lost in the event of a failure.

Outflow modelling is the process by which these predictions are made. By interpreting the operational parameters into appropriate hydraulic considerations, a leak and resulting spill can be modeled at points along the centerline. The results of these simulations are combined to form a profile for the entire pipeline showing areas of higher and lower potential outflow.[[14]](#footnote-14)

The amount of product released during a leak is ultimately dependent on the local hydraulic pressure at the leak site over the duration of the shutdown procedure along with the geometry of the pipeline as it contributes to the drainage of the pipeline. The conditions affecting the outflow of product during a leak occur in four distinct phases.

1. Full Operation
2. Pump Shutdown
3. Valve Closure
4. Gravity Drainage

**Outflow Phases**

**Phase 1 – Full Operation**

In the event of a leak, there is opportunity for some time to pass before the shutdown of the pipeline begins. At this time the pumps are in full operation and the leak flows at a constant rate for the full duration.

The amount of product lost during Phase 1 is calculated by determining the instantaneous leak rate at the leak site and multiplying by the duration of the entire phase.

The duration of the first phase is comprised of two periods, the detection period and the troubleshooting period. The former is the amount of time required to detect that a leak has occurred and the latter is the amount of time required by operations staff to ensure that a leak is occurring and action is required.

*Detection Period*

The time required to detect a leak is dependent on the size of the leak. This model considers a leak to be detected in one of three ways,

1. An Instantaneous Drop in Pressure[[15]](#footnote-15)
2. The Accumulation of Lost Product
3. Detection on the Right-of-Way

If an instantaneous pressure drop is sufficient, the result is the immediate detection of a leak. If the leak is too small to be noticed immediately then the leak is detected when the amount of lost product reaches a defined threshold. The leak detection time is capped by the maximum amount of time that could pass before a leak would be noticed by regular above-ground activities on the Right-of-Way.

*Troubleshooting Period*

The amount of time required by operations staff before initiating a shutdown is determined by the operator.

**Phase 2 – Pump Shutdown**

This phase begins after detecting a leak and initiating the shutdown of the pipeline. The calculations in this phase are conducted at time intervals over the duration of the pump shutdown phase.

Discrete values for the pump pressure and flow rate of the pipeline over time form a shutdown profile. At each time interval the value of flow rate and pressure at the pump station is interpolated and used to determine the local pressure at the leak site and consequently the leak rate.

**Phase 3 – Valve Closure**

In this phase, the pumps have shut off and the product flows under the force of gravity alone. As the valves close during this phase the flow rate is restricted.

Similar to Phase 2, the third phase calculates the local pressure at the leak site at discrete time intervals. The aperture is interpolated from the valve closure profile associated with each valve and consequently the flow coefficient is determined from the aperture.

**Phase 4 – Gravity Drainage**

After all valves are closed, the bulk flow of product is stopped. However, the section contained by the closed valves can drain by gravity through the orifice. This phase is modeled statically and it is assumed that all product that can drain in this manner indeed does.

When product is drained in this way it can be replaced either by air or by a vacuum. The pressure of the atmosphere can uphold a column of product before a vacuum is formed. The elevation of product upheld from atmospheric pressure is known as the column height.

Drainage of any particular segment will be expected to continue until a significant local maximum is reached. It is important to consider the difference between minima and maxima when determining if a maximum is significant. If the difference between a local maximum and an adjacent local minimum is less than the internal diameter of the pipeline, then product drainage may continue until the next local maximum.

Figure 9 shows the effect of the relation between the elevation changes and the inner diameter of the pipeline, where Case A forms a seal in the line where drainage cannot pass the low point. In Case B, the elevation differential is not sufficient to prevent further drainage.

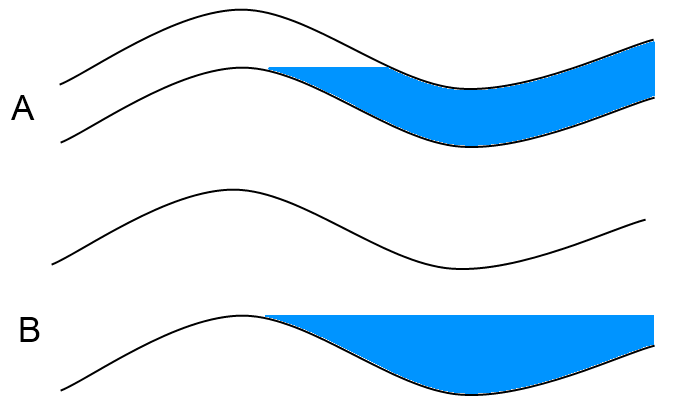


Figure 12 – Seal Caused By Internal Diameter Difference

1. Reportable Pipeline Segments
   1. Third Party Damage Reportable Pipeline Segments
2. "SECT 2 CABRI TO HERBERT NPS 6
   1. Total Cumulative Length (m): 74062.22
   2. Likelihood of failure distributed between minimum of 1.009e-02 and maximum of 1.009e-02.
      1. Land use distributed as
         1. Agricultural: 74,062.22
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1963-07-01 and maximum of 1963-07-01
      4. Outside diameter of 6.625 in.
      5. Grade between minimum of 241.0 and maximum of 241.0 MPa
      6. Wall thickness between minimum of 4.83 and maximum of 4.83 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 2.423e-01 and maximum of 2.423e-01
      9. Class area location is/are 1.0.
   3. Consequence of failure distributed between minimum of $2.20 and maximum of $9.10MM
   4. Total length driven by Safety: 469.89 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $5.29MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 10.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
      5. Rupture scenario yielded 41.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
      8. Puncture scenario yielded 30.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
      9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
      10. Product type is NGL.
      11. Class area location is/are 1.0.
   6. Total length driven by Economic Loss: 73592.33 meters.
   7. Economic Loss Cost distributed between minimum of $2.20 and maximum of $3.81MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $0.30MM
      5. Leak scenario yielded 10.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $38.19MM
      8. Rupture scenario yielded 41.0 intersections with structures, with minimum of $25,000.00 and maximum of $20,349,375.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $2.31MM
      11. Puncture scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
      12. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
3. "SECT 7 MANSON TO RAPID CITY NPS 6
   1. Total Cumulative Length (m): 73509.85
   2. Likelihood of failure distributed between minimum of 2.427e-03 and maximum of 1.009e-02.
      1. Land use distributed as
         1. Agricultural: 73,386.30
         2. Bush/Creek: 123.55
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1963-07-01 and maximum of 1963-07-01
      4. Outside diameter of 6.625 in.
      5. Grade between minimum of 241.0 and maximum of 241.0 MPa
      6. Wall thickness between minimum of 4.83 and maximum of 4.83 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 2.423e-01 and maximum of 2.423e-01
      9. Class area location is/are 1.0.
   3. Consequence of failure distributed between minimum of $3.17 and maximum of $127.06MM
   4. Total length driven by Safety: 785.6 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 17.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
      5. Rupture scenario yielded 55.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
      8. Puncture scenario yielded 39.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
      10. Product type is NGL.
      11. Class area location is/are 1.0.
   6. Total length driven by Economic Loss: 72724.25 meters.
   7. Economic Loss Cost distributed between minimum of $3.17 and maximum of $6.00MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $2.96MM
      5. Leak scenario yielded 17.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $20.55MM
      8. Rupture scenario yielded 55.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $4.95MM
      11. Puncture scenario yielded 39.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
      12. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13
4. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5
   1. Total Cumulative Length (m): 58954.19
   2. Likelihood of failure distributed between minimum of 1.326e-03 and maximum of 6.947e-03.
      1. Land use distributed as
         1. Agricultural: 4,286.21
         2. Forested: 52,658.73
         3. Remote: 1,589.97
         4. Water Course: 419.27
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
      4. Outside diameter of 8.625 in.
      5. Grade between minimum of 290.0 and maximum of 290.0 MPa
      6. Wall thickness between minimum of 4.78 and maximum of 8.18 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 6.864e-02 and maximum of 1.669e-01
      9. Class area location is/are 1.0, 2.0.
   3. Consequence of failure distributed between minimum of $10.00 and maximum of $66.05MM
   4. Total length driven by Safety: 110.96 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $28.51MM:
      1. Leak cost between minimum of $0.00 and maximum of $28.51MM
      2. Leak scenario yielded 207.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.95 and maximum of 3.95 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $65.66MM
      5. Rupture scenario yielded 109.0 intersections with structures, with minimum of 0.0 and maximum of 6.84 of population impacted
      6. Rupture hazard radius distributed between minimum of 53.42 and maximum of 53.42 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $28.51MM
      8. Puncture scenario yielded 228.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted
      9. Puncture hazard radius distributed between minimum of 15.77 and maximum of 15.77 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 58843.23 meters.
   7. Environmental Cost distributed between minimum of $9.69 and maximum of $65.39MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.41MM
      2. Leak spill volume between a minimum of 1691.87 and maximum of 2302.51 gallons
      3. Rupture cost between minimum of $86.06 and maximum of $194.84MM
      4. Rupture spill volume is between a minimum of 811993.29 and maximum of 1105065.43 gallons
      5. Puncture cost between minimum of $5.89 and maximum of $13.34MM
      6. Puncture spill volume is between a minimum of 55590.98 and maximum of 75655.39 gallons
5. "KERROBERT TO CACTUS LAKE NPS 4
   1. Total Cumulative Length (m): 57641.88
   2. Likelihood of failure distributed between minimum of 3.308e-03 and maximum of 1.374e-02.
      1. Land use distributed as
         1. Agricultural: 54,462.33
         2. Remote: 3,148.89
         3. Water Course: 30.66
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
      4. Outside diameter of 4.5 in.
      5. Grade between minimum of 290.0 and maximum of 290.0 MPa
      6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 1.895e-01 and maximum of 3.302e-01
      9. Class area location is/are 1.0.
   3. Consequence of failure distributed between minimum of $7.99 and maximum of $17.51MM
   4. Total length driven by Environmental: 57641.88 meters.
   5. Environmental Cost distributed between minimum of $7.70 and maximum of $17.17MM:
      1. Leak cost between minimum of $0.21 and maximum of $0.48MM
      2. Leak spill volume between a minimum of 1973.18 and maximum of 2807.92 gallons
      3. Rupture cost between minimum of $27.32 and maximum of $62.22MM
      4. Rupture spill volume is between a minimum of 257786.21 and maximum of 366840.06 gallons
      5. Puncture cost between minimum of $6.87 and maximum of $15.65MM
      6. Puncture spill volume is between a minimum of 64834.29 and maximum of 92261.78 gallons
6. "NPS8 Red Earth to Rainbow P/L tie-in From 9-18-87-8-W5 To 15-29-81-9-W
   1. Total Cumulative Length (m): 55942.98
   2. Likelihood of failure distributed between minimum of 1.319e-03 and maximum of 6.911e-03.
      1. Land use distributed as
         1. Agricultural: 9,143.88
         2. Forested: 41,633.90
         3. Remote: 4,725.43
         4. Water Course: 439.78
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
      4. Outside diameter of 8.625 in.
      5. Grade between minimum of 290.0 and maximum of 290.0 MPa
      6. Wall thickness between minimum of 4.8 and maximum of 5.6 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 1.316e-01 and maximum of 1.660e-01
      9. Class area location is/are 1.0, 2.0.
   3. Consequence of failure distributed between minimum of $10.00 and maximum of $68.20MM
   4. Total length driven by Safety: 63.1 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $21.89MM:
      1. Leak cost between minimum of $0.00 and maximum of $21.89MM
      2. Leak scenario yielded 102.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.95 and maximum of 3.95 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $43.78MM
      5. Rupture scenario yielded 85.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
      6. Rupture hazard radius distributed between minimum of 53.42 and maximum of 53.42 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
      8. Puncture scenario yielded 154.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      9. Puncture hazard radius distributed between minimum of 15.77 and maximum of 15.77 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 55879.89 meters.
   7. Environmental Cost distributed between minimum of $9.68 and maximum of $67.53MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.50MM
      2. Leak spill volume between a minimum of 1696.4 and maximum of 2872.92 gallons
      3. Rupture cost between minimum of $86.30 and maximum of $241.45MM
      4. Rupture spill volume is between a minimum of 814170.01 and maximum of 1378824.67 gallons
      5. Puncture cost between minimum of $5.91 and maximum of $16.53MM
      6. Puncture spill volume is between a minimum of 55740.01 and maximum of 94397.6 gallons
7. "UNITY TO LONE ROCK NPS 4
   1. Total Cumulative Length (m): 51803.4
   2. Likelihood of failure distributed between minimum of 1.559e-03 and maximum of 1.376e-02.
      1. Land use distributed as
         1. Agricultural: 48,198.85
         2. Remote: 3,533.53
         3. Water Course: 71.02
      2. Depth of cover distributed as
         1. nan
      3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
      4. Outside diameter of 4.5 in.
      5. Grade between minimum of 290.0 and maximum of 290.0 MPa
      6. Wall thickness between minimum of 3.18 and maximum of 6.02 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 1.386e-01 and maximum of 3.305e-01
      9. Class area location is/are 1.0.
   3. Consequence of failure distributed between minimum of $7.98 and maximum of $21.08MM
   4. Total length driven by Safety: 699.63 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 10.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.02 and maximum of 12.02 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
      5. Rupture scenario yielded 17.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
      6. Rupture hazard radius distributed between minimum of 83.2 and maximum of 83.2 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
      8. Puncture scenario yielded 17.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 48.57 and maximum of 48.57 meters.
      10. Product type is Condensate.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 51103.76 meters.
   7. Environmental Cost distributed between minimum of $7.61 and maximum of $19.92MM:
      1. Leak cost between minimum of $0.21 and maximum of $0.48MM
      2. Leak spill volume between a minimum of 1972.39 and maximum of 2702.49 gallons
      3. Rupture cost between minimum of $27.31 and maximum of $62.82MM
      4. Rupture spill volume is between a minimum of 257682.32 and maximum of 353066.58 gallons
      5. Puncture cost between minimum of $6.87 and maximum of $15.80MM
      6. Puncture spill volume is between a minimum of 64808.16 and maximum of 88797.7 gallons
8. "MEDICINE RIVER JUNCTION TO RAVEN RIVER PUMP STATION NPS 8
   1. Total Cumulative Length (m): 38176.33
   2. Likelihood of failure distributed between minimum of 1.156e-03 and maximum of 2.129e-03.
      1. Land use distributed as
         1. Agricultural: 38,176.33
      2. Depth of cover distributed as
         1. >= 0.91 to < 1.22m: 38,176.33
      3. Installation date between minimum of 1990-01-01 and maximum of 1990-01-01
      4. Outside diameter of 8.625 in.
      5. Grade between minimum of 359.0 and maximum of 359.0 MPa
      6. Wall thickness between minimum of 4.78 and maximum of 7.04 mm
      7. Toughness between minimum of nan and maximum of nan J
      8. Probability of failure given a hit between minimum of 8.676e-02 and maximum of 1.598e-01
      9. Class area location is/are 1.0.
   3. Consequence of failure distributed between minimum of $11.52 and maximum of $33.07MM
   4. Total length driven by Safety: 97.27 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $20.27MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 11.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $43.78MM
      5. Rupture scenario yielded 71.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
      6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
      8. Puncture scenario yielded 35.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
      9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
      10. Product type is LVP Products.
      11. Class area location is/are 1.0.
   6. Total length driven by Environmental: 38079.06 meters.
   7. Environmental Cost distributed between minimum of $11.19 and maximum of $24.23MM:
      1. Leak cost between minimum of $0.21 and maximum of $0.45MM
      2. Leak spill volume between a minimum of 1973.49 and maximum of 2539.14 gallons
      3. Rupture cost between minimum of $100.39 and maximum of $216.59MM
      4. Rupture spill volume is between a minimum of 947155.24 and maximum of 1218631.01 gallons
      5. Puncture cost between minimum of $6.87 and maximum of $14.83MM
      6. Puncture spill volume is between a minimum of 64844.49 and maximum of 83430.36 gallons
9. "UTIKUMA TO EDMONTON NPS 24
   1. Total Cumulative Length (m): 36740.4
   2. Likelihood of failure distributed between minimum of 1.129e-03 and maximum of 1.618e-02.
      1. Land use distributed as
         1. Agricultural: 35,891.49
         2. Forested: 755.99
         3. High Density Residential: 4.54
         4. Remote: 81.29
         5. Water Course: 7.10
      2. Depth of cover distributed as
         1. < 0.24m: 22.81, >= 0.24 to < 0.30m: 7.01, >= 0.30 to < 0.37m: 38.72, >= 0.37 to < 0.43m: 86.22, >= 0.43 to < 0.49m: 212.65, >= 0.49 to < 0.55m: 301.79, >= 0.55 to < 0.61m: 261.29, >= 0.61 to < 0.67m: 293.19, >= 0.67 to < 0.76m: 699.85, >= 0.76 to < 0.91m: 1,250.26, >= 0.91 to < 1.22m: 19,960.71, >= 1.22 to < 1.83m: 13,605.91
      3. Installation date between minimum of 1967-01-01 and maximum of 1994-01-01
      4. Outside diameter of 24.0 in.
      5. Grade between minimum of 359.0 and maximum of 414.0 MPa
      6. Wall thickness between minimum of 6.35 and maximum of 12.7 mm
      7. Toughness between minimum of 12.4 and maximum of 12.4 J
      8. Probability of failure given a hit between minimum of 1.999e-02 and maximum of 9.716e-02
      9. Class area location is/are 1.0, 2.0.
   3. Consequence of failure distributed between minimum of $7.57 and maximum of $89.87MM
   4. Total length driven by Safety: 1912.53 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $77.24MM:
      1. Leak cost between minimum of $0.00 and maximum of $21.89MM
      2. Leak scenario yielded 644.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.59 and maximum of 3.59 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $919.30MM
      5. Rupture scenario yielded 346.0 intersections with structures, with minimum of 0.0 and maximum of 95.76 of population impacted
      6. Rupture hazard radius distributed between minimum of 122.95 and maximum of 122.95 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $43.78MM
      8. Puncture scenario yielded 730.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
      9. Puncture hazard radius distributed between minimum of 14.3 and maximum of 14.3 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 34827.87 meters.
   7. Environmental Cost distributed between minimum of $3.13 and maximum of $62.69MM:
      1. Leak cost between minimum of $0.11 and maximum of $43.51MM
      2. Leak spill volume between a minimum of 1370.56 and maximum of 410514.68 gallons
      3. Rupture cost between minimum of $7.05 and maximum of $92.96MM
      4. Rupture spill volume is between a minimum of 66487.52 and maximum of 877018.37 gallons
      5. Puncture cost between minimum of $2.00 and maximum of $43.51MM
      6. Puncture spill volume is between a minimum of 18846.95 and maximum of 410514.68 gallons
10. "NORTH UNITY TO BELTON NPS 12
    1. Total Cumulative Length (m): 33655.43
    2. Likelihood of failure distributed between minimum of 1.186e-03 and maximum of 4.927e-03.
       1. Land use distributed as
          1. Agricultural: 24,737.74
          2. Remote: 8,887.79
          3. Water Course: 29.90
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1998-01-01 and maximum of 1998-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 5.56 and maximum of 9.52 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 4.276e-02 and maximum of 1.183e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $15.83 and maximum of $36.14MM
    4. Total length driven by Environmental: 33655.43 meters.
    5. Environmental Cost distributed between minimum of $14.83 and maximum of $34.94MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.40MM
       2. Leak spill volume between a minimum of 1763.98 and maximum of 2234.57 gallons
       3. Rupture cost between minimum of $196.09 and maximum of $416.46MM
       4. Rupture spill volume is between a minimum of 1850042.45 and maximum of 2343595.14 gallons
       5. Puncture cost between minimum of $6.14 and maximum of $13.05MM
       6. Puncture spill volume is between a minimum of 57960.41 and maximum of 73423.03 gallons
11. "KERROBERT TO NORTH UNITY NPS 6
    1. Total Cumulative Length (m): 31781.99
    2. Likelihood of failure distributed between minimum of 1.061e-03 and maximum of 2.093e-02.
       1. Land use distributed as
          1. Agricultural: 24,064.22
          2. Remote: 7,023.34
          3. Water Course: 694.43
       2. Depth of cover distributed as
          1. >= 0.55 to < 0.61m: 28.77, >= 0.67 to < 0.76m: 407.29, >= 0.76 to < 0.91m: 11,402.49, >= 0.91 to < 1.22m: 7,181.09, >= 1.22 to < 1.83m: 10,506.06, >= 1.83m : 2,256.29
       3. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 7.11 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 9.098e-02 and maximum of 2.130e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $9.69 and maximum of $28.69MM
    4. Total length driven by Safety: 921.58 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 22.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
       5. Rupture scenario yielded 27.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 112.52 and maximum of 112.52 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 32.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 30860.42 meters.
    7. Environmental Cost distributed between minimum of $9.03 and maximum of $17.74MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.41MM
       2. Leak spill volume between a minimum of 1973.38 and maximum of 2648.15 gallons
       3. Rupture cost between minimum of $59.23 and maximum of $115.53MM
       4. Rupture spill volume is between a minimum of 558791.97 and maximum of 749863.57 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $13.41MM
       6. Puncture spill volume is between a minimum of 64840.82 and maximum of 87012.29 gallons
12. "NPS4 Harmattan to Sundre From 1-34-31-4W5 To 16-8-34-5W5
    1. Total Cumulative Length (m): 31099.3
    2. Likelihood of failure distributed between minimum of 1.777e-03 and maximum of 9.609e-03.
       1. Land use distributed as
          1. Agricultural: 29,967.50
          2. Forested: 403.13
          3. Remote: 34.18
          4. Water Course: 694.49
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2009-01-01 and maximum of 2009-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 8.56 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 7.781e-02 and maximum of 2.308e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $10.31 and maximum of $33.81MM
    4. Total length driven by Safety: 609.79 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $22.44MM:
       1. Leak cost between minimum of $0.00 and maximum of $21.89MM
       2. Leak scenario yielded 9.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.76 and maximum of 12.76 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $43.78MM
       5. Rupture scenario yielded 26.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
       6. Rupture hazard radius distributed between minimum of 102.22 and maximum of 102.22 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
       8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 60.91 and maximum of 60.91 meters.
       10. Product type is Butane.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 30489.51 meters.
    7. Economic Loss Cost distributed between minimum of $10.31 and maximum of $15.50MM:
       1. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is Butane.
       4. Leak cost between minimum of $0.51 and maximum of $0.78MM
       5. Leak scenario yielded 9.0 intersections with structures, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $297,296.59 and maximum of $297,296.59
       7. Rupture cost between minimum of $39.05 and maximum of $39.59MM
       8. Rupture scenario yielded 26.0 intersections with structures, with minimum of $25,000.00 and maximum of $539,736.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $38,840,282.94 and maximum of $38,840,282.94
       10. Puncture cost between minimum of $9.98 and maximum of $10.25MM
       11. Puncture scenario yielded 19.0 intersections with structures, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted
       12. Product Loss costs between minimum of $9,768,490.70 and maximum of $9,768,490.70"
13. "BONAVISTA 10-28 TO 10-7 NPS 4
    1. Total Cumulative Length (m): 28199.35
    2. Likelihood of failure distributed between minimum of 1.008e-02 and maximum of 1.614e-02.
       1. Land use distributed as
          1. Agricultural: 28,199.35
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.420e-01 and maximum of 3.877e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $1.12 and maximum of $23.54MM
    4. Total length driven by Safety: 85.12 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $21.89MM:
       1. Leak cost between minimum of $0.00 and maximum of $21.89MM
       2. Leak scenario yielded 5.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 3.7 and maximum of 3.79 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
       5. Rupture scenario yielded 29.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       6. Rupture hazard radius distributed between minimum of 27.68 and maximum of 28.36 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
       8. Puncture scenario yielded 27.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 14.77 and maximum of 15.13 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 28114.23 meters.
    7. Environmental Cost distributed between minimum of $0.90 and maximum of $4.63MM:
       1. Leak cost between minimum of $0.16 and maximum of $0.31MM
       2. Leak spill volume between a minimum of 1464.91 and maximum of 1852.07 gallons
       3. Rupture cost between minimum of $0.04 and maximum of $2.73MM
       4. Rupture spill volume is between a minimum of 379.55 and maximum of 15469.9 gallons
       5. Puncture cost between minimum of $5.10 and maximum of $10.09MM
       6. Puncture spill volume is between a minimum of 48133.5 and maximum of 60854.75 gallons
14. "SSPL MAINLINE NPS 16
    1. Total Cumulative Length (m): 27229.24
    2. Likelihood of failure distributed between minimum of 1.031e-03 and maximum of 7.769e-03.
       1. Land use distributed as
          1. Agricultural: 23,587.14
          2. Remote: 1,815.50
          3. Water Course: 1,826.61
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1954-01-01 and maximum of 1954-01-01
       4. Outside diameter of 16.0 in.
       5. Grade between minimum of 317.0 and maximum of 317.0 MPa
       6. Wall thickness between minimum of 6.35 and maximum of 9.52 mm
       7. Toughness between minimum of 4.0 and maximum of 4.0 J
       8. Probability of failure given a hit between minimum of 1.029e-01 and maximum of 1.866e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $10.00 and maximum of $31.24MM
    4. Total length driven by Environmental: 27229.24 meters.
    5. Environmental Cost distributed between minimum of $8.97 and maximum of $30.08MM:
       1. Leak cost between minimum of $0.27 and maximum of $0.51MM
       2. Leak spill volume between a minimum of 1567.63 and maximum of 2880.08 gallons
       3. Rupture cost between minimum of $7.53 and maximum of $479.51MM
       4. Rupture spill volume is between a minimum of 42331.09 and maximum of 4524011.12 gallons
       5. Puncture cost between minimum of $8.85 and maximum of $16.84MM
       6. Puncture spill volume is between a minimum of 51508.72 and maximum of 94633.0 gallons
15. "WASCANA MAINLINE NPS 12
    1. Total Cumulative Length (m): 24582.75
    2. Likelihood of failure distributed between minimum of 1.002e-03 and maximum of 1.665e-02.
       1. Land use distributed as
          1. Agricultural: 24,319.49
          2. Commercial/Industrial: 1.62
          3. Remote: 0.20
          4. Water Course: 261.45
       2. Depth of cover distributed as
          1. < 0.24m: 5.58, >= 0.24 to < 0.30m: 10.97, >= 0.30 to < 0.37m: 11.43, >= 0.37 to < 0.43m: 21.48, >= 0.43 to < 0.49m: 33.67, >= 0.49 to < 0.55m: 16.92, >= 0.61 to < 0.67m: 73.63, >= 0.67 to < 0.76m: 2,371.48, >= 0.76 to < 0.91m: 18,643.87, >= 0.91 to < 1.22m: 2,899.48, >= 1.22 to < 1.83m: 494.23
       3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 7.39 mm
       7. Toughness between minimum of 42.0 and maximum of 42.0 J
       8. Probability of failure given a hit between minimum of 4.046e-02 and maximum of 9.999e-02
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $6.27 and maximum of $134.67MM
    4. Total length driven by Safety: 68.26 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $111.37MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 9.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 3.79 and maximum of 3.83 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 34.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 73.17 and maximum of 73.88 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 18.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 15.13 and maximum of 15.28 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 24514.49 meters.
    7. Environmental Cost distributed between minimum of $3.53 and maximum of $15.20MM:
       1. Leak cost between minimum of $0.12 and maximum of $0.43MM
       2. Leak spill volume between a minimum of 1578.63 and maximum of 2458.71 gallons
       3. Rupture cost between minimum of $2.70 and maximum of $69.83MM
       4. Rupture spill volume is between a minimum of 26485.37 and maximum of 658780.33 gallons
       5. Puncture cost between minimum of $3.89 and maximum of $14.17MM
       6. Puncture spill volume is between a minimum of 51870.19 and maximum of 80787.46 gallons
16. "BELTON TO MARIPOSA NPS 10
    1. Total Cumulative Length (m): 24523.24
    2. Likelihood of failure distributed between minimum of 1.583e-03 and maximum of 6.579e-03.
       1. Land use distributed as
          1. Agricultural: 24,092.38
          2. Remote: 421.83
          3. Water Course: 9.03
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
       4. Outside diameter of 10.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 9.27 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 4.910e-02 and maximum of 1.580e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $13.07 and maximum of $36.58MM
    4. Total length driven by Environmental: 24523.25 meters.
    5. Environmental Cost distributed between minimum of $12.72 and maximum of $23.77MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 2146.56 gallons
       3. Rupture cost between minimum of $146.50 and maximum of $258.09MM
       4. Rupture spill volume is between a minimum of 1382206.82 and maximum of 1600393.72 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $11.37MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 70531.0 gallons
17. "SYLVAN LAKE EAST LATERAL NPS 8
    1. Total Cumulative Length (m): 23743.21
    2. Likelihood of failure distributed between minimum of 1.198e-03 and maximum of 4.979e-03.
       1. Land use distributed as
          1. Agricultural: 21,877.61
          2. Forested: 1,074.37
          3. Remote: 791.22
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2019-04-23 and maximum of 2019-04-23
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 5.59 and maximum of 8.18 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 6.235e-02 and maximum of 1.196e-01
       9. Class area location is/are nan.
    3. Consequence of failure distributed between minimum of $10.00 and maximum of $11.67MM
    4. Total length driven by Environmental: 23743.21 meters.
    5. Environmental Cost distributed between minimum of $9.62 and maximum of $11.27MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1692.06 and maximum of 1997.55 gallons
       3. Rupture cost between minimum of $86.07 and maximum of $101.61MM
       4. Rupture spill volume is between a minimum of 812082.65 and maximum of 958699.41 gallons
       5. Puncture cost between minimum of $5.89 and maximum of $6.96MM
       6. Puncture spill volume is between a minimum of 55597.1 and maximum of 65634.83 gallons
18. "OLDS TO HARMATTAN NPS 3
    1. Total Cumulative Length (m): 23430.35
    2. Likelihood of failure distributed between minimum of 2.587e-03 and maximum of 1.647e-02.
       1. Land use distributed as
          1. Agricultural: 23,421.31
          2. Water Course: 9.04
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.582e-01 and maximum of 3.956e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $1.15 and maximum of $10.55MM
    4. Total length driven by Safety: 127.74 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $3.27MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 7.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.09 and maximum of 11.09 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
       5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       6. Rupture hazard radius distributed between minimum of 63.72 and maximum of 63.72 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
       8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
       9. Puncture hazard radius distributed between minimum of 45.25 and maximum of 45.25 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 23302.62 meters.
    7. Environmental Cost distributed between minimum of $0.93 and maximum of $10.26MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1644.98 and maximum of 1961.43 gallons
       3. Rupture cost between minimum of $0.21 and maximum of $1.29MM
       4. Rupture spill volume is between a minimum of 1939.31 and maximum of 8828.65 gallons
       5. Puncture cost between minimum of $5.73 and maximum of $11.47MM
       6. Puncture spill volume is between a minimum of 54050.34 and maximum of 64447.97 gallons
19. "RAINBOW LAKE TO CADOTTE NPS 20
    1. Total Cumulative Length (m): 23262.33
    2. Likelihood of failure distributed between minimum of 1.084e-03 and maximum of 3.617e-03.
       1. Land use distributed as
          1. Agricultural: 23,262.33
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
       4. Outside diameter of 20.0 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 7.14 and maximum of 12.7 mm
       7. Toughness between minimum of 12.4 and maximum of 12.4 J
       8. Probability of failure given a hit between minimum of 2.604e-02 and maximum of 8.688e-02
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.00 and maximum of $40.82MM
    4. Total length driven by Environmental: 23262.33 meters.
    5. Environmental Cost distributed between minimum of $9.05 and maximum of $39.71MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.43MM
       2. Leak spill volume between a minimum of 1585.19 and maximum of 2570.42 gallons
       3. Rupture cost between minimum of $13.58 and maximum of $198.33MM
       4. Rupture spill volume is between a minimum of 76353.58 and maximum of 1166021.01 gallons
       5. Puncture cost between minimum of $5.52 and maximum of $14.13MM
       6. Puncture spill volume is between a minimum of 52085.87 and maximum of 84458.14 gallons
20. "UNITY TO WEST SENLAC NPS 3
    1. Total Cumulative Length (m): 22339.6
    2. Likelihood of failure distributed between minimum of 3.394e-03 and maximum of 1.410e-02.
       1. Land use distributed as
          1. Agricultural: 22,331.00
          2. Remote: 0.10
          3. Water Course: 8.50
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1991-01-01 and maximum of 1991-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 5.49 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.669e-01 and maximum of 3.388e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $7.50 and maximum of $19.87MM
    4. Total length driven by Safety: 194.6 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 4.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.02 and maximum of 12.02 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
       5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 68.39 and maximum of 68.39 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 6.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.57 and maximum of 48.57 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 22144.99 meters.
    7. Environmental Cost distributed between minimum of $7.15 and maximum of $13.29MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.40MM
       2. Leak spill volume between a minimum of 1972.39 and maximum of 2302.15 gallons
       3. Rupture cost between minimum of $16.52 and maximum of $31.29MM
       4. Rupture spill volume is between a minimum of 155881.9 and maximum of 181943.64 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $13.01MM
       6. Puncture spill volume is between a minimum of 64808.16 and maximum of 75643.38 gallons
21. "NORTH MARSDEN TIE IN TO WINTER TIE IN NPS 12
    1. Total Cumulative Length (m): 20484.51
    2. Likelihood of failure distributed between minimum of 1.856e-03 and maximum of 4.055e-03.
       1. Land use distributed as
          1. Agricultural: 20,467.68
          2. Remote: 16.83
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2002-01-01 and maximum of 2002-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.19 and maximum of 9.52 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 4.458e-02 and maximum of 1.883e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $16.73 and maximum of $30.17MM
    4. Total length driven by Environmental: 20484.51 meters.
    5. Environmental Cost distributed between minimum of $15.70 and maximum of $18.85MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.23MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 2139.45 gallons
       3. Rupture cost between minimum of $206.09 and maximum of $237.83MM
       4. Rupture spill volume is between a minimum of 1944359.08 and maximum of 2243826.85 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $7.45MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 70297.37 gallons
22. "NPS6 Bentley to Silver Springs
    1. Total Cumulative Length (m): 19618.4
    2. Likelihood of failure distributed between minimum of 1.581e-03 and maximum of 1.185e-02.
       1. Land use distributed as
          1. Agricultural: 19,567.98
          2. Forested: 5.14
          3. Water Course: 45.29
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1977-01-01 and maximum of 1977-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 386.0 and maximum of 386.0 MPa
       6. Wall thickness between minimum of 3.2 and maximum of 4.78 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 1.578e-01 and maximum of 2.846e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $2.74 and maximum of $14.03MM
    4. Total length driven by Environmental: 19618.4 meters.
    5. Environmental Cost distributed between minimum of $2.50 and maximum of $13.73MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.44MM
       2. Leak spill volume between a minimum of 1892.29 and maximum of 2486.61 gallons
       3. Rupture cost between minimum of $2.00 and maximum of $7.08MM
       4. Rupture spill volume is between a minimum of 15101.14 and maximum of 44412.36 gallons
       5. Puncture cost between minimum of $6.59 and maximum of $14.54MM
       6. Puncture spill volume is between a minimum of 62176.21 and maximum of 81704.39 gallons
23. "NPS8 SS-1 From 10-21-18-17-W3 To 2-27-16-17-W3
    1. Total Cumulative Length (m): 18879.11
    2. Likelihood of failure distributed between minimum of 1.204e-03 and maximum of 5.003e-03.
       1. Land use distributed as
          1. Agricultural: 14,061.35
          2. Remote: 4,794.79
          3. Water Course: 22.98
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 6.4 and maximum of 8.2 mm
       7. Toughness between minimum of 17.6 and maximum of 17.6 J
       8. Probability of failure given a hit between minimum of 7.848e-02 and maximum of 1.202e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.29 and maximum of $20.02MM
    4. Total length driven by Environmental: 18879.11 meters.
    5. Environmental Cost distributed between minimum of $9.97 and maximum of $19.64MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.36MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 2245.82 gallons
       3. Rupture cost between minimum of $94.31 and maximum of $173.73MM
       4. Rupture spill volume is between a minimum of 889763.83 and maximum of 1077854.47 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $11.89MM
       6. Puncture spill volume is between a minimum of 60915.34 and maximum of 73792.47 gallons
24. "BUCK LAKE TO WINFIELD NPS 4
    1. Total Cumulative Length (m): 17448.06
    2. Likelihood of failure distributed between minimum of 3.112e-03 and maximum of 1.293e-02.
       1. Land use distributed as
          1. Agricultural: 17,369.80
          2. Forested: 0.20
          3. Water Course: 78.07
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1977-01-01 and maximum of 1977-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.17 and maximum of 8.6 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 7.773e-02 and maximum of 3.107e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $8.10 and maximum of $135.64MM
    4. Total length driven by Safety: 388.74 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $124.86MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 2.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $242.11MM
       5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 25.22 of population impacted
       6. Rupture hazard radius distributed between minimum of 83.22 and maximum of 83.22 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 15.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 17059.33 meters.
    7. Environmental Cost distributed between minimum of $7.57 and maximum of $15.73MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.42MM
       2. Leak spill volume between a minimum of 1973.51 and maximum of 2386.68 gallons
       3. Rupture cost between minimum of $27.33 and maximum of $55.10MM
       4. Rupture spill volume is between a minimum of 257828.51 and maximum of 311807.6 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $13.86MM
       6. Puncture spill volume is between a minimum of 64844.93 and maximum of 78420.89 gallons
25. "BUCK LAKE TO WINFIELD NPS 3
    1. Total Cumulative Length (m): 17353.78
    2. Likelihood of failure distributed between minimum of 1.044e-02 and maximum of 1.045e-02.
       1. Land use distributed as
          1. Agricultural: 17,353.78
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1977-01-01 and maximum of 1977-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 2.507e-01 and maximum of 2.510e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $1.31 and maximum of $125.08MM
    4. Total length driven by Safety: 411.64 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 3.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 9.97 and maximum of 9.97 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 17.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 63.82 and maximum of 63.82 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 12.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 45.92 and maximum of 45.92 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 16942.14 meters.
    7. Economic Loss Cost distributed between minimum of $1.31 and maximum of $4.03MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.24 and maximum of $2.93MM
       5. Leak scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $32,885.37 and maximum of $32,885.37
       7. Rupture cost between minimum of $2.80 and maximum of $5.49MM
       8. Rupture scenario yielded 17.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $2,598,999.73 and maximum of $2,598,999.73
       10. Puncture cost between minimum of $1.29 and maximum of $3.97MM
       11. Puncture scenario yielded 12.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,080,538.52 and maximum of $1,080,538.52"
26. "NPS12 Milk River mainline From 8-21-2-16-W4 To 1-6-1-16-W4 (border)
    1. Total Cumulative Length (m): 16377.09
    2. Likelihood of failure distributed between minimum of 1.554e-03 and maximum of 4.122e-03.
       1. Land use distributed as
          1. Agricultural: 16,377.09
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 6.3 and maximum of 10.3 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.733e-02 and maximum of 9.902e-02
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $16.69 and maximum of $76.00MM
    4. Total length driven by Environmental: 16377.09 meters.
    5. Environmental Cost distributed between minimum of $15.69 and maximum of $74.69MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.38MM
       2. Leak spill volume between a minimum of 1852.98 and maximum of 2193.14 gallons
       3. Rupture cost between minimum of $205.98 and maximum of $402.84MM
       4. Rupture spill volume is between a minimum of 1943379.8 and maximum of 2300136.85 gallons
       5. Puncture cost between minimum of $6.45 and maximum of $12.62MM
       6. Puncture spill volume is between a minimum of 60884.6 and maximum of 72061.52 gallons
27. "ZN-70/ZN-89/ZN-90 NPS 8
    1. Total Cumulative Length (m): 16094.08
    2. Likelihood of failure distributed between minimum of 1.167e-03 and maximum of 1.953e-03.
       1. Land use distributed as
          1. Forested: 7,263.99
          2. Remote: 8,790.23
          3. Water Course: 39.86
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1968-01-01 and maximum of 1968-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 7.04 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.165e-01 and maximum of 1.949e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $12.00 and maximum of $21.10MM
    4. Total length driven by Environmental: 16094.08 meters.
    5. Environmental Cost distributed between minimum of $11.67 and maximum of $20.72MM:
       1. Leak cost between minimum of $0.15 and maximum of $0.26MM
       2. Leak spill volume between a minimum of 1398.53 and maximum of 1606.02 gallons
       3. Rupture cost between minimum of $71.14 and maximum of $123.62MM
       4. Rupture spill volume is between a minimum of 671208.81 and maximum of 770790.15 gallons
       5. Puncture cost between minimum of $4.87 and maximum of $8.46MM
       6. Puncture spill volume is between a minimum of 45952.54 and maximum of 52770.12 gallons
28. "WAPELLA LATERAL EAST NPS 6
    1. Total Cumulative Length (m): 15436.27
    2. Likelihood of failure distributed between minimum of 1.317e-03 and maximum of 1.215e-02.
       1. Land use distributed as
          1. Agricultural: 13,271.15
          2. Bush/Creek: 2,042.15
          3. Forested: 57.40
          4. Remote: 0.49
          5. Water Course: 65.08
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1999-11-30 and maximum of 1999-11-30
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 5.56 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.314e-01 and maximum of 2.919e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $8.98 and maximum of $29.88MM
    4. Total length driven by Environmental: 15436.27 meters.
    5. Environmental Cost distributed between minimum of $8.68 and maximum of $29.46MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.39MM
       2. Leak spill volume between a minimum of 1849.28 and maximum of 2217.11 gallons
       3. Rupture cost between minimum of $56.39 and maximum of $111.70MM
       4. Rupture spill volume is between a minimum of 523651.77 and maximum of 627807.15 gallons
       5. Puncture cost between minimum of $6.54 and maximum of $12.96MM
       6. Puncture spill volume is between a minimum of 60763.24 and maximum of 72849.17 gallons
29. "CACTUS LAKE TO SOUTH BODO NPS 3 FROM 1-34-35-28W3 tO 5-4-37-1W4
    1. Total Cumulative Length (m): 15226.17
    2. Likelihood of failure distributed between minimum of 3.374e-03 and maximum of 1.402e-02.
       1. Land use distributed as
          1. Agricultural: 15,219.80
          2. Water Course: 6.37
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1986-01-01 and maximum of 1986-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.368e-01 and maximum of 3.368e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $7.51 and maximum of $13.23MM
    4. Total length driven by Environmental: 15226.17 meters.
    5. Environmental Cost distributed between minimum of $7.23 and maximum of $12.93MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.39MM
       2. Leak spill volume between a minimum of 1974.68 and maximum of 2348.45 gallons
       3. Rupture cost between minimum of $16.54 and maximum of $30.44MM
       4. Rupture spill volume is between a minimum of 156063.4 and maximum of 185602.55 gallons
       5. Puncture cost between minimum of $6.88 and maximum of $12.66MM
       6. Puncture spill volume is between a minimum of 64883.62 and maximum of 77164.58 gallons
30. "NPS3 East Garrington to BV 48 From 6-17-034-3W5 To 1-35-033-5W5
    1. Total Cumulative Length (m): 14498.06
    2. Likelihood of failure distributed between minimum of 1.371e-02 and maximum of 1.371e-02.
       1. Land use distributed as
          1. Agricultural: 14,498.06
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1977-01-01 and maximum of 1977-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 3.293e-01 and maximum of 3.293e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $1.60 and maximum of $2.59MM
    4. Total length driven by Economic Loss: 14498.06 meters.
    5. Economic Loss Cost distributed between minimum of $1.60 and maximum of $1.63MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.25 and maximum of $0.27MM
       5. Leak scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $40,607.24 and maximum of $40,607.24
       7. Rupture cost between minimum of $3.42 and maximum of $3.69MM
       8. Rupture scenario yielded 10.0 intersections with structures, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $3,209,275.47 and maximum of $3,209,275.47
       10. Puncture cost between minimum of $1.54 and maximum of $1.57MM
       11. Puncture scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,334,261.70 and maximum of $1,334,261.70"
31. "NPS3 Niton Junction to BV 22 From 14-18-54-12W5 to 5-5-52-11W5
    1. Total Cumulative Length (m): 12519.36
    2. Likelihood of failure distributed between minimum of 1.389e-02 and maximum of 1.389e-02.
       1. Land use distributed as
          1. Agricultural: 12,519.36
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1978-01-01 and maximum of 1978-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 3.336e-01 and maximum of 3.336e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $1.90 and maximum of $1.94MM
    4. Total length driven by Economic Loss: 12519.36 meters.
    5. Economic Loss Cost distributed between minimum of $1.90 and maximum of $1.94MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.26 and maximum of $0.26MM
       5. Leak scenario yielded 2373.0 intersections with structures, with minimum of $0.00 and maximum of $0.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $50,290.22 and maximum of $50,290.22
       7. Rupture cost between minimum of $4.18 and maximum of $4.21MM
       8. Rupture scenario yielded 364.0 intersections with structures, with minimum of $0.00 and maximum of $25,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $3,974,541.88 and maximum of $3,974,541.88
       10. Puncture cost between minimum of $1.86 and maximum of $1.86MM
       11. Puncture scenario yielded 506.0 intersections with structures, with minimum of $0.00 and maximum of $0.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,652,422.50 and maximum of $1,652,422.50"
32. "ELBOW TO MADDEN NPS 6
    1. Total Cumulative Length (m): 12430.62
    2. Likelihood of failure distributed between minimum of 1.656e-03 and maximum of 3.556e-02.
       1. Land use distributed as
          1. Agricultural: 12,430.62
       2. Depth of cover distributed as
          1. < 0.24m: 115.40, >= 0.91 to < 1.22m: 274.88, >= 1.22 to < 1.83m: 11,517.19, >= 1.83m : 523.15
       3. Installation date between minimum of 1993-01-01 and maximum of 1993-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 7.11 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 9.134e-02 and maximum of 2.135e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $9.82 and maximum of $17.73MM
    4. Total length driven by Environmental: 12430.62 meters.
    5. Environmental Cost distributed between minimum of $9.12 and maximum of $17.00MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.39MM
       2. Leak spill volume between a minimum of 1973.39 and maximum of 2194.16 gallons
       3. Rupture cost between minimum of $59.23 and maximum of $109.29MM
       4. Rupture spill volume is between a minimum of 558793.09 and maximum of 621307.59 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $12.68MM
       6. Puncture spill volume is between a minimum of 64840.95 and maximum of 72094.98 gallons
33. "ZAMA STATION TO 20 NPS 10
    1. Total Cumulative Length (m): 11772.85
    2. Likelihood of failure distributed between minimum of 1.178e-03 and maximum of 1.178e-03.
       1. Land use distributed as
          1. Forested: 3,254.37
          2. Remote: 8,438.23
          3. Water Course: 80.25
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1984-01-01 and maximum of 1984-01-01
       4. Outside diameter of 10.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 5.16 and maximum of 5.16 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.176e-01 and maximum of 1.176e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.66 and maximum of $66.08MM
    4. Total length driven by Environmental: 11772.85 meters.
    5. Environmental Cost distributed between minimum of $10.31 and maximum of $65.39MM:
       1. Leak cost between minimum of $0.15 and maximum of $0.29MM
       2. Leak spill volume between a minimum of 1398.42 and maximum of 1644.23 gallons
       3. Rupture cost between minimum of $110.51 and maximum of $218.10MM
       4. Rupture spill volume is between a minimum of 1042611.79 and maximum of 1225875.14 gallons
       5. Puncture cost between minimum of $4.87 and maximum of $9.61MM
       6. Puncture spill volume is between a minimum of 45948.97 and maximum of 54025.58 gallons
34. "EASTERN DELIVERY SYSTEM (EDS) NORTH NPS 10/12
    1. Total Cumulative Length (m): 11753.48
    2. Likelihood of failure distributed between minimum of 1.044e-03 and maximum of 6.019e-03.
       1. Land use distributed as
          1. Agricultural: 11,704.18
          2. Water Course: 49.30
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1974-01-01 and maximum of 1979-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 317.0 and maximum of 386.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 9.4 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 3.339e-02 and maximum of 1.446e-01
       9. Class area location is/are 1.0, 2.0, 3.0.
    3. Consequence of failure distributed between minimum of $10.07 and maximum of $388.65MM
    4. Total length driven by Safety: 11719.03 meters.
    5. Safety Cost distributed between minimum of $6.07 and maximum of $380.90MM:
       1. Leak cost between minimum of $0.00 and maximum of $187.30MM
       2. Leak scenario yielded 27.0 intersections with structures, with minimum of 1.26 and maximum of 19.51 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.52 and maximum of 11.52 meters.
       4. Rupture cost between minimum of $12.11 and maximum of $3,372.10MM
       5. Rupture scenario yielded 299.0 intersections with structures, with minimum of 1.26 and maximum of 351.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 174.17 and maximum of 197.94 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $274.85MM
       8. Puncture scenario yielded 167.0 intersections with structures, with minimum of 1.26 and maximum of 28.63 of population impacted
       9. Puncture hazard radius distributed between minimum of 54.02 and maximum of 54.02 meters.
       10. Product type is NGL.
       11. Class area location is/are 1.0, 2.0, 3.0.
    6. Total length driven by Economic Loss: 34.46 meters.
    7. Economic Loss Cost distributed between minimum of $3.54 and maximum of $11.90MM:
       1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $800,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $1.16MM
       5. Leak scenario yielded 27.0 intersections with structures, with minimum of $18,600.00 and maximum of $835,868.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $50,706.96 and maximum of $50,706.96
       7. Rupture cost between minimum of $38.04 and maximum of $82.92MM
       8. Rupture scenario yielded 299.0 intersections with structures, with minimum of $18,600.00 and maximum of $28,897,975.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $37,805,233.24 and maximum of $53,180,860.82
       10. Puncture cost between minimum of $1.88 and maximum of $5.49MM
       11. Puncture scenario yielded 167.0 intersections with structures, with minimum of $18,600.00 and maximum of $2,987,148.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,666,115.49 and maximum of $1,666,115.49"
35. "SSPL LOOP CANTUAR JCT TO CANTUAR STN NPS 12
    1. Total Cumulative Length (m): 10218.41
    2. Likelihood of failure distributed between minimum of 1.051e-03 and maximum of 4.367e-03.
       1. Land use distributed as
          1. Agricultural: 9,251.72
          2. Remote: 966.69
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1965-01-01 and maximum of 1965-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 317.0 and maximum of 317.0 MPa
       6. Wall thickness between minimum of 6.35 and maximum of 9.52 mm
       7. Toughness between minimum of 17.6 and maximum of 17.6 J
       8. Probability of failure given a hit between minimum of 4.887e-02 and maximum of 1.049e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $15.31 and maximum of $16.85MM
    4. Total length driven by Environmental: 10218.41 meters.
    5. Environmental Cost distributed between minimum of $14.29 and maximum of $15.84MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1715.23 and maximum of 1927.42 gallons
       3. Rupture cost between minimum of $190.67 and maximum of $214.26MM
       4. Rupture spill volume is between a minimum of 1798917.76 and maximum of 2021451.48 gallons
       5. Puncture cost between minimum of $5.97 and maximum of $6.71MM
       6. Puncture spill volume is between a minimum of 56358.71 and maximum of 63330.52 gallons
36. "CONDOR FROM 6-11-38-6W5 TO 14-12-38-5W5 NPS4 (TAQA)
    1. Total Cumulative Length (m): 9973.63
    2. Likelihood of failure distributed between minimum of 2.305e-03 and maximum of 1.290e-02.
       1. Land use distributed as
          1. Agricultural: 9,912.09
          2. Water Course: 61.54
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2002-02-25 and maximum of 2002-02-25
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.96 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.301e-01 and maximum of 3.098e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $7.52 and maximum of $14.16MM
    4. Total length driven by Environmental: 9973.63 meters.
    5. Environmental Cost distributed between minimum of $7.23 and maximum of $13.86MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.38MM
       2. Leak spill volume between a minimum of 1854.19 and maximum of 2121.7 gallons
       3. Rupture cost between minimum of $25.68 and maximum of $49.32MM
       4. Rupture spill volume is between a minimum of 242240.55 and maximum of 277188.74 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $12.40MM
       6. Puncture spill volume is between a minimum of 60924.49 and maximum of 69714.11 gallons
37. "KALKASKA MARYSVILLE TO SARNIA NPS 8
    1. Total Cumulative Length (m): 9476.04
    2. Likelihood of failure distributed between minimum of 1.006e-03 and maximum of 4.214e-03.
       1. Land use distributed as
          1. Agricultural: 6,085.11
          2. Forested: 3,297.38
          3. Remote: 7.36
          4. Water Course: 16.23
          5. Wetlands: 69.96
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1974-01-01 and maximum of 1974-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 6.35 and maximum of 12.7 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 2.763e-02 and maximum of 1.012e-01
       9. Class area location is/are 1.0, 2.0, 3.0.
    3. Consequence of failure distributed between minimum of $17.20 and maximum of $344.45MM
    4. Total length driven by Safety: 1596.39 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $324.73MM:
       1. Leak cost between minimum of $0.00 and maximum of $115.20MM
       2. Leak scenario yielded 10.0 intersections with structures, with minimum of 1.26 and maximum of 12.0 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.99 and maximum of 11.99 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $1,484.06MM
       5. Rupture scenario yielded 40.0 intersections with structures, with minimum of 1.26 and maximum of 154.59 of population impacted
       6. Rupture hazard radius distributed between minimum of 154.44 and maximum of 154.44 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $274.18MM
       8. Puncture scenario yielded 52.0 intersections with structures, with minimum of 1.26 and maximum of 28.56 of population impacted
       9. Puncture hazard radius distributed between minimum of 56.5 and maximum of 56.5 meters.
       10. Product type is Liquid petroleum gas (LPG).
       11. Class area location is/are 1.0, 2.0, 3.0.
    6. Total length driven by Economic Loss: 7879.65 meters.
    7. Economic Loss Cost distributed between minimum of $17.20 and maximum of $20.17MM:
       1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is Liquid petroleum gas (LPG).
       4. Leak cost between minimum of $0.54 and maximum of $1.10MM
       5. Leak scenario yielded 10.0 intersections with structures, with minimum of $268,825.00 and maximum of $566,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $321,595.28 and maximum of $321,595.28
       7. Rupture cost between minimum of $154.56 and maximum of $170.77MM
       8. Rupture scenario yielded 40.0 intersections with structures, with minimum of $268,825.00 and maximum of $16,205,152.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $154,345,973.41 and maximum of $154,345,973.41
       10. Puncture cost between minimum of $10.78 and maximum of $13.76MM
       11. Puncture scenario yielded 52.0 intersections with structures, with minimum of $268,825.00 and maximum of $2,982,075.00 in cost of structures impacted
       12. Product Loss costs between minimum of $10,566,890.49 and maximum of $10,566,890.49"
38. "SS-39 NPS 8
    1. Total Cumulative Length (m): 9090.49
    2. Likelihood of failure distributed between minimum of 1.212e-03 and maximum of 5.035e-03.
       1. Land use distributed as
          1. Agricultural: 7,854.39
          2. Remote: 1,174.44
          3. Water Course: 61.66
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
       7. Toughness between minimum of 17.6 and maximum of 17.6 J
       8. Probability of failure given a hit between minimum of 1.209e-01 and maximum of 1.209e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.64 and maximum of $59.88MM
    4. Total length driven by Environmental: 9090.49 meters.
    5. Environmental Cost distributed between minimum of $10.25 and maximum of $59.07MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.36MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 2042.5 gallons
       3. Rupture cost between minimum of $94.31 and maximum of $174.40MM
       4. Rupture spill volume is between a minimum of 889762.93 and maximum of 980274.33 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $11.94MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 67111.9 gallons
39. "EVERDELL TO FERRIER WEST NPS 3
    1. Total Cumulative Length (m): 8811.27
    2. Likelihood of failure distributed between minimum of 1.667e-03 and maximum of 1.415e-02.
       1. Land use distributed as
          1. Agricultural: 8,678.60
          2. Water Course: 132.67
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 5.49 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 1.664e-01 and maximum of 3.400e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $2.30 and maximum of $138.43MM
    4. Total length driven by Safety: 1058.77 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $133.16MM:
       1. Leak cost between minimum of $0.00 and maximum of $133.16MM
       2. Leak scenario yielded 10.0 intersections with structures, with minimum of 12.61 and maximum of 13.87 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $133.16MM
       5. Rupture scenario yielded 25.0 intersections with structures, with minimum of 0.0 and maximum of 13.87 of population impacted
       6. Rupture hazard radius distributed between minimum of 80.38 and maximum of 80.38 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $133.16MM
       8. Puncture scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 13.87 of population impacted
       9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 7752.49 meters.
    7. Economic Loss Cost distributed between minimum of $2.30 and maximum of $5.26MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.27 and maximum of $3.22MM
       5. Leak scenario yielded 10.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,957,075.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $5.02 and maximum of $7.97MM
       8. Rupture scenario yielded 25.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,957,075.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
       10. Puncture cost between minimum of $2.21 and maximum of $5.16MM
       11. Puncture scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,957,075.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
40. "WAPELLA MAINLINE NPS 8
    1. Total Cumulative Length (m): 8718.26
    2. Likelihood of failure distributed between minimum of 1.601e-03 and maximum of 6.653e-03.
       1. Land use distributed as
          1. Agricultural: 208.25
          2. Bush/Creek: 8,384.63
          3. Forested: 0.08
          4. Remote: 0.10
          5. Water Course: 125.19
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1999-01-01 and maximum of 1999-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.598e-01 and maximum of 1.598e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.00 and maximum of $15.81MM
    4. Total length driven by Environmental: 8718.26 meters.
    5. Environmental Cost distributed between minimum of $9.66 and maximum of $15.47MM:
       1. Leak cost between minimum of $0.28 and maximum of $0.47MM
       2. Leak spill volume between a minimum of 1870.35 and maximum of 2630.0 gallons
       3. Rupture cost between minimum of $5.29 and maximum of $45.62MM
       4. Rupture spill volume is between a minimum of 29751.97 and maximum of 256422.69 gallons
       5. Puncture cost between minimum of $9.11 and maximum of $15.37MM
       6. Puncture spill volume is between a minimum of 61455.44 and maximum of 86415.96 gallons
41. "NPS8 Hdpe Brine Pipeline
    1. Total Cumulative Length (m): 8472.17
    2. Likelihood of failure distributed between minimum of 1.002e-02 and maximum of 4.163e-02.
       1. Land use distributed as
          1. Agricultural: 8,347.12
          2. Forested: 56.89
          3. Water Course: 68.16
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2010-09-01 and maximum of 2010-09-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 1.0 and maximum of 1.0 MPa
       6. Wall thickness between minimum of 1.0 and maximum of 1.0 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.000e+00 and maximum of 1.000e+00
       9. Class area location is/are nan.
    3. Consequence of failure distributed between minimum of $1.62 and maximum of $3.33MM
    4. Total length driven by Environmental: 8472.17 meters.
    5. Environmental Cost distributed between minimum of $1.40 and maximum of $3.08MM:
       1. Leak cost between minimum of $0.03 and maximum of $0.06MM
       2. Leak spill volume between a minimum of 544.51 and maximum of 696.58 gallons
       3. Rupture cost between minimum of $12.86 and maximum of $27.84MM
       4. Rupture spill volume is between a minimum of 261330.33 and maximum of 334314.68 gallons
       5. Puncture cost between minimum of $0.88 and maximum of $1.91MM
       6. Puncture spill volume is between a minimum of 17891.29 and maximum of 22887.97 gallons
42. "RICINUS TO STRACHAN LATERAL NPS 4
    1. Total Cumulative Length (m): 8010.85
    2. Likelihood of failure distributed between minimum of 1.721e-03 and maximum of 1.374e-02.
       1. Land use distributed as
          1. Agricultural: 7,998.48
          2. Remote: 3.81
          3. Water Course: 8.56
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 5.16 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 1.718e-01 and maximum of 3.301e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $2.45 and maximum of $126.19MM
    4. Total length driven by Safety: 652.77 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 9.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 97.06 and maximum of 97.06 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 7358.08 meters.
    7. Economic Loss Cost distributed between minimum of $2.45 and maximum of $5.14MM:
       1. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.27 and maximum of $2.96MM
       5. Leak scenario yielded 9.0 intersections with structures, with minimum of $0.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $8.16 and maximum of $10.85MM
       8. Rupture scenario yielded 20.0 intersections with structures, with minimum of $0.00 and maximum of $2,688,250.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $7,950,487.38 and maximum of $7,950,487.38
       10. Puncture cost between minimum of $2.21 and maximum of $4.90MM
       11. Puncture scenario yielded 19.0 intersections with structures, with minimum of $0.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
43. "STRACHAN TO ROCKY MOUNTAIN HOUSE CONDENSATE NPS 6
    1. Total Cumulative Length (m): 7720.03
    2. Likelihood of failure distributed between minimum of 1.059e-03 and maximum of 3.951e-02.
       1. Land use distributed as
          1. Agricultural: 7,698.87
          2. Water Course: 21.17
       2. Depth of cover distributed as
          1. >= 0.49 to < 0.55m: 23.85, >= 0.55 to < 0.61m: 67.21, >= 0.61 to < 0.67m: 121.85, >= 0.67 to < 0.76m: 543.23, >= 0.76 to < 0.91m: 5,269.08, >= 0.91 to < 1.22m: 1,100.22, >= 1.22 to < 1.83m: 527.59, >= 1.83m : 67.00
       3. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 2.77 and maximum of 7.11 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 9.086e-02 and maximum of 3.599e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $5.83 and maximum of $129.50MM
    4. Total length driven by Safety: 1966.72 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.12 and maximum of 11.12 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 80.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 105.04 and maximum of 105.04 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 47.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 45.35 and maximum of 45.35 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 5753.31 meters.
    7. Environmental Cost distributed between minimum of $4.75 and maximum of $10.48MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1654.49 and maximum of 2095.39 gallons
       3. Rupture cost between minimum of $0.28 and maximum of $4.08MM
       4. Rupture spill volume is between a minimum of 2678.21 and maximum of 28922.34 gallons
       5. Puncture cost between minimum of $5.76 and maximum of $11.47MM
       6. Puncture spill volume is between a minimum of 54362.77 and maximum of 68849.64 gallons
44. "SS-49 NPS 6
    1. Total Cumulative Length (m): 7503.02
    2. Likelihood of failure distributed between minimum of 3.192e-03 and maximum of 1.326e-02.
       1. Land use distributed as
          1. Agricultural: 7,245.83
          2. Remote: 174.42
          3. Water Course: 82.78
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1961-01-01 and maximum of 1961-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
       7. Toughness between minimum of 17.6 and maximum of 17.6 J
       8. Probability of failure given a hit between minimum of 3.186e-01 and maximum of 3.186e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $7.91 and maximum of $39.74MM
    4. Total length driven by Environmental: 7503.02 meters.
    5. Environmental Cost distributed between minimum of $7.62 and maximum of $39.25MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.33MM
       2. Leak spill volume between a minimum of 1650.88 and maximum of 1831.09 gallons
       3. Rupture cost between minimum of $49.55 and maximum of $92.10MM
       4. Rupture spill volume is between a minimum of 467472.07 and maximum of 518498.98 gallons
       5. Puncture cost between minimum of $5.75 and maximum of $10.69MM
       6. Puncture spill volume is between a minimum of 54244.29 and maximum of 60165.32 gallons
45. "LONE ROCK TO DULWICH NPS 6
    1. Total Cumulative Length (m): 7416.88
    2. Likelihood of failure distributed between minimum of 3.877e-03 and maximum of 1.293e-02.
       1. Land use distributed as
          1. Agricultural: 7,416.88
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 7.11 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 9.314e-02 and maximum of 3.107e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $1.00 and maximum of $13.41MM
    4. Total length driven by Safety: 149.29 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 3.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.41 and maximum of 11.41 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
       5. Rupture scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 107.45 and maximum of 107.45 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 5.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 46.39 and maximum of 46.39 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 7267.58 meters.
    7. Environmental Cost distributed between minimum of $0.67 and maximum of $1.43MM:
       1. Leak cost between minimum of $0.66 and maximum of $1.36MM
       2. Leak spill volume between a minimum of 6244.85 and maximum of 12852.25 gallons
       3. Rupture cost between minimum of $0.95 and maximum of $1.65MM
       4. Rupture spill volume is between a minimum of 8973.34 and maximum of 15545.55 gallons
       5. Puncture cost between minimum of $0.66 and maximum of $1.36MM
       6. Puncture spill volume is between a minimum of 6244.85 and maximum of 12852.25 gallons
46. "SS-09/SS-08 NPS 4
    1. Total Cumulative Length (m): 7331.36
    2. Likelihood of failure distributed between minimum of 1.326e-02 and maximum of 1.502e-02.
       1. Land use distributed as
          1. Agricultural: 7,331.36
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1966-01-01 and maximum of 1970-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 317.0 and maximum of 317.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.184e-01 and maximum of 3.608e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $5.38 and maximum of $6.35MM
    4. Total length driven by Environmental: 7331.36 meters.
    5. Environmental Cost distributed between minimum of $5.12 and maximum of $6.05MM:
       1. Leak cost between minimum of $0.16 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1545.39 and maximum of 1772.8 gallons
       3. Rupture cost between minimum of $21.40 and maximum of $24.55MM
       4. Rupture spill volume is between a minimum of 201897.55 and maximum of 231607.68 gallons
       5. Puncture cost between minimum of $5.38 and maximum of $6.17MM
       6. Puncture spill volume is between a minimum of 50778.06 and maximum of 58250.28 gallons
47. "COCHRANE TO ROCKY MOUNTAIN HOUSE NPS 8
    1. Total Cumulative Length (m): 7267.6
    2. Likelihood of failure distributed between minimum of 1.706e-03 and maximum of 7.107e-03.
       1. Land use distributed as
          1. Agricultural: 7,256.83
          2. Water Course: 10.77
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 317.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 8.18 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 6.372e-02 and maximum of 1.707e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $10.35 and maximum of $169.29MM
    4. Total length driven by Safety: 7237.6 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $165.30MM:
       1. Leak cost between minimum of $0.00 and maximum of $135.74MM
       2. Leak scenario yielded 52.0 intersections with structures, with minimum of 0.0 and maximum of 14.14 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.58 and maximum of 12.24 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $472.61MM
       5. Rupture scenario yielded 225.0 intersections with structures, with minimum of 1.26 and maximum of 49.23 of population impacted
       6. Rupture hazard radius distributed between minimum of 148.55 and maximum of 158.1 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $165.41MM
       8. Puncture scenario yielded 133.0 intersections with structures, with minimum of 1.26 and maximum of 17.23 of population impacted
       9. Puncture hazard radius distributed between minimum of 54.35 and maximum of 57.84 meters.
       10. Product type is NGL.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 30.0 meters.
    7. Economic Loss Cost distributed between minimum of $3.18 and maximum of $17.37MM:
       1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $2.99MM
       5. Leak scenario yielded 52.0 intersections with structures, with minimum of $18,600.00 and maximum of $2,713,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $51,540.43 and maximum of $60,855.70
       7. Rupture cost between minimum of $25.49 and maximum of $32.67MM
       8. Rupture scenario yielded 225.0 intersections with structures, with minimum of $18,600.00 and maximum of $3,252,986.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $24,736,239.66 and maximum of $29,206,998.79
       10. Puncture cost between minimum of $1.91 and maximum of $5.20MM
       11. Puncture scenario yielded 133.0 intersections with structures, with minimum of $18,600.00 and maximum of $2,983,118.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,693,501.49 and maximum of $1,999,580.23"
48. "MARSHALL TO DULWICH BUTANE NPS 4
    1. Total Cumulative Length (m): 6899.61
    2. Likelihood of failure distributed between minimum of 3.310e-03 and maximum of 1.375e-02.
       1. Land use distributed as
          1. Agricultural: 5,493.91
          2. Remote: 1,404.02
          3. Water Course: 1.68
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2002-01-01 and maximum of 2002-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 6.02 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.397e-01 and maximum of 3.304e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.93 and maximum of $11.20MM
    4. Total length driven by Economic Loss: 6899.61 meters.
    5. Economic Loss Cost distributed between minimum of $10.93 and maximum of $11.20MM:
       1. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is Butane.
       4. Leak cost between minimum of $0.51 and maximum of $0.53MM
       5. Leak scenario yielded 4.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $297,296.59 and maximum of $297,296.59
       7. Rupture cost between minimum of $39.05 and maximum of $39.10MM
       8. Rupture scenario yielded 12.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $38,840,282.94 and maximum of $38,840,282.94
       10. Puncture cost between minimum of $9.98 and maximum of $10.03MM
       11. Puncture scenario yielded 9.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
       12. Product Loss costs between minimum of $9,768,490.70 and maximum of $9,768,490.70"
49. "EDSON TO WOLF LAKE NPS 4
    1. Total Cumulative Length (m): 6698.46
    2. Likelihood of failure distributed between minimum of 1.294e-03 and maximum of 1.276e-02.
       1. Land use distributed as
          1. Agricultural: 6,514.44
          2. Forested: 113.97
          3. Remote: 70.05
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 386.0 and maximum of 386.0 MPa
       6. Wall thickness between minimum of 3.17 and maximum of 6.02 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 1.291e-01 and maximum of 3.064e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $2.45 and maximum of $133.00MM
    4. Total length driven by Safety: 906.01 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $127.84MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 4.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $242.11MM
       5. Rupture scenario yielded 36.0 intersections with structures, with minimum of 0.0 and maximum of 25.22 of population impacted
       6. Rupture hazard radius distributed between minimum of 97.06 and maximum of 97.06 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 24.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 5792.44 meters.
    7. Economic Loss Cost distributed between minimum of $2.45 and maximum of $5.22MM:
       1. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.27 and maximum of $2.96MM
       5. Leak scenario yielded 4.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $8.16 and maximum of $13.54MM
       8. Rupture scenario yielded 36.0 intersections with structures, with minimum of $25,000.00 and maximum of $5,376,500.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $7,950,487.38 and maximum of $7,950,487.38
       10. Puncture cost between minimum of $2.21 and maximum of $4.90MM
       11. Puncture scenario yielded 24.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
50. "WASCANA LATERAL NPS 12
    1. Total Cumulative Length (m): 6679.39
    2. Likelihood of failure distributed between minimum of 1.100e-03 and maximum of 3.986e-03.
       1. Land use distributed as
          1. Agricultural: 6,679.39
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2014-01-01 and maximum of 2014-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 6.4 and maximum of 9.5 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.641e-02 and maximum of 9.574e-02
       9. Class area location is/are 1.0, 2.0, 3.0.
    3. Consequence of failure distributed between minimum of $16.73 and maximum of $33.97MM
    4. Total length driven by Environmental: 6679.39 meters.
    5. Environmental Cost distributed between minimum of $15.72 and maximum of $18.45MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1854.79 and maximum of 2017.48 gallons
       3. Rupture cost between minimum of $206.18 and maximum of $224.27MM
       4. Rupture spill volume is between a minimum of 1945276.96 and maximum of 2115913.34 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $7.03MM
       6. Puncture spill volume is between a minimum of 60944.03 and maximum of 66289.94 gallons
51. "WINDSOR TO SARNIA NPS 12
    1. Total Cumulative Length (m): 6671.92
    2. Likelihood of failure distributed between minimum of 1.523e-03 and maximum of 1.149e-02.
       1. Land use distributed as
          1. Agricultural: 6,056.70
          2. Forested: 606.23
          3. Water Course: 8.99
       2. Depth of cover distributed as
          1. < 0.24m: 6,300.36, >= 0.24 to < 0.30m: 2.33, >= 0.61 to < 0.67m: 6.69, >= 0.67 to < 0.76m: 14.35, >= 0.76 to < 0.91m: 348.18
       3. Installation date between minimum of 1974-01-01 and maximum of 1974-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 6.35 and maximum of 12.7 mm
       7. Toughness between minimum of 33.9 and maximum of 33.9 J
       8. Probability of failure given a hit between minimum of 9.147e-03 and maximum of 6.900e-02
       9. Class area location is/are 1.0, 2.0, 3.0.
    3. Consequence of failure distributed between minimum of $4.94 and maximum of $433.05MM
    4. Total length driven by Safety: 5976.87 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $423.48MM:
       1. Leak cost between minimum of $0.00 and maximum of $28.51MM
       2. Leak scenario yielded 18.0 intersections with structures, with minimum of 1.26 and maximum of 2.97 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.71 and maximum of 11.71 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $3,175.10MM
       5. Rupture scenario yielded 300.0 intersections with structures, with minimum of 0.0 and maximum of 330.74 of population impacted
       6. Rupture hazard radius distributed between minimum of 201.6 and maximum of 201.6 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $313.06MM
       8. Puncture scenario yielded 157.0 intersections with structures, with minimum of 1.26 and maximum of 32.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 55.01 and maximum of 55.01 meters.
       10. Product type is NGL.
       11. Class area location is/are 1.0, 2.0, 3.0.
    6. Total length driven by Economic Loss: 695.05 meters.
    7. Economic Loss Cost distributed between minimum of $4.94 and maximum of $9.57MM:
       1. Repair costs between minimum of $44,000.00 and maximum of $187,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.90 and maximum of $1.19MM
       5. Leak scenario yielded 18.0 intersections with structures, with minimum of $18,600.00 and maximum of $293,825.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $53,244.14 and maximum of $53,244.14
       7. Rupture cost between minimum of $56.69 and maximum of $85.78MM
       8. Rupture scenario yielded 300.0 intersections with structures, with minimum of $18,600.00 and maximum of $29,093,023.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $55,841,832.10 and maximum of $55,841,832.10
       10. Puncture cost between minimum of $2.59 and maximum of $6.12MM
       11. Puncture scenario yielded 157.0 intersections with structures, with minimum of $18,600.00 and maximum of $3,526,884.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,749,481.68 and maximum of $1,749,481.68"
52. "SS-10 NPS 8
    1. Total Cumulative Length (m): 6594.74
    2. Likelihood of failure distributed between minimum of 1.020e-03 and maximum of 7.708e-03.
       1. Land use distributed as
          1. Agricultural: 6,314.07
          2. Remote: 280.67
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 7.04 mm
       7. Toughness between minimum of 17.6 and maximum of 17.6 J
       8. Probability of failure given a hit between minimum of 1.018e-01 and maximum of 1.851e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.57 and maximum of $29.63MM
    4. Total length driven by Environmental: 6594.74 meters.
    5. Environmental Cost distributed between minimum of $10.24 and maximum of $29.11MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 1919.58 gallons
       3. Rupture cost between minimum of $94.31 and maximum of $97.65MM
       4. Rupture spill volume is between a minimum of 889762.93 and maximum of 921282.09 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.69MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 63073.15 gallons
53. "WILLESDEN GREEN TO SILVER SPRINGS NPS 3
    1. Total Cumulative Length (m): 6143.55
    2. Likelihood of failure distributed between minimum of 3.215e-03 and maximum of 1.336e-02.
       1. Land use distributed as
          1. Agricultural: 5,972.19
          2. Forested: 171.36
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1995-01-01 and maximum of 1995-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 5.49 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 1.580e-01 and maximum of 3.209e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $2.30 and maximum of $126.05MM
    4. Total length driven by Safety: 402.35 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 5.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 80.38 and maximum of 80.38 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 17.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
       10. Product type is NGL.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 5741.2 meters.
    7. Economic Loss Cost distributed between minimum of $2.30 and maximum of $4.99MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $2.96MM
       5. Leak scenario yielded 5.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $5.02 and maximum of $7.70MM
       8. Rupture scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
       10. Puncture cost between minimum of $2.21 and maximum of $4.89MM
       11. Puncture scenario yielded 17.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
54. "NPS6 Tie-in Jct to Cactus Lake From 5-4-37-1-W4 To 1-34-35-28W3
    1. Total Cumulative Length (m): 5940.92
    2. Likelihood of failure distributed between minimum of 1.658e-03 and maximum of 8.881e-03.
       1. Land use distributed as
          1. Agricultural: 5,934.55
          2. Water Course: 6.38
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1986-01-01 and maximum of 1986-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 7.11 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 9.107e-02 and maximum of 2.133e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.01 and maximum of $16.13MM
    4. Total length driven by Environmental: 5940.92 meters.
    5. Environmental Cost distributed between minimum of $9.69 and maximum of $15.79MM:
       1. Leak cost between minimum of $0.22 and maximum of $0.36MM
       2. Leak spill volume between a minimum of 2004.56 and maximum of 2229.49 gallons
       3. Rupture cost between minimum of $63.01 and maximum of $103.03MM
       4. Rupture spill volume is between a minimum of 567621.31 and maximum of 631313.83 gallons
       5. Puncture cost between minimum of $7.31 and maximum of $11.96MM
       6. Puncture spill volume is between a minimum of 65865.35 and maximum of 73256.08 gallons
55. "MEDICINE RIVER 10-19 TO 09-27 NPS 4
    1. Total Cumulative Length (m): 5863.62
    2. Likelihood of failure distributed between minimum of 2.001e-03 and maximum of 1.488e-02.
       1. Land use distributed as
          1. Agricultural: 5,860.53
          2. Water Course: 3.09
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.997e-01 and maximum of 3.575e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $6.08 and maximum of $18.75MM
    4. Total length driven by Safety: 188.09 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $11.86MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 11.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.55 and maximum of 11.55 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
       5. Rupture scenario yielded 35.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       6. Rupture hazard radius distributed between minimum of 80.3 and maximum of 80.3 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 29.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 46.87 and maximum of 46.87 meters.
       10. Product type is LVP Products.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 5675.52 meters.
    7. Environmental Cost distributed between minimum of $5.81 and maximum of $10.82MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.36MM
       2. Leak spill volume between a minimum of 1800.9 and maximum of 2040.07 gallons
       3. Rupture cost between minimum of $0.53 and maximum of $1.28MM
       4. Rupture spill volume is between a minimum of 5031.18 and maximum of 7791.67 gallons
       5. Puncture cost between minimum of $6.27 and maximum of $11.93MM
       6. Puncture spill volume is between a minimum of 59173.41 and maximum of 67032.18 gallons
56. "SS-69/SS-34 NPS 4
    1. Total Cumulative Length (m): 5779.85
    2. Likelihood of failure distributed between minimum of 1.337e-02 and maximum of 1.515e-02.
       1. Land use distributed as
          1. Agricultural: 5,779.85
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1966-01-01 and maximum of 2000-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 317.0 and maximum of 317.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.211e-01 and maximum of 3.638e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $4.66 and maximum of $7.40MM
    4. Total length driven by Environmental: 5779.85 meters.
    5. Environmental Cost distributed between minimum of $4.41 and maximum of $7.11MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1695.14 and maximum of 1823.58 gallons
       3. Rupture cost between minimum of $23.47 and maximum of $25.25MM
       4. Rupture spill volume is between a minimum of 221461.88 and maximum of 238241.26 gallons
       5. Puncture cost between minimum of $5.90 and maximum of $6.35MM
       6. Puncture spill volume is between a minimum of 55698.57 and maximum of 59918.66 gallons
57. "WEST PEMBINA TO BRAZEAU NPS 3
    1. Total Cumulative Length (m): 5656.61
    2. Likelihood of failure distributed between minimum of 6.983e-03 and maximum of 1.084e-02.
       1. Land use distributed as
          1. Agricultural: 5,656.61
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1984-01-01 and maximum of 1984-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 5.49 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 1.677e-01 and maximum of 2.603e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $2.30 and maximum of $126.05MM
    4. Total length driven by Safety: 1647.26 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 24.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 53.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 80.38 and maximum of 80.38 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 50.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
       10. Product type is NGL.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 4009.35 meters.
    7. Economic Loss Cost distributed between minimum of $2.30 and maximum of $4.99MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $2.96MM
       5. Leak scenario yielded 24.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $5.02 and maximum of $7.73MM
       8. Rupture scenario yielded 53.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
       10. Puncture cost between minimum of $2.21 and maximum of $4.92MM
       11. Puncture scenario yielded 50.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
58. "MARSHALL TO DULWICH CONDENSATE NPS 4
    1. Total Cumulative Length (m): 5515.56
    2. Likelihood of failure distributed between minimum of 3.308e-03 and maximum of 1.374e-02.
       1. Land use distributed as
          1. Agricultural: 5,511.75
          2. Water Course: 3.81
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2001-01-01 and maximum of 2001-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.302e-01 and maximum of 3.302e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $8.01 and maximum of $13.67MM
    4. Total length driven by Environmental: 5515.56 meters.
    5. Environmental Cost distributed between minimum of $7.70 and maximum of $13.36MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.37MM
       2. Leak spill volume between a minimum of 1973.38 and maximum of 2116.69 gallons
       3. Rupture cost between minimum of $27.33 and maximum of $48.40MM
       4. Rupture spill volume is between a minimum of 257812.17 and maximum of 276534.15 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $12.17MM
       6. Puncture spill volume is between a minimum of 64840.82 and maximum of 69549.48 gallons
59. "BONAVISTA LATERAL 14-24 TO 3-27 NPS 4
    1. Total Cumulative Length (m): 5448.29
    2. Likelihood of failure distributed between minimum of 1.025e-02 and maximum of 1.619e-02.
       1. Land use distributed as
          1. Agricultural: 5,448.29
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1960-01-01 and maximum of 1960-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.461e-01 and maximum of 3.888e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $4.55 and maximum of $36.93MM
    4. Total length driven by Safety: 578.92 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $31.48MM:
       1. Leak cost between minimum of $0.00 and maximum of $28.51MM
       2. Leak scenario yielded 39.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted.
       3. Leak hazard radius distributed between minimum of 3.86 and maximum of 3.94 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $57.02MM
       5. Rupture scenario yielded 25.0 intersections with structures, with minimum of 0.0 and maximum of 5.94 of population impacted
       6. Rupture hazard radius distributed between minimum of 28.92 and maximum of 29.5 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $28.51MM
       8. Puncture scenario yielded 42.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted
       9. Puncture hazard radius distributed between minimum of 15.43 and maximum of 15.74 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 4869.37 meters.
    7. Environmental Cost distributed between minimum of $4.30 and maximum of $7.88MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.32MM
       2. Leak spill volume between a minimum of 1613.33 and maximum of 1799.07 gallons
       3. Rupture cost between minimum of $22.34 and maximum of $41.66MM
       4. Rupture spill volume is between a minimum of 210773.22 and maximum of 235039.37 gallons
       5. Puncture cost between minimum of $5.62 and maximum of $10.48MM
       6. Puncture spill volume is between a minimum of 53010.33 and maximum of 59113.37 gallons
60. "NPS4 Eckville Lateral From 06-18-039-03W5 to 04-33-039-03W5
    1. Total Cumulative Length (m): 5368.19
    2. Likelihood of failure distributed between minimum of 3.592e-03 and maximum of 1.493e-02.
       1. Land use distributed as
          1. Agricultural: 5,366.45
          2. Water Course: 1.74
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1977-01-01 and maximum of 1977-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.17 and maximum of 3.96 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.699e-01 and maximum of 3.585e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $4.06 and maximum of $11.61MM
    4. Total length driven by Environmental: 5368.19 meters.
    5. Environmental Cost distributed between minimum of $3.81 and maximum of $11.31MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.31MM
       2. Leak spill volume between a minimum of 1693.6 and maximum of 1826.78 gallons
       3. Rupture cost between minimum of $23.45 and maximum of $40.88MM
       4. Rupture spill volume is between a minimum of 221260.37 and maximum of 238659.75 gallons
       5. Puncture cost between minimum of $5.90 and maximum of $10.28MM
       6. Puncture spill volume is between a minimum of 55647.89 and maximum of 60023.91 gallons
61. "10-33 VALVE SITE TO MAIN LINE TIE-IN 2-6 NPS 3
    1. Total Cumulative Length (m): 5299.77
    2. Likelihood of failure distributed between minimum of 2.116e-03 and maximum of 1.517e-02.
       1. Land use distributed as
          1. Agricultural: 5,226.53
          2. Forested: 13.42
          3. Water Course: 59.82
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1992-01-01 and maximum of 1992-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 5.49 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.742e-01 and maximum of 3.644e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $1.84 and maximum of $266.20MM
    4. Total length driven by Safety: 1093.08 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $259.75MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 8.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.53 and maximum of 11.53 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $262.68MM
       5. Rupture scenario yielded 36.0 intersections with structures, with minimum of 0.0 and maximum of 27.36 of population impacted
       6. Rupture hazard radius distributed between minimum of 75.16 and maximum of 75.16 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $262.68MM
       8. Puncture scenario yielded 34.0 intersections with structures, with minimum of 0.0 and maximum of 27.36 of population impacted
       9. Puncture hazard radius distributed between minimum of 54.08 and maximum of 54.08 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 4206.69 meters.
    7. Economic Loss Cost distributed between minimum of $1.84 and maximum of $6.46MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.26 and maximum of $0.28MM
       5. Leak scenario yielded 8.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $50,866.30 and maximum of $50,866.30
       7. Rupture cost between minimum of $4.23 and maximum of $8.77MM
       8. Rupture scenario yielded 36.0 intersections with structures, with minimum of $25,000.00 and maximum of $4,543,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,020,070.39 and maximum of $4,020,070.39
       10. Puncture cost between minimum of $1.88 and maximum of $6.42MM
       11. Puncture scenario yielded 34.0 intersections with structures, with minimum of $25,000.00 and maximum of $4,543,000.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,671,351.05 and maximum of $1,671,351.05"
62. "BRETON TO EDMONTON NPS 10
    1. Total Cumulative Length (m): 4849.17
    2. Likelihood of failure distributed between minimum of 1.039e-03 and maximum of 4.931e-03.
       1. Land use distributed as
          1. Agricultural: 4,537.67
          2. Forested: 165.87
          3. Water Course: 145.62
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1970-12-31 and maximum of 1970-12-31
       4. Outside diameter of 10.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 5.16 mm
       7. Toughness between minimum of 30.0 and maximum of 30.0 J
       8. Probability of failure given a hit between minimum of 1.037e-01 and maximum of 1.184e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $10.01 and maximum of $463.46MM
    4. Total length driven by Safety: 4849.17 meters.
    5. Safety Cost distributed between minimum of $8.32 and maximum of $454.56MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 105.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 10.9 and maximum of 12.16 meters.
       4. Rupture cost between minimum of $21.89 and maximum of $1,706.50MM
       5. Rupture scenario yielded 220.0 intersections with structures, with minimum of 2.28 and maximum of 177.76 of population impacted
       6. Rupture hazard radius distributed between minimum of 163.58 and maximum of 185.15 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $187.30MM
       8. Puncture scenario yielded 318.0 intersections with structures, with minimum of 2.28 and maximum of 19.51 of population impacted
       9. Puncture hazard radius distributed between minimum of 50.73 and maximum of 57.42 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0.
63. "SUNDRE 16-8 TO 13-11 NPS 6
    1. Total Cumulative Length (m): 4838.94
    2. Likelihood of failure distributed between minimum of 1.658e-03 and maximum of 6.892e-03.
       1. Land use distributed as
          1. Agricultural: 4,670.82
          2. Water Course: 168.13
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2009-01-01 and maximum of 2009-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 7.11 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 9.101e-02 and maximum of 1.655e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.01 and maximum of $32.22MM
    4. Total length driven by Safety: 243.42 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $22.44MM:
       1. Leak cost between minimum of $0.00 and maximum of $21.89MM
       2. Leak scenario yielded 6.0 intersections with structures, with minimum of 1.26 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $33.99MM
       5. Rupture scenario yielded 12.0 intersections with structures, with minimum of 0.0 and maximum of 3.54 of population impacted
       6. Rupture hazard radius distributed between minimum of 112.52 and maximum of 112.52 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
       8. Puncture scenario yielded 9.0 intersections with structures, with minimum of 1.26 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 4595.52 meters.
    7. Environmental Cost distributed between minimum of $9.09 and maximum of $22.62MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.39MM
       2. Leak spill volume between a minimum of 1973.38 and maximum of 2177.17 gallons
       3. Rupture cost between minimum of $59.23 and maximum of $109.19MM
       4. Rupture spill volume is between a minimum of 558792.79 and maximum of 616497.21 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $12.67MM
       6. Puncture spill volume is between a minimum of 64840.92 and maximum of 71536.79 gallons
64. "STRACHAN TO ROCKY MOUNTAIN HOUSE NGL NPS 6
    1. Total Cumulative Length (m): 4785.3
    2. Likelihood of failure distributed between minimum of 1.052e-03 and maximum of 3.393e-02.
       1. Land use distributed as
          1. Agricultural: 4,755.41
          2. Forested: 29.90
       2. Depth of cover distributed as
          1. >= 0.49 to < 0.55m: 4.16, >= 0.55 to < 0.61m: 19.96, >= 0.61 to < 0.67m: 114.80, >= 0.67 to < 0.76m: 563.01, >= 0.76 to < 0.91m: 3,113.25, >= 0.91 to < 1.22m: 708.89, >= 1.22 to < 1.83m: 205.04, >= 1.83m : 56.20
       3. Installation date between minimum of 1972-07-15 and maximum of 1972-07-15
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 7.11 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 9.023e-02 and maximum of 3.087e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $2.03 and maximum of $125.82MM
    4. Total length driven by Safety: 2121.76 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 10.89 and maximum of 10.89 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 77.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 113.66 and maximum of 113.66 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 50.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 50.68 and maximum of 50.68 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 2663.54 meters.
    7. Economic Loss Cost distributed between minimum of $2.03 and maximum of $8.43MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.25 and maximum of $2.94MM
       5. Leak scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $42,776.72 and maximum of $42,776.72
       7. Rupture cost between minimum of $12.32 and maximum of $18.88MM
       8. Rupture scenario yielded 77.0 intersections with structures, with minimum of $25,000.00 and maximum of $6,560,625.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $12,112,859.08 and maximum of $12,112,859.08
       10. Puncture cost between minimum of $1.62 and maximum of $8.18MM
       11. Puncture scenario yielded 50.0 intersections with structures, with minimum of $25,000.00 and maximum of $6,560,625.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,405,545.82 and maximum of $1,405,545.82"
65. "CONDOR FROM 14-12-38-5W5 TO 5-20-38-4W5 NPS4
    1. Total Cumulative Length (m): 4785.07
    2. Likelihood of failure distributed between minimum of 1.262e-02 and maximum of 1.357e-02.
       1. Land use distributed as
          1. Agricultural: 4,785.07
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1989-01-01 and maximum of 2017-11-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 290.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.2 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.032e-01 and maximum of 3.261e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $6.89 and maximum of $7.28MM
    4. Total length driven by Environmental: 4785.07 meters.
    5. Environmental Cost distributed between minimum of $6.60 and maximum of $7.00MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1691.91 and maximum of 1794.31 gallons
       3. Rupture cost between minimum of $23.43 and maximum of $24.85MM
       4. Rupture spill volume is between a minimum of 221039.07 and maximum of 234417.15 gallons
       5. Puncture cost between minimum of $5.89 and maximum of $6.25MM
       6. Puncture spill volume is between a minimum of 55592.23 and maximum of 58956.88 gallons
66. "AMERADA FERRIER 1-6 TO 10-33 JUNCTION NPS 4
    1. Total Cumulative Length (m): 4761.52
    2. Likelihood of failure distributed between minimum of 3.580e-03 and maximum of 1.490e-02.
       1. Land use distributed as
          1. Agricultural: 4,256.53
          2. Forested: 504.99
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1961-01-01 and maximum of 1961-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.17 and maximum of 5.4 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 1.692e-01 and maximum of 3.578e-01
       9. Class area location is/are 1.0, 2.0, 3.0.
    3. Consequence of failure distributed between minimum of $4.99 and maximum of $142.13MM
    4. Total length driven by Safety: 1679.99 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $133.69MM:
       1. Leak cost between minimum of $0.00 and maximum of $21.89MM
       2. Leak scenario yielded 4.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.55 and maximum of 11.55 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $306.46MM
       5. Rupture scenario yielded 38.0 intersections with structures, with minimum of 0.0 and maximum of 31.92 of population impacted
       6. Rupture hazard radius distributed between minimum of 80.3 and maximum of 80.3 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $284.57MM
       8. Puncture scenario yielded 28.0 intersections with structures, with minimum of 2.28 and maximum of 29.64 of population impacted
       9. Puncture hazard radius distributed between minimum of 46.87 and maximum of 46.87 meters.
       10. Product type is LVP Products.
       11. Class area location is/are 1.0, 2.0, 3.0.
    6. Total length driven by Environmental: 3081.53 meters.
    7. Environmental Cost distributed between minimum of $4.73 and maximum of $8.41MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1821.24 and maximum of 2060.9 gallons
       3. Rupture cost between minimum of $25.22 and maximum of $45.39MM
       4. Rupture spill volume is between a minimum of 237935.49 and maximum of 269245.95 gallons
       5. Puncture cost between minimum of $6.34 and maximum of $11.42MM
       6. Puncture spill volume is between a minimum of 59841.75 and maximum of 67716.46 gallons
67. "WASCANA LATERAL NPS 16
    1. Total Cumulative Length (m): 4726.51
    2. Likelihood of failure distributed between minimum of 1.230e-03 and maximum of 1.845e-03.
       1. Land use distributed as
          1. Agricultural: 4,726.51
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2014-01-01 and maximum of 2014-01-01
       4. Outside diameter of 16.0 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 7.9 and maximum of 9.5 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.954e-02 and maximum of 4.432e-02
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $20.23 and maximum of $37.53MM
    4. Total length driven by Environmental: 4726.51 meters.
    5. Environmental Cost distributed between minimum of $19.18 and maximum of $21.55MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.18MM
       2. Leak spill volume between a minimum of 1569.7 and maximum of 1683.88 gallons
       3. Rupture cost between minimum of $274.79 and maximum of $294.77MM
       4. Rupture spill volume is between a minimum of 2592539.41 and maximum of 2781111.39 gallons
       5. Puncture cost between minimum of $5.47 and maximum of $5.86MM
       6. Puncture spill volume is between a minimum of 51576.93 and maximum of 55328.45 gallons
68. "PINCHER CREEK TO CARWAY NPS 12
    1. Total Cumulative Length (m): 4431.32
    2. Likelihood of failure distributed between minimum of 1.322e-03 and maximum of 7.871e-03.
       1. Land use distributed as
          1. Agricultural: 181.13
          2. Water Course: 4,250.19
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1967-01-01 and maximum of 2018-11-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 317.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 9.52 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 4.433e-02 and maximum of 1.891e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.08 and maximum of $15.86MM
    4. Total length driven by Safety: 29.99 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $5.48MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 1.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 3.74 and maximum of 4.11 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $43.78MM
       5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
       6. Rupture hazard radius distributed between minimum of 72.23 and maximum of 79.49 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
       8. Puncture scenario yielded 2.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
       9. Puncture hazard radius distributed between minimum of 14.94 and maximum of 16.44 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 4401.33 meters.
    7. Environmental Cost distributed between minimum of $4.79 and maximum of $14.92MM:
       1. Leak cost between minimum of $0.26 and maximum of $0.45MM
       2. Leak spill volume between a minimum of 1644.96 and maximum of 2533.72 gallons
       3. Rupture cost between minimum of $9.15 and maximum of $30.31MM
       4. Rupture spill volume is between a minimum of 51421.19 and maximum of 170353.01 gallons
       5. Puncture cost between minimum of $8.70 and maximum of $14.81MM
       6. Puncture spill volume is between a minimum of 54049.72 and maximum of 83252.39 gallons
69. "KERROBERT UNIT RAIL TRANSFER NPS 20
    1. Total Cumulative Length (m): 4423.16
    2. Likelihood of failure distributed between minimum of 1.168e-03 and maximum of 1.168e-03.
       1. Land use distributed as
          1. Agricultural: 4,423.16
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2015-01-01 and maximum of 2015-01-01
       4. Outside diameter of 20.0 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 7.92 and maximum of 7.92 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.806e-02 and maximum of 2.806e-02
       9. Class area location is/are nan.
    3. Consequence of failure distributed between minimum of $16.04 and maximum of $17.84MM
    4. Total length driven by Environmental: 4423.16 meters.
    5. Environmental Cost distributed between minimum of $15.02 and maximum of $16.81MM:
       1. Leak cost between minimum of $0.09 and maximum of $0.10MM
       2. Leak spill volume between a minimum of 810.94 and maximum of 907.27 gallons
       3. Rupture cost between minimum of $221.81 and maximum of $248.16MM
       4. Rupture spill volume is between a minimum of 2092754.43 and maximum of 2341331.2 gallons
       5. Puncture cost between minimum of $2.82 and maximum of $3.16MM
       6. Puncture spill volume is between a minimum of 26645.78 and maximum of 29810.75 gallons
70. "NPS8 LPG Sarnia to St Clair Terminal
    1. Total Cumulative Length (m): 4399.4
    2. Likelihood of failure distributed between minimum of 1.147e-03 and maximum of 8.000e-03.
       1. Land use distributed as
          1. Agricultural: 3,069.98
          2. Forested: 1,317.49
          3. Water Course: 11.93
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1974-01-01 and maximum of 1974-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 8.18 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 6.035e-02 and maximum of 1.922e-01
       9. Class area location is/are 1.0, 2.0, 3.0.
    3. Consequence of failure distributed between minimum of $12.69 and maximum of $334.09MM
    4. Total length driven by Safety: 765.22 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $319.11MM:
       1. Leak cost between minimum of $0.00 and maximum of $115.20MM
       2. Leak scenario yielded 24.0 intersections with structures, with minimum of 1.26 and maximum of 12.0 of population impacted.
       3. Leak hazard radius distributed between minimum of 10.84 and maximum of 10.84 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $1,418.40MM
       5. Rupture scenario yielded 53.0 intersections with structures, with minimum of 1.26 and maximum of 147.75 of population impacted
       6. Rupture hazard radius distributed between minimum of 137.89 and maximum of 137.89 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $274.18MM
       8. Puncture scenario yielded 75.0 intersections with structures, with minimum of 0.0 and maximum of 28.56 of population impacted
       9. Puncture hazard radius distributed between minimum of 50.45 and maximum of 50.45 meters.
       10. Product type is Liquid petroleum gas (LPG).
       11. Class area location is/are 1.0, 2.0, 3.0.
    6. Total length driven by Economic Loss: 3634.18 meters.
    7. Economic Loss Cost distributed between minimum of $12.69 and maximum of $14.99MM:
       1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is Liquid petroleum gas (LPG).
       4. Leak cost between minimum of $0.45 and maximum of $1.02MM
       5. Leak scenario yielded 24.0 intersections with structures, with minimum of $268,825.00 and maximum of $566,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $237,688.87 and maximum of $237,688.87
       7. Rupture cost between minimum of $114.29 and maximum of $129.69MM
       8. Rupture scenario yielded 53.0 intersections with structures, with minimum of $268,825.00 and maximum of $15,395,548.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $114,076,051.74 and maximum of $114,076,051.74
       10. Puncture cost between minimum of $8.02 and maximum of $9.70MM
       11. Puncture scenario yielded 75.0 intersections with structures, with minimum of $25,000.00 and maximum of $1,671,736.00 in cost of structures impacted
       12. Product Loss costs between minimum of $7,809,916.38 and maximum of $7,809,916.38"
71. "NPS6 Brookfield to Joffre From 15-20-38-25W4 To 15-17-39-26W4
    1. Total Cumulative Length (m): 4326.15
    2. Likelihood of failure distributed between minimum of 1.187e-03 and maximum of 3.852e-03.
       1. Land use distributed as
          1. Agricultural: 4,326.15
       2. Depth of cover distributed as
          1. >= 0.91 to < 1.22m: 4,326.15
       3. Installation date between minimum of 1995-01-01 and maximum of 1995-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 290.0 and maximum of 386.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 7.11 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 8.911e-02 and maximum of 2.891e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $10.00 and maximum of $26.77MM
    4. Total length driven by Environmental: 4326.15 meters.
    5. Environmental Cost distributed between minimum of $9.69 and maximum of $26.28MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.39MM
       2. Leak spill volume between a minimum of 1875.77 and maximum of 2232.77 gallons
       3. Rupture cost between minimum of $56.30 and maximum of $111.25MM
       4. Rupture spill volume is between a minimum of 531151.76 and maximum of 632240.79 gallons
       5. Puncture cost between minimum of $6.53 and maximum of $12.91MM
       6. Puncture spill volume is between a minimum of 61633.52 and maximum of 73363.64 gallons
72. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
    1. Total Cumulative Length (m): 3941.31
    2. Likelihood of failure distributed between minimum of 1.082e-03 and maximum of 4.817e-03.
       1. Land use distributed as
          1. Agricultural: 2,616.94
          2. Forested: 1,293.63
          3. Water Course: 30.73
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       4. Outside diameter of 10.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 5.16 and maximum of 7.04 mm
       7. Toughness between minimum of 30.0 and maximum of 30.0 J
       8. Probability of failure given a hit between minimum of 6.001e-02 and maximum of 1.157e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $10.02 and maximum of $367.04MM
    4. Total length driven by Safety: 3356.41 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $361.10MM:
       1. Leak cost between minimum of $0.00 and maximum of $345.43MM
       2. Leak scenario yielded 16.0 intersections with structures, with minimum of 2.28 and maximum of 35.98 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.39 and maximum of 12.16 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $872.95MM
       5. Rupture scenario yielded 105.0 intersections with structures, with minimum of 2.28 and maximum of 90.93 of population impacted
       6. Rupture hazard radius distributed between minimum of 171.98 and maximum of 185.15 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $345.43MM
       8. Puncture scenario yielded 60.0 intersections with structures, with minimum of 0.0 and maximum of 35.98 of population impacted
       9. Puncture hazard radius distributed between minimum of 53.34 and maximum of 57.42 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 584.9 meters.
    7. Economic Loss Cost distributed between minimum of $2.48 and maximum of $21.26MM:
       1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.27 and maximum of $2.96MM
       5. Leak scenario yielded 16.0 intersections with structures, with minimum of $269,868.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $49,027.76 and maximum of $59,691.29
       7. Rupture cost between minimum of $36.77 and maximum of $73.79MM
       8. Rupture scenario yielded 105.0 intersections with structures, with minimum of $269,868.00 and maximum of $29,065,968.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $36,553,283.29 and maximum of $44,503,622.40
       10. Puncture cost between minimum of $1.83 and maximum of $4.87MM
       11. Puncture scenario yielded 60.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,610,940.77 and maximum of $1,961,320.39"
73. "MARIPOSA TO KERROBERT NPS 12 (BLEND LOOP)
    1. Total Cumulative Length (m): 3908.03
    2. Likelihood of failure distributed between minimum of 1.534e-03 and maximum of 3.942e-03.
       1. Land use distributed as
          1. Agricultural: 3,908.03
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1998-01-01 and maximum of 1998-01-01
       4. Outside diameter of 12.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 6.35 and maximum of 10.31 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.685e-02 and maximum of 9.468e-02
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $16.25 and maximum of $31.39MM
    4. Total length driven by Environmental: 3908.03 meters.
    5. Environmental Cost distributed between minimum of $15.25 and maximum of $19.19MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.23MM
       2. Leak spill volume between a minimum of 1797.7 and maximum of 2150.21 gallons
       3. Rupture cost between minimum of $199.84 and maximum of $239.02MM
       4. Rupture spill volume is between a minimum of 1885408.79 and maximum of 2255111.49 gallons
       5. Puncture cost between minimum of $6.26 and maximum of $7.49MM
       6. Puncture spill volume is between a minimum of 59068.41 and maximum of 70650.91 gallons
74. "NORTH CACTUS BLEND LATERAL NPS 4
    1. Total Cumulative Length (m): 3639.99
    2. Likelihood of failure distributed between minimum of 1.032e-02 and maximum of 1.369e-02.
       1. Land use distributed as
          1. Agricultural: 3,639.99
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1994-01-01 and maximum of 1994-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.96 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.479e-01 and maximum of 3.289e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $7.51 and maximum of $7.88MM
    4. Total length driven by Environmental: 3639.99 meters.
    5. Environmental Cost distributed between minimum of $7.23 and maximum of $7.59MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1852.98 and maximum of 1946.63 gallons
       3. Rupture cost between minimum of $25.66 and maximum of $26.96MM
       4. Rupture spill volume is between a minimum of 242081.91 and maximum of 254317.03 gallons
       5. Puncture cost between minimum of $6.45 and maximum of $6.78MM
       6. Puncture spill volume is between a minimum of 60884.6 and maximum of 63961.78 gallons
75. "NORTH CACTUS CONDENSATE LATERAL NPS 3
    1. Total Cumulative Length (m): 3621.16
    2. Likelihood of failure distributed between minimum of 1.413e-02 and maximum of 1.413e-02.
       1. Land use distributed as
          1. Agricultural: 3,621.16
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1994-01-01 and maximum of 1994-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.395e-01 and maximum of 3.395e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $7.50 and maximum of $7.85MM
    4. Total length driven by Environmental: 3621.16 meters.
    5. Environmental Cost distributed between minimum of $7.22 and maximum of $7.56MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.22MM
       2. Leak spill volume between a minimum of 1972.39 and maximum of 2066.35 gallons
       3. Rupture cost between minimum of $16.52 and maximum of $17.31MM
       4. Rupture spill volume is between a minimum of 155881.9 and maximum of 163307.66 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $7.20MM
       6. Puncture spill volume is between a minimum of 64808.16 and maximum of 67895.44 gallons
76. "NPS8 SARNIA CONDENSATE TO SUNCOR
    1. Total Cumulative Length (m): 3356.54
    2. Likelihood of failure distributed between minimum of 1.715e-03 and maximum of 7.138e-03.
       1. Land use distributed as
          1. Agricultural: 1,826.34
          2. Forested: 1,528.89
          3. Water Course: 1.30
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 8.18 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 7.136e-02 and maximum of 1.715e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $16.21 and maximum of $103.43MM
    4. Total length driven by Safety: 578.2 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $86.78MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 21.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 11.8 and maximum of 11.8 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $546.62MM
       5. Rupture scenario yielded 38.0 intersections with structures, with minimum of 0.0 and maximum of 56.94 of population impacted
       6. Rupture hazard radius distributed between minimum of 135.89 and maximum of 135.89 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $165.41MM
       8. Puncture scenario yielded 49.0 intersections with structures, with minimum of 0.0 and maximum of 17.23 of population impacted
       9. Puncture hazard radius distributed between minimum of 47.76 and maximum of 47.76 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 2778.34 meters.
    7. Environmental Cost distributed between minimum of $15.82 and maximum of $28.36MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.35MM
       2. Leak spill volume between a minimum of 1889.11 and maximum of 1980.8 gallons
       3. Rupture cost between minimum of $96.10 and maximum of $169.14MM
       4. Rupture spill volume is between a minimum of 906656.27 and maximum of 950663.92 gallons
       5. Puncture cost between minimum of $6.58 and maximum of $11.58MM
       6. Puncture spill volume is between a minimum of 62071.83 and maximum of 65084.7 gallons
77. "MONTEREY 5-24 TO 4-31 NPS 4
    1. Total Cumulative Length (m): 3286.44
    2. Likelihood of failure distributed between minimum of 1.241e-02 and maximum of 1.550e-02.
       1. Land use distributed as
          1. Agricultural: 3,286.44
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1959-01-01 and maximum of 1959-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.96 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.981e-01 and maximum of 3.722e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $5.09 and maximum of $5.61MM
    4. Total length driven by Environmental: 3286.44 meters.
    5. Environmental Cost distributed between minimum of $4.83 and maximum of $5.33MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1853.97 and maximum of 1923.83 gallons
       3. Rupture cost between minimum of $25.67 and maximum of $26.64MM
       4. Rupture spill volume is between a minimum of 242211.52 and maximum of 251338.07 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.70MM
       6. Puncture spill volume is between a minimum of 60917.19 and maximum of 63212.56 gallons
78. "SS-48 NPS 6
    1. Total Cumulative Length (m): 2977.13
    2. Likelihood of failure distributed between minimum of 1.191e-03 and maximum of 1.326e-02.
       1. Land use distributed as
          1. Agricultural: 2,748.70
          2. Remote: 150.60
          3. Water Course: 77.83
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1961-01-01 and maximum of 1961-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 6.35 mm
       7. Toughness between minimum of 17.6 and maximum of 17.6 J
       8. Probability of failure given a hit between minimum of 1.189e-01 and maximum of 3.186e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $7.92 and maximum of $22.07MM
    4. Total length driven by Environmental: 2977.13 meters.
    5. Environmental Cost distributed between minimum of $7.62 and maximum of $21.63MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.31MM
       2. Leak spill volume between a minimum of 1650.03 and maximum of 1735.7 gallons
       3. Rupture cost between minimum of $49.52 and maximum of $87.44MM
       4. Rupture spill volume is between a minimum of 467229.46 and maximum of 491488.94 gallons
       5. Puncture cost between minimum of $5.75 and maximum of $10.15MM
       6. Puncture spill volume is between a minimum of 54216.14 and maximum of 57031.15 gallons
79. "SUNDRE LATERAL 10-4 TO 16-8 NPS 4
    1. Total Cumulative Length (m): 2965.24
    2. Likelihood of failure distributed between minimum of 1.037e-02 and maximum of 1.629e-02.
       1. Land use distributed as
          1. Agricultural: 2,965.24
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.491e-01 and maximum of 3.912e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $4.87 and maximum of $8.21MM
    4. Total length driven by Environmental: 2965.24 meters.
    5. Environmental Cost distributed between minimum of $4.58 and maximum of $7.94MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.33MM
       2. Leak spill volume between a minimum of 1801.37 and maximum of 1862.87 gallons
       3. Rupture cost between minimum of $24.94 and maximum of $43.25MM
       4. Rupture spill volume is between a minimum of 235340.45 and maximum of 243374.63 gallons
       5. Puncture cost between minimum of $6.27 and maximum of $10.88MM
       6. Puncture spill volume is between a minimum of 59189.09 and maximum of 61209.72 gallons
80. "NITON BV 22 TO STATION 8 NPS 4
    1. Total Cumulative Length (m): 2796.6
    2. Likelihood of failure distributed between minimum of 3.270e-03 and maximum of 1.359e-02.
       1. Land use distributed as
          1. Agricultural: 2,257.63
          2. Forested: 538.97
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1978-01-01 and maximum of 1978-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.17 and maximum of 3.17 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 3.263e-01 and maximum of 3.263e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $2.06 and maximum of $125.77MM
    4. Total length driven by Safety: 538.97 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 11.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.49 and maximum of 11.49 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 39.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 90.36 and maximum of 90.36 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 31.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 53.85 and maximum of 53.85 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 2257.63 meters.
    7. Economic Loss Cost distributed between minimum of $2.06 and maximum of $4.71MM:
       1. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.26 and maximum of $2.95MM
       5. Leak scenario yielded 11.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $50,290.22 and maximum of $50,290.22
       7. Rupture cost between minimum of $6.78 and maximum of $9.47MM
       8. Rupture scenario yielded 39.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $6,570,161.07 and maximum of $6,570,161.07
       10. Puncture cost between minimum of $1.86 and maximum of $4.55MM
       11. Puncture scenario yielded 31.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,652,422.50 and maximum of $1,652,422.50"
81. "SS-24 NPS 4
    1. Total Cumulative Length (m): 2785.51
    2. Likelihood of failure distributed between minimum of 1.311e-02 and maximum of 1.628e-02.
       1. Land use distributed as
          1. Agricultural: 2,785.51
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.96 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.149e-01 and maximum of 3.911e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $4.65 and maximum of $4.87MM
    4. Total length driven by Environmental: 2785.51 meters.
    5. Environmental Cost distributed between minimum of $4.37 and maximum of $4.58MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1694.94 and maximum of 1752.98 gallons
       3. Rupture cost between minimum of $23.47 and maximum of $24.27MM
       4. Rupture spill volume is between a minimum of 221434.64 and maximum of 229017.59 gallons
       5. Puncture cost between minimum of $5.90 and maximum of $6.10MM
       6. Puncture spill volume is between a minimum of 55691.72 and maximum of 57598.87 gallons
82. "SOUTH GARRINGTON 12-24 TO 04-16 NPS 4
    1. Total Cumulative Length (m): 2722.38
    2. Likelihood of failure distributed between minimum of 1.769e-03 and maximum of 1.483e-02.
       1. Land use distributed as
          1. Agricultural: 2,527.74
          2. Water Course: 194.64
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1989-01-01 and maximum of 2014-03-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 241.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.766e-01 and maximum of 3.563e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $6.79 and maximum of $29.70MM
    4. Total length driven by Safety: 98.8 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $22.44MM:
       1. Leak cost between minimum of $0.00 and maximum of $21.89MM
       2. Leak scenario yielded 9.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 3.95 and maximum of 4.11 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $43.78MM
       5. Rupture scenario yielded 11.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
       6. Rupture hazard radius distributed between minimum of 29.55 and maximum of 30.81 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
       8. Puncture scenario yielded 14.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 15.77 and maximum of 16.44 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 2623.58 meters.
    7. Environmental Cost distributed between minimum of $6.51 and maximum of $12.65MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.33MM
       2. Leak spill volume between a minimum of 1692.42 and maximum of 1879.19 gallons
       3. Rupture cost between minimum of $23.44 and maximum of $43.68MM
       4. Rupture spill volume is between a minimum of 221106.56 and maximum of 245505.99 gallons
       5. Puncture cost between minimum of $5.89 and maximum of $10.99MM
       6. Puncture spill volume is between a minimum of 55609.21 and maximum of 61745.76 gallons
83. "BRETON TO EDMONTON NPS 8
    1. Total Cumulative Length (m): 2655.93
    2. Likelihood of failure distributed between minimum of 1.003e-03 and maximum of 7.107e-03.
       1. Land use distributed as
          1. Agricultural: 2,564.67
          2. Forested: 48.60
          3. Water Course: 42.66
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 317.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 8.18 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 6.659e-02 and maximum of 1.707e-01
       9. Class area location is/are 1.0, 2.0, 3.0.
    3. Consequence of failure distributed between minimum of $10.00 and maximum of $194.89MM
    4. Total length driven by Safety: 1012.79 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $184.94MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 117.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.13 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $831.74MM
       5. Rupture scenario yielded 236.0 intersections with structures, with minimum of 0.0 and maximum of 86.64 of population impacted
       6. Rupture hazard radius distributed between minimum of 129.12 and maximum of 138.23 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $187.30MM
       8. Puncture scenario yielded 355.0 intersections with structures, with minimum of 2.28 and maximum of 19.51 of population impacted
       9. Puncture hazard radius distributed between minimum of 45.37 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0, 2.0, 3.0.
    6. Total length driven by Environmental: 1643.14 meters.
    7. Environmental Cost distributed between minimum of $0.59 and maximum of $15.21MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.47MM
       2. Leak spill volume between a minimum of 1701.39 and maximum of 2660.55 gallons
       3. Rupture cost between minimum of $1.62 and maximum of $13.26MM
       4. Rupture spill volume is between a minimum of 15247.51 and maximum of 74557.31 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $15.55MM
       6. Puncture spill volume is between a minimum of 55903.71 and maximum of 87419.56 gallons
84. "SS-52 NPS 4
    1. Total Cumulative Length (m): 2516.14
    2. Likelihood of failure distributed between minimum of 1.374e-02 and maximum of 1.374e-02.
       1. Land use distributed as
          1. Agricultural: 2,516.14
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.300e-01 and maximum of 3.300e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $7.51 and maximum of $9.35MM
    4. Total length driven by Environmental: 2516.14 meters.
    5. Environmental Cost distributed between minimum of $7.22 and maximum of $9.04MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1851.11 and maximum of 1908.89 gallons
       3. Rupture cost between minimum of $25.63 and maximum of $26.43MM
       4. Rupture spill volume is between a minimum of 241837.76 and maximum of 249386.62 gallons
       5. Puncture cost between minimum of $6.45 and maximum of $6.65MM
       6. Puncture spill volume is between a minimum of 60823.19 and maximum of 62721.76 gallons
85. "RADIAL LAKE TO LOCHEARN PUMP STATION NPS 3
    1. Total Cumulative Length (m): 2403.81
    2. Likelihood of failure distributed between minimum of 3.405e-03 and maximum of 1.415e-02.
       1. Land use distributed as
          1. Agricultural: 2,254.31
          2. Forested: 149.51
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1976-01-01 and maximum of 1976-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.18 and maximum of 3.96 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 2.592e-01 and maximum of 3.399e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $1.04 and maximum of $194.82MM
    4. Total length driven by Safety: 463.47 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $191.94MM:
       1. Leak cost between minimum of $0.00 and maximum of $28.51MM
       2. Leak scenario yielded 6.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $193.92MM
       5. Rupture scenario yielded 22.0 intersections with structures, with minimum of 0.0 and maximum of 20.2 of population impacted
       6. Rupture hazard radius distributed between minimum of 80.38 and maximum of 80.38 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $193.92MM
       8. Puncture scenario yielded 23.0 intersections with structures, with minimum of 0.0 and maximum of 20.2 of population impacted
       9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 1940.34 meters.
    7. Economic Loss Cost distributed between minimum of $1.04 and maximum of $2.88MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.27 and maximum of $0.29MM
       5. Leak scenario yielded 6.0 intersections with structures, with minimum of $18,600.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $5.02 and maximum of $5.60MM
       8. Rupture scenario yielded 22.0 intersections with structures, with minimum of $18,600.00 and maximum of $584,600.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
       10. Puncture cost between minimum of $2.21 and maximum of $2.79MM
       11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $18,600.00 and maximum of $584,600.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
86. "SS-44 NPS 8
    1. Total Cumulative Length (m): 2344.82
    2. Likelihood of failure distributed between minimum of 1.170e-03 and maximum of 8.425e-03.
       1. Land use distributed as
          1. Agricultural: 2,341.89
          2. Remote: 1.93
          3. Water Course: 1.00
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1956-01-01 and maximum of 1956-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 5.56 and maximum of 8.18 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.168e-01 and maximum of 2.024e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.27 and maximum of $45.46MM
    4. Total length driven by Environmental: 2344.82 meters.
    5. Environmental Cost distributed between minimum of $9.95 and maximum of $44.77MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.34MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 1904.4 gallons
       3. Rupture cost between minimum of $94.31 and maximum of $162.16MM
       4. Rupture spill volume is between a minimum of 889762.93 and maximum of 913993.1 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $11.10MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 62574.13 gallons
87. "PECO TO BRAZEAU NPS 3
    1. Total Cumulative Length (m): 2299.69
    2. Likelihood of failure distributed between minimum of 1.672e-03 and maximum of 1.082e-02.
       1. Land use distributed as
          1. Agricultural: 2,126.14
          2. Forested: 173.55
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1986-01-01 and maximum of 1986-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 5.49 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 1.669e-01 and maximum of 2.599e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $2.31 and maximum of $126.01MM
    4. Total length driven by Safety: 173.55 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 12.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 80.38 and maximum of 80.38 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 9.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 2126.14 meters.
    7. Economic Loss Cost distributed between minimum of $2.31 and maximum of $4.96MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.27 and maximum of $2.96MM
       5. Leak scenario yielded 1.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $5.02 and maximum of $7.70MM
       8. Rupture scenario yielded 12.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
       10. Puncture cost between minimum of $2.21 and maximum of $4.89MM
       11. Puncture scenario yielded 9.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
88. "WINTER CONDENSATE NPS 3
    1. Total Cumulative Length (m): 2286.46
    2. Likelihood of failure distributed between minimum of 1.277e-02 and maximum of 1.277e-02.
       1. Land use distributed as
          1. Agricultural: 2,286.46
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1994-01-01 and maximum of 1994-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.067e-01 and maximum of 3.067e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $3.71 and maximum of $3.96MM
    4. Total length driven by Environmental: 2286.46 meters.
    5. Environmental Cost distributed between minimum of $3.47 and maximum of $3.72MM:
       1. Leak cost between minimum of $0.10 and maximum of $0.11MM
       2. Leak spill volume between a minimum of 948.19 and maximum of 1017.18 gallons
       3. Rupture cost between minimum of $7.94 and maximum of $8.52MM
       4. Rupture spill volume is between a minimum of 74937.5 and maximum of 80390.1 gallons
       5. Puncture cost between minimum of $3.30 and maximum of $3.54MM
       6. Puncture spill volume is between a minimum of 31155.39 and maximum of 33422.32 gallons
89. "RAINBOW ATLANTIS LATERAL NPS 8
    1. Total Cumulative Length (m): 2229.95
    2. Likelihood of failure distributed between minimum of 1.170e-03 and maximum of 5.315e-03.
       1. Land use distributed as
          1. Agricultural: 448.50
          2. Forested: 1,678.09
          3. Water Course: 103.36
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2015-02-09 and maximum of 2015-02-09
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 5.56 and maximum of 12.7 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 2.809e-02 and maximum of 1.277e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.67 and maximum of $19.88MM
    4. Total length driven by Environmental: 2229.95 meters.
    5. Environmental Cost distributed between minimum of $10.35 and maximum of $19.51MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.34MM
       2. Leak spill volume between a minimum of 1853.97 and maximum of 1900.95 gallons
       3. Rupture cost between minimum of $94.31 and maximum of $162.32MM
       4. Rupture spill volume is between a minimum of 889789.8 and maximum of 912337.73 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $11.11MM
       6. Puncture spill volume is between a minimum of 60917.11 and maximum of 62460.8 gallons
90. "LONE ROCK TO KERROBERT NPS 10
    1. Total Cumulative Length (m): 2148.19
    2. Likelihood of failure distributed between minimum of 1.400e-03 and maximum of 5.816e-03.
       1. Land use distributed as
          1. Agricultural: 1,152.05
          2. Remote: 7.37
          3. Water Course: 988.77
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       4. Outside diameter of 10.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 9.27 mm
       7. Toughness between minimum of 24.8 and maximum of 24.8 J
       8. Probability of failure given a hit between minimum of 4.155e-02 and maximum of 1.397e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.04 and maximum of $21.89MM
    4. Total length driven by Safety: 851.61 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 60.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 4.02 and maximum of 4.02 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
       5. Rupture scenario yielded 41.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 66.53 and maximum of 66.53 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 73.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 16.07 and maximum of 16.07 meters.
       10. Product type is Blend.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 1296.58 meters.
    7. Environmental Cost distributed between minimum of $6.26 and maximum of $14.06MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.43MM
       2. Leak spill volume between a minimum of 1763.98 and maximum of 2419.82 gallons
       3. Rupture cost between minimum of $14.78 and maximum of $52.96MM
       4. Rupture spill volume is between a minimum of 139430.11 and maximum of 297649.22 gallons
       5. Puncture cost between minimum of $6.14 and maximum of $14.15MM
       6. Puncture spill volume is between a minimum of 57960.41 and maximum of 79509.78 gallons
91. "WEST BRAZEAU TO STATION 8 NPS 4
    1. Total Cumulative Length (m): 2142.77
    2. Likelihood of failure distributed between minimum of 1.177e-03 and maximum of 1.476e-02.
       1. Land use distributed as
          1. Agricultural: 1,894.76
          2. Forested: 248.00
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1980-01-01 and maximum of 1980-01-01
       4. Outside diameter of 4.5 in.
       5. Grade between minimum of 241.0 and maximum of 241.0 MPa
       6. Wall thickness between minimum of 3.17 and maximum of 6.8 mm
       7. Toughness between minimum of 20.0 and maximum of 20.0 J
       8. Probability of failure given a hit between minimum of 1.175e-01 and maximum of 3.546e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $1.69 and maximum of $125.41MM
    4. Total length driven by Safety: 248.0 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 8.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 10.67 and maximum of 10.67 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
       5. Rupture scenario yielded 43.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 83.12 and maximum of 83.12 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
       8. Puncture scenario yielded 18.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 49.54 and maximum of 49.54 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 1894.76 meters.
    7. Economic Loss Cost distributed between minimum of $1.69 and maximum of $4.35MM:
       1. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.25 and maximum of $2.94MM
       5. Leak scenario yielded 8.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $40,251.79 and maximum of $40,251.79
       7. Rupture cost between minimum of $5.47 and maximum of $8.16MM
       8. Rupture scenario yielded 43.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $5,258,690.95 and maximum of $5,258,690.95
       10. Puncture cost between minimum of $1.53 and maximum of $4.22MM
       11. Puncture scenario yielded 18.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
       12. Product Loss costs between minimum of $1,322,582.37 and maximum of $1,322,582.37"
92. "CADOTTE LAKE TO UTIKUMA STATION NPS 20
    1. Total Cumulative Length (m): 2123.3
    2. Likelihood of failure distributed between minimum of 1.084e-03 and maximum of 3.617e-03.
       1. Land use distributed as
          1. Agricultural: 2,123.30
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
       4. Outside diameter of 20.0 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 7.14 and maximum of 12.7 mm
       7. Toughness between minimum of 12.4 and maximum of 12.4 J
       8. Probability of failure given a hit between minimum of 2.604e-02 and maximum of 8.688e-02
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $10.10 and maximum of $24.61MM
    4. Total length driven by Environmental: 2123.3 meters.
    5. Environmental Cost distributed between minimum of $9.15 and maximum of $23.60MM:
       1. Leak cost between minimum of $0.22 and maximum of $0.55MM
       2. Leak spill volume between a minimum of 1792.67 and maximum of 3078.04 gallons
       3. Rupture cost between minimum of $11.15 and maximum of $121.34MM
       4. Rupture spill volume is between a minimum of 62684.72 and maximum of 682029.51 gallons
       5. Puncture cost between minimum of $7.17 and maximum of $17.99MM
       6. Puncture spill volume is between a minimum of 58902.99 and maximum of 101137.41 gallons
93. "SUNDRE TO BENTLEY NPS 8
    1. Total Cumulative Length (m): 2116.74
    2. Likelihood of failure distributed between minimum of 1.523e-03 and maximum of 9.078e-03.
       1. Land use distributed as
          1. Agricultural: 1,980.14
          2. Water Course: 136.60
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1962-01-01 and maximum of 1962-01-01
       4. Outside diameter of 8.625 in.
       5. Grade between minimum of 317.0 and maximum of 317.0 MPa
       6. Wall thickness between minimum of 4.78 and maximum of 6.35 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.515e-01 and maximum of 2.180e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $18.94 and maximum of $55.61MM
    4. Total length driven by Safety: 2116.74 meters.
    5. Safety Cost distributed between minimum of $15.00 and maximum of $51.36MM:
       1. Leak cost between minimum of $0.00 and maximum of $50.40MM
       2. Leak scenario yielded 40.0 intersections with structures, with minimum of 1.26 and maximum of 5.25 of population impacted.
       3. Leak hazard radius distributed between minimum of 20.4 and maximum of 20.4 meters.
       4. Rupture cost between minimum of $21.89 and maximum of $77.77MM
       5. Rupture scenario yielded 132.0 intersections with structures, with minimum of 2.28 and maximum of 8.1 of population impacted
       6. Rupture hazard radius distributed between minimum of 135.46 and maximum of 135.46 meters.
       7. Puncture cost between minimum of $12.11 and maximum of $50.40MM
       8. Puncture scenario yielded 98.0 intersections with structures, with minimum of 1.26 and maximum of 5.25 of population impacted
       9. Puncture hazard radius distributed between minimum of 55.42 and maximum of 55.42 meters.
       10. Product type is Butane/Condensate.
       11. Class area location is/are 1.0, 2.0.
94. "SPRINGDALE TO ELLERSLIE NPS 16
    1. Total Cumulative Length (m): 2114.17
    2. Likelihood of failure distributed between minimum of 1.370e-03 and maximum of 3.073e-03.
       1. Land use distributed as
          1. Agricultural: 2,114.17
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1994-01-01 and maximum of 1994-01-01
       4. Outside diameter of 16.0 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 6.35 and maximum of 7.92 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.290e-02 and maximum of 7.381e-02
       9. Class area location is/are 1.0, 2.0, 3.0.
    3. Consequence of failure distributed between minimum of $10.01 and maximum of $110.80MM
    4. Total length driven by Safety: 1219.92 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $103.22MM:
       1. Leak cost between minimum of $0.00 and maximum of $28.51MM
       2. Leak scenario yielded 40.0 intersections with structures, with minimum of 2.97 and maximum of 2.97 of population impacted.
       3. Leak hazard radius distributed between minimum of 3.93 and maximum of 4.15 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $525.31MM
       5. Rupture scenario yielded 120.0 intersections with structures, with minimum of 0.0 and maximum of 54.72 of population impacted
       6. Rupture hazard radius distributed between minimum of 93.25 and maximum of 98.63 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $87.55MM
       8. Puncture scenario yielded 99.0 intersections with structures, with minimum of 2.28 and maximum of 9.12 of population impacted
       9. Puncture hazard radius distributed between minimum of 15.69 and maximum of 16.59 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0, 2.0, 3.0.
    6. Total length driven by Environmental: 894.25 meters.
    7. Environmental Cost distributed between minimum of $5.68 and maximum of $13.53MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.40MM
       2. Leak spill volume between a minimum of 1674.97 and maximum of 2257.51 gallons
       3. Rupture cost between minimum of $5.53 and maximum of $29.12MM
       4. Rupture spill volume is between a minimum of 52157.54 and maximum of 169882.93 gallons
       5. Puncture cost between minimum of $5.83 and maximum of $13.20MM
       6. Puncture spill volume is between a minimum of 55035.83 and maximum of 74176.68 gallons
95. "NPS3 Emerge From 11-33-48-27W3 To 2-6-49-27W3
    1. Total Cumulative Length (m): 2066.76
    2. Likelihood of failure distributed between minimum of 3.196e-03 and maximum of 1.328e-02.
       1. Land use distributed as
          1. Agricultural: 1,969.22
          2. Remote: 97.54
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2010-01-01 and maximum of 2010-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.190e-01 and maximum of 3.190e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $7.52 and maximum of $28.47MM
    4. Total length driven by Safety: 243.83 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $20.78MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 7.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
       5. Rupture scenario yielded 12.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       6. Rupture hazard radius distributed between minimum of 68.4 and maximum of 68.4 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
       8. Puncture scenario yielded 12.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 1822.93 meters.
    7. Environmental Cost distributed between minimum of $7.12 and maximum of $7.48MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.22MM
       2. Leak spill volume between a minimum of 1973.38 and maximum of 2044.73 gallons
       3. Rupture cost between minimum of $16.53 and maximum of $17.13MM
       4. Rupture spill volume is between a minimum of 155960.45 and maximum of 161599.56 gallons
       5. Puncture cost between minimum of $6.87 and maximum of $7.12MM
       6. Puncture spill volume is between a minimum of 64840.82 and maximum of 67185.29 gallons
96. "ENCANA SENLAC LATERAL NPS 3
    1. Total Cumulative Length (m): 2054.36
    2. Likelihood of failure distributed between minimum of 1.403e-02 and maximum of 1.403e-02.
       1. Land use distributed as
          1. Agricultural: 2,054.36
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1995-01-01 and maximum of 1995-01-01
       4. Outside diameter of 3.5 in.
       5. Grade between minimum of 290.0 and maximum of 290.0 MPa
       6. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 3.369e-01 and maximum of 3.369e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $7.50 and maximum of $7.67MM
    4. Total length driven by Environmental: 2054.36 meters.
    5. Environmental Cost distributed between minimum of $7.22 and maximum of $7.39MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1983.31 and maximum of 2019.53 gallons
       3. Rupture cost between minimum of $16.61 and maximum of $16.92MM
       4. Rupture spill volume is between a minimum of 156745.2 and maximum of 159607.81 gallons
       5. Puncture cost between minimum of $6.91 and maximum of $7.03MM
       6. Puncture spill volume is between a minimum of 65167.08 and maximum of 66357.22 gallons
97. "CROOKED LAKE LATERAL NPS 6 FROM 15-17-39-26W4 TO 3-5-40-28W4
    1. Total Cumulative Length (m): 2028.43
    2. Likelihood of failure distributed between minimum of 1.349e-03 and maximum of 9.235e-03.
       1. Land use distributed as
          1. Agricultural: 1,971.33
          2. Water Course: 57.10
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1990-01-01 and maximum of 1990-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 317.0 and maximum of 317.0 MPa
       6. Wall thickness between minimum of 3.96 and maximum of 6.35 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 1.105e-01 and maximum of 2.218e-01
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $10.00 and maximum of $33.10MM
    4. Total length driven by Safety: 315.5 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $23.46MM:
       1. Leak cost between minimum of $0.00 and maximum of $21.89MM
       2. Leak scenario yielded 10.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 3.95 and maximum of 3.95 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $65.66MM
       5. Rupture scenario yielded 51.0 intersections with structures, with minimum of 2.28 and maximum of 6.84 of population impacted
       6. Rupture hazard radius distributed between minimum of 42.02 and maximum of 42.02 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
       8. Puncture scenario yielded 34.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 15.77 and maximum of 15.77 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 1712.93 meters.
    7. Environmental Cost distributed between minimum of $9.01 and maximum of $16.52MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.38MM
       2. Leak spill volume between a minimum of 1789.7 and maximum of 2141.43 gallons
       3. Rupture cost between minimum of $58.58 and maximum of $107.88MM
       4. Rupture spill volume is between a minimum of 506780.92 and maximum of 606376.59 gallons
       5. Puncture cost between minimum of $6.80 and maximum of $12.52MM
       6. Puncture spill volume is between a minimum of 58805.59 and maximum of 70362.42 gallons
98. "SS-03 NPS 6
    1. Total Cumulative Length (m): 1933.07
    2. Likelihood of failure distributed between minimum of 4.136e-03 and maximum of 1.302e-02.
       1. Land use distributed as
          1. Agricultural: 1,933.07
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 1963-01-01 and maximum of 1963-01-01
       4. Outside diameter of 6.625 in.
       5. Grade between minimum of 317.0 and maximum of 317.0 MPa
       6. Wall thickness between minimum of 3.2 and maximum of 7.1 mm
       7. Toughness between minimum of 17.6 and maximum of 17.6 J
       8. Probability of failure given a hit between minimum of 9.936e-02 and maximum of 3.127e-01
       9. Class area location is/are 1.0.
    3. Consequence of failure distributed between minimum of $4.65 and maximum of $24.45MM
    4. Total length driven by Environmental: 1933.07 meters.
    5. Environmental Cost distributed between minimum of $4.37 and maximum of $23.96MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1801.73 and maximum of 1815.99 gallons
       3. Rupture cost between minimum of $54.08 and maximum of $54.50MM
       4. Rupture spill volume is between a minimum of 510185.96 and maximum of 514224.45 gallons
       5. Puncture cost between minimum of $6.27 and maximum of $6.32MM
       6. Puncture spill volume is between a minimum of 59200.7 and maximum of 59669.32 gallons
99. "MBV 25 TO NIPISI NPS 10
    1. Total Cumulative Length (m): 1857.12
    2. Likelihood of failure distributed between minimum of 4.130e-03 and maximum of 4.137e-03.
       1. Land use distributed as
          1. Agricultural: 1,857.12
       2. Depth of cover distributed as
          1. nan
       3. Installation date between minimum of 2013-09-01 and maximum of 2013-09-01
       4. Outside diameter of 10.75 in.
       5. Grade between minimum of 359.0 and maximum of 359.0 MPa
       6. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
       7. Toughness between minimum of nan and maximum of nan J
       8. Probability of failure given a hit between minimum of 9.920e-02 and maximum of 9.937e-02
       9. Class area location is/are 1.0, 2.0.
    3. Consequence of failure distributed between minimum of $10.00 and maximum of $71.67MM
    4. Total length driven by Safety: 777.28 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $64.10MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 155.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $87.55MM
       5. Rupture scenario yielded 248.0 intersections with structures, with minimum of 0.0 and maximum of 9.12 of population impacted
       6. Rupture hazard radius distributed between minimum of 164.13 and maximum of 164.13 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $65.66MM
       8. Puncture scenario yielded 230.0 intersections with structures, with minimum of 0.0 and maximum of 6.84 of population impacted
       9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Environmental: 1079.84 meters.
    7. Environmental Cost distributed between minimum of $6.46 and maximum of $9.77MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.31MM
       2. Leak spill volume between a minimum of 1974.94 and maximum of 2882.26 gallons
       3. Rupture cost between minimum of $3.10 and maximum of $12.50MM
       4. Rupture spill volume is between a minimum of 29246.41 and maximum of 117922.29 gallons
       5. Puncture cost between minimum of $6.88 and maximum of $10.04MM
       6. Puncture spill volume is between a minimum of 64892.04 and maximum of 94704.58 gallons
100. "SILVER SPRINGS TO BRETON NPS 8
     1. Total Cumulative Length (m): 1851.0
     2. Likelihood of failure distributed between minimum of 1.706e-03 and maximum of 1.023e-02.
        1. Land use distributed as
           1. Agricultural: 1,307.32
           2. Forested: 341.09
           3. Water Course: 202.59
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 317.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.67 and maximum of 8.18 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 6.659e-02 and maximum of 2.458e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $8.48 and maximum of $355.04MM
     4. Total length driven by Safety: 1387.72 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $345.43MM:
        1. Leak cost between minimum of $0.00 and maximum of $345.43MM
        2. Leak scenario yielded 15.0 intersections with structures, with minimum of 3.98 and maximum of 35.98 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $345.43MM
        5. Rupture scenario yielded 50.0 intersections with structures, with minimum of 2.28 and maximum of 35.98 of population impacted
        6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $345.43MM
        8. Puncture scenario yielded 36.0 intersections with structures, with minimum of 0.0 and maximum of 35.98 of population impacted
        9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
        10. Product type is Condensate.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 463.27 meters.
     7. Environmental Cost distributed between minimum of $6.59 and maximum of $14.15MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.44MM
        2. Leak spill volume between a minimum of 1973.38 and maximum of 2457.06 gallons
        3. Rupture cost between minimum of $2.27 and maximum of $14.19MM
        4. Rupture spill volume is between a minimum of 18565.77 and maximum of 79743.23 gallons
        5. Puncture cost between minimum of $6.87 and maximum of $14.36MM
        6. Puncture spill volume is between a minimum of 64840.94 and maximum of 80733.45 gallons
101. "GARRINGTON LATERAL NPS 3
     1. Total Cumulative Length (m): 1819.01
     2. Likelihood of failure distributed between minimum of 6.943e-03 and maximum of 1.410e-02.
        1. Land use distributed as
           1. Agricultural: 1,819.01
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1977-01-01 and maximum of 1977-01-01
        4. Outside diameter of 3.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 5.49 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.668e-01 and maximum of 3.388e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $2.31 and maximum of $124.56MM
     4. Total length driven by Safety: 89.88 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $119.60MM:
        1. Leak cost between minimum of $0.03 and maximum of $0.03MM
        2. Leak scenario yielded 0.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
        5. Rupture scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 80.38 and maximum of 80.38 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 1729.13 meters.
     7. Economic Loss Cost distributed between minimum of $2.31 and maximum of $4.96MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.27 and maximum of $0.27MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $5.02 and maximum of $7.70MM
        8. Rupture scenario yielded 1.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
        10. Puncture cost between minimum of $2.21 and maximum of $4.89MM
        11. Puncture scenario yielded 1.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
        12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
102. "MADDEN 13-30 TO SUNDRE 16-8 NPS 8
     1. Total Cumulative Length (m): 1800.15
     2. Likelihood of failure distributed between minimum of 2.252e-03 and maximum of 1.665e-01.
        1. Land use distributed as
           1. Agricultural: 1,787.24
           2. Water Course: 12.92
        2. Depth of cover distributed as
           1. < 0.24m: 15.94, >= 0.24 to < 0.30m: 9.09, >= 0.37 to < 0.43m: 22.52, >= 0.43 to < 0.49m: 10.03, >= 0.49 to < 0.55m: 9.57, >= 0.55 to < 0.61m: 5.61, >= 0.76 to < 0.91m: 4.91, >= 0.91 to < 1.22m: 56.07, >= 1.22 to < 1.83m: 940.17
        3. Installation date between minimum of 1956-01-01 and maximum of 2017-09-19
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 207.0 and maximum of 207.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 12.7 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.248e-01 and maximum of 1.000e+00
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $1.00 and maximum of $348.89MM
     4. Total length driven by Safety: 636.23 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $345.43MM:
        1. Leak cost between minimum of $0.00 and maximum of $345.43MM
        2. Leak scenario yielded 53.0 intersections with structures, with minimum of 3.98 and maximum of 35.98 of population impacted.
        3. Leak hazard radius distributed between minimum of 3.7 and maximum of 3.7 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $345.43MM
        5. Rupture scenario yielded 44.0 intersections with structures, with minimum of 3.98 and maximum of 35.98 of population impacted
        6. Rupture hazard radius distributed between minimum of 50.04 and maximum of 50.04 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $345.43MM
        8. Puncture scenario yielded 70.0 intersections with structures, with minimum of 3.98 and maximum of 35.98 of population impacted
        9. Puncture hazard radius distributed between minimum of 14.77 and maximum of 14.77 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 1163.92 meters.
     7. Environmental Cost distributed between minimum of $0.78 and maximum of $2.20MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.31MM
        2. Leak spill volume between a minimum of 1464.91 and maximum of 1721.18 gallons
        3. Rupture cost between minimum of $0.69 and maximum of $9.17MM
        4. Rupture spill volume is between a minimum of 6524.15 and maximum of 51528.46 gallons
        5. Puncture cost between minimum of $5.10 and maximum of $10.05MM
        6. Puncture spill volume is between a minimum of 48133.5 and maximum of 56553.9 gallons
103. "NOVA LATERAL NPS 10
     1. Total Cumulative Length (m): 1661.99
     2. Likelihood of failure distributed between minimum of 1.020e-03 and maximum of 2.767e-03.
        1. Land use distributed as
           1. Agricultural: 1,661.99
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1988-01-01 and maximum of 1988-01-01
        4. Outside diameter of 10.75 in.
        5. Grade between minimum of 386.0 and maximum of 386.0 MPa
        6. Wall thickness between minimum of 7.8 and maximum of 12.7 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 2.451e-02 and maximum of 6.648e-02
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $22.92 and maximum of $24.33MM
     4. Total length driven by Economic Loss: 1661.99 meters.
     5. Economic Loss Cost distributed between minimum of $22.87 and maximum of $24.32MM:
        1. Repair costs between minimum of $17,000.00 and maximum of $17,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Liquid petroleum gas (LPG).
        4. Leak cost between minimum of $0.56 and maximum of $0.56MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $342,313.34 and maximum of $342,313.34
        7. Rupture cost between minimum of $255.43 and maximum of $256.00MM
        8. Rupture scenario yielded 4.0 intersections with structures, with minimum of $25,000.00 and maximum of $562,650.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $255,216,166.19 and maximum of $255,216,166.19
        10. Puncture cost between minimum of $11.46 and maximum of $11.46MM
        11. Puncture scenario yielded 1.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Product Loss costs between minimum of $11,247,638.82 and maximum of $11,247,638.82"
104. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
     1. Total Cumulative Length (m): 1656.78
     2. Likelihood of failure distributed between minimum of 1.083e-03 and maximum of 7.958e-03.
        1. Land use distributed as
           1. Agricultural: 1,114.58
           2. Forested: 0.39
           3. Water Course: 541.81
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1966-01-01 and maximum of 1966-01-01
        4. Outside diameter of 12.75 in.
        5. Grade between minimum of 317.0 and maximum of 448.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 8.38 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 7.633e-02 and maximum of 1.912e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $10.03 and maximum of $316.11MM
     4. Total length driven by Safety: 951.53 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $307.20MM:
        1. Leak cost between minimum of $0.00 and maximum of $307.20MM
        2. Leak scenario yielded 24.0 intersections with structures, with minimum of 32.0 and maximum of 32.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 3.64 and maximum of 4.11 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $307.20MM
        5. Rupture scenario yielded 60.0 intersections with structures, with minimum of 0.0 and maximum of 32.0 of population impacted
        6. Rupture hazard radius distributed between minimum of 70.19 and maximum of 79.49 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $307.20MM
        8. Puncture scenario yielded 56.0 intersections with structures, with minimum of 0.0 and maximum of 32.0 of population impacted
        9. Puncture hazard radius distributed between minimum of 14.52 and maximum of 16.44 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 705.25 meters.
     7. Environmental Cost distributed between minimum of $1.69 and maximum of $16.41MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.43MM
        2. Leak spill volume between a minimum of 1547.38 and maximum of 2443.61 gallons
        3. Rupture cost between minimum of $5.89 and maximum of $45.70MM
        4. Rupture spill volume is between a minimum of 33118.18 and maximum of 256856.64 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $14.28MM
        6. Puncture spill volume is between a minimum of 50843.34 and maximum of 80291.33 gallons
105. "PRIME WEST 7-8 TO PIPELINE TIE-IN 16-6 NPS 4
     1. Total Cumulative Length (m): 1539.42
     2. Likelihood of failure distributed between minimum of 1.031e-02 and maximum of 1.031e-02.
        1. Land use distributed as
           1. Agricultural: 1,539.42
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 207.0 and maximum of 207.0 MPa
        6. Wall thickness between minimum of 4.77 and maximum of 4.77 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.476e-01 and maximum of 2.476e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $4.90 and maximum of $8.24MM
     4. Total length driven by Environmental: 1539.42 meters.
     5. Environmental Cost distributed between minimum of $4.64 and maximum of $7.98MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.27MM
        2. Leak spill volume between a minimum of 1464.91 and maximum of 1502.57 gallons
        3. Rupture cost between minimum of $20.28 and maximum of $34.86MM
        4. Rupture spill volume is between a minimum of 191382.56 and maximum of 196303.16 gallons
        5. Puncture cost between minimum of $5.10 and maximum of $8.77MM
        6. Puncture spill volume is between a minimum of 48133.5 and maximum of 49371.05 gallons
106. "NPS4 SS-35 From 5-34-11-19-W3 To 5-35-11-19-W3
     1. Total Cumulative Length (m): 1532.63
     2. Likelihood of failure distributed between minimum of 1.516e-02 and maximum of 1.516e-02.
        1. Land use distributed as
           1. Agricultural: 1,532.63
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1968-01-01 and maximum of 1968-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.17 and maximum of 3.17 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.642e-01 and maximum of 3.642e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $1.17 and maximum of $1.22MM
     4. Total length driven by Environmental: 1532.63 meters.
     5. Environmental Cost distributed between minimum of $0.96 and maximum of $0.98MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.17MM
        2. Leak spill volume between a minimum of 1545.39 and maximum of 1577.19 gallons
        3. Rupture cost between minimum of $21.40 and maximum of $21.84MM
        4. Rupture spill volume is between a minimum of 201897.55 and maximum of 206051.63 gallons
        5. Puncture cost between minimum of $5.38 and maximum of $5.49MM
        6. Puncture spill volume is between a minimum of 50778.06 and maximum of 51822.83 gallons
107. "CACTUS LAKE TO SOUTH BODO NPS 3 FROM 5-4-37-1-W4 TO 14-32-36-1W4
     1. Total Cumulative Length (m): 1502.04
     2. Likelihood of failure distributed between minimum of 1.402e-02 and maximum of 1.402e-02.
        1. Land use distributed as
           1. Agricultural: 1,502.04
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1986-01-01 and maximum of 1986-01-01
        4. Outside diameter of 3.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.368e-01 and maximum of 3.368e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $7.53 and maximum of $7.62MM
     4. Total length driven by Environmental: 1502.04 meters.
     5. Environmental Cost distributed between minimum of $7.22 and maximum of $7.33MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1973.38 and maximum of 2004.54 gallons
        3. Rupture cost between minimum of $16.53 and maximum of $16.79MM
        4. Rupture spill volume is between a minimum of 155960.45 and maximum of 158423.26 gallons
        5. Puncture cost between minimum of $6.87 and maximum of $6.98MM
        6. Puncture spill volume is between a minimum of 64840.82 and maximum of 65864.74 gallons
108. "RIMBEY TERMINAL SALES OIL NPS 4
     1. Total Cumulative Length (m): 1499.7
     2. Likelihood of failure distributed between minimum of 3.308e-03 and maximum of 1.374e-02.
        1. Land use distributed as
           1. Agricultural: 1,498.05
           2. Water Course: 1.66
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2003-01-01 and maximum of 2003-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.301e-01 and maximum of 3.301e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $7.54 and maximum of $12.61MM
     4. Total length driven by Environmental: 1499.7 meters.
     5. Environmental Cost distributed between minimum of $7.23 and maximum of $12.33MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1854.2 and maximum of 1884.75 gallons
        3. Rupture cost between minimum of $25.68 and maximum of $43.75MM
        4. Rupture spill volume is between a minimum of 242242.05 and maximum of 246233.11 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $11.00MM
        6. Puncture spill volume is between a minimum of 60924.87 and maximum of 61928.64 gallons
109. "FORT SASK TO JOSEPHBURG NPS 6
     1. Total Cumulative Length (m): 1486.74
     2. Likelihood of failure distributed between minimum of 1.336e-03 and maximum of 8.868e-03.
        1. Land use distributed as
           1. Agricultural: 1,481.59
           2. Water Course: 5.15
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1985-12-01 and maximum of 1985-12-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 5.56 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.333e-01 and maximum of 2.130e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.01 and maximum of $16.68MM
     4. Total length driven by Environmental: 1486.74 meters.
     5. Environmental Cost distributed between minimum of $9.69 and maximum of $16.34MM:
        1. Leak cost between minimum of $0.22 and maximum of $0.38MM
        2. Leak spill volume between a minimum of 2015.3 and maximum of 2137.08 gallons
        3. Rupture cost between minimum of $63.02 and maximum of $106.86MM
        4. Rupture spill volume is between a minimum of 570662.31 and maximum of 605145.35 gallons
        5. Puncture cost between minimum of $7.31 and maximum of $12.40MM
        6. Puncture spill volume is between a minimum of 66218.22 and maximum of 70219.55 gallons
110. "RADIAL LAKE EAST LATERAL NPS 4
     1. Total Cumulative Length (m): 1400.24
     2. Likelihood of failure distributed between minimum of 3.290e-03 and maximum of 1.333e-02.
        1. Land use distributed as
           1. Agricultural: 1,400.24
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1976-01-01 and maximum of 1976-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 317.0 and maximum of 317.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 8.56 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 7.902e-02 and maximum of 3.201e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $1.69 and maximum of $125.73MM
     4. Total length driven by Safety: 225.91 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.33 and maximum of 11.33 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $271.49MM
        5. Rupture scenario yielded 18.0 intersections with structures, with minimum of 0.0 and maximum of 28.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 88.95 and maximum of 88.95 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 11.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 53.01 and maximum of 53.01 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 1174.33 meters.
     7. Economic Loss Cost distributed between minimum of $1.69 and maximum of $4.67MM:
        1. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.26 and maximum of $2.95MM
        5. Leak scenario yielded 1.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $48,231.06 and maximum of $48,231.06
        7. Rupture cost between minimum of $6.51 and maximum of $11.94MM
        8. Rupture scenario yielded 18.0 intersections with structures, with minimum of $25,000.00 and maximum of $5,426,500.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $6,301,141.56 and maximum of $6,301,141.56
        10. Puncture cost between minimum of $1.79 and maximum of $4.48MM
        11. Puncture scenario yielded 11.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
        12. Product Loss costs between minimum of $1,584,762.99 and maximum of $1,584,762.99"
111. "WEST SENLAC TO UNITY NPS 6
     1. Total Cumulative Length (m): 1338.45
     2. Likelihood of failure distributed between minimum of 1.656e-03 and maximum of 8.844e-03.
        1. Land use distributed as
           1. Agricultural: 888.87
           2. Remote: 441.05
           3. Water Course: 8.53
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1991-01-01 and maximum of 1991-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 7.11 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 9.079e-02 and maximum of 2.124e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.00 and maximum of $21.23MM
     4. Total length driven by Safety: 130.91 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 9.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 4.11 and maximum of 4.11 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
        5. Rupture scenario yielded 6.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 43.8 and maximum of 43.8 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 16.44 and maximum of 16.44 meters.
        10. Product type is Blend.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 1207.55 meters.
     7. Environmental Cost distributed between minimum of $8.54 and maximum of $16.28MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.37MM
        2. Leak spill volume between a minimum of 1852.98 and maximum of 2182.66 gallons
        3. Rupture cost between minimum of $55.61 and maximum of $106.08MM
        4. Rupture spill volume is between a minimum of 524697.6 and maximum of 618052.74 gallons
        5. Puncture cost between minimum of $6.45 and maximum of $12.31MM
        6. Puncture spill volume is between a minimum of 60884.6 and maximum of 71717.29 gallons
112. "SUNDRE TO HARTELL NPS 12
     1. Total Cumulative Length (m): 1226.92
     2. Likelihood of failure distributed between minimum of 1.616e-03 and maximum of 2.550e-03.
        1. Land use distributed as
           1. Agricultural: 1,226.92
        2. Depth of cover distributed as
           1. >= 0.91 to < 1.22m: 1,226.92
        3. Installation date between minimum of 1966-01-01 and maximum of 1966-01-01
        4. Outside diameter of 12.75 in.
        5. Grade between minimum of 317.0 and maximum of 317.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 7.14 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.213e-01 and maximum of 1.914e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $10.08 and maximum of $50.92MM
     4. Total length driven by Safety: 615.33 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $42.90MM:
        1. Leak cost between minimum of $0.00 and maximum of $28.51MM
        2. Leak scenario yielded 2697.0 intersections with structures, with minimum of 2.28 and maximum of 2.97 of population impacted.
        3. Leak hazard radius distributed between minimum of 3.64 and maximum of 4.11 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $109.44MM
        5. Rupture scenario yielded 293.0 intersections with structures, with minimum of 2.28 and maximum of 11.4 of population impacted
        6. Rupture hazard radius distributed between minimum of 70.19 and maximum of 79.49 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $43.78MM
        8. Puncture scenario yielded 752.0 intersections with structures, with minimum of 2.28 and maximum of 4.56 of population impacted
        9. Puncture hazard radius distributed between minimum of 14.52 and maximum of 16.44 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 611.59 meters.
     7. Environmental Cost distributed between minimum of $2.02 and maximum of $13.03MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.40MM
        2. Leak spill volume between a minimum of 1492.75 and maximum of 2273.07 gallons
        3. Rupture cost between minimum of $3.21 and maximum of $25.03MM
        4. Rupture spill volume is between a minimum of 22292.01 and maximum of 140676.84 gallons
        5. Puncture cost between minimum of $5.20 and maximum of $13.29MM
        6. Puncture spill volume is between a minimum of 49048.48 and maximum of 74687.87 gallons
113. "SECT 1 EMPRESS TO CABRI NPS 6
     1. Total Cumulative Length (m): 1218.56
     2. Likelihood of failure distributed between minimum of 1.502e-03 and maximum of 9.390e-03.
        1. Land use distributed as
           1. Agricultural: 1,012.09
           2. Remote: 206.47
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1963-01-01 and maximum of 1963-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 241.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.83 and maximum of 7.11 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.499e-01 and maximum of 2.255e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $13.68 and maximum of $144.59MM
     4. Total length driven by Safety: 1218.56 meters.
     5. Safety Cost distributed between minimum of $10.36 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 18.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
        4. Rupture cost between minimum of $65.66 and maximum of $121.06MM
        5. Rupture scenario yielded 45.0 intersections with structures, with minimum of 6.84 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 41.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0, 2.0.
114. "SECT 9 PORTAGE TO FORT WHYTE TERMINAL NPS 6
     1. Total Cumulative Length (m): 1182.36
     2. Likelihood of failure distributed between minimum of 1.501e-03 and maximum of 1.091e-02.
        1. Land use distributed as
           1. Agricultural: 982.77
           2. Forested: 196.66
           3. Water Course: 2.92
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1963-07-01 and maximum of 1963-07-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 241.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.19 and maximum of 7.11 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.498e-01 and maximum of 2.620e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $2.92 and maximum of $143.02MM
     4. Total length driven by Safety: 1152.79 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 13.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $179.52MM
        5. Rupture scenario yielded 55.0 intersections with structures, with minimum of 12.61 and maximum of 18.7 of population impacted
        6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 47.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 29.57 meters.
     7. Economic Loss Cost distributed between minimum of $2.92 and maximum of $23.08MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.27 and maximum of $2.96MM
        5. Leak scenario yielded 13.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
        7. Rupture cost between minimum of $17.84 and maximum of $38.19MM
        8. Rupture scenario yielded 55.0 intersections with structures, with minimum of $566,000.00 and maximum of $20,349,375.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
        10. Puncture cost between minimum of $2.26 and maximum of $22.61MM
        11. Puncture scenario yielded 47.0 intersections with structures, with minimum of $25,000.00 and maximum of $20,349,375.00 in cost of structures impacted
        12. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
115. "ROCKY MOUNTAIN HOUSE TO SILVER SPRINGS NPS 8
     1. Total Cumulative Length (m): 1171.82
     2. Likelihood of failure distributed between minimum of 1.609e-03 and maximum of 7.091e-03.
        1. Land use distributed as
           1. Agricultural: 706.60
           2. Forested: 336.50
           3. Water Course: 128.72
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 317.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 8.18 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 6.266e-02 and maximum of 1.703e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $10.03 and maximum of $130.01MM
     4. Total length driven by Safety: 680.69 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.46 and maximum of 12.03 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
        5. Rupture scenario yielded 40.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 132.52 and maximum of 138.23 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 46.57 and maximum of 48.58 meters.
        10. Product type is Condensate.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 491.12 meters.
     7. Environmental Cost distributed between minimum of $0.88 and maximum of $12.36MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.39MM
        2. Leak spill volume between a minimum of 1772.09 and maximum of 2184.19 gallons
        3. Rupture cost between minimum of $2.09 and maximum of $8.46MM
        4. Rupture spill volume is between a minimum of 15215.38 and maximum of 47566.18 gallons
        5. Puncture cost between minimum of $6.17 and maximum of $12.77MM
        6. Puncture spill volume is between a minimum of 58226.71 and maximum of 71767.55 gallons
116. "PEYTO OLDMAN TO EDSON NPS 4
     1. Total Cumulative Length (m): 1141.18
     2. Likelihood of failure distributed between minimum of 2.308e-03 and maximum of 9.589e-03.
        1. Land use distributed as
           1. Agricultural: 358.21
           2. Forested: 636.64
           3. Remote: 146.33
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2006-01-01 and maximum of 2006-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 2.303e-01 and maximum of 2.303e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $22.84 and maximum of $132.41MM
     4. Total length driven by Safety: 1141.18 meters.
     5. Safety Cost distributed between minimum of $20.38 and maximum of $127.20MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 12.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $21.89 and maximum of $242.11MM
        5. Rupture scenario yielded 80.0 intersections with structures, with minimum of 2.28 and maximum of 25.22 of population impacted
        6. Rupture hazard radius distributed between minimum of 97.06 and maximum of 97.06 meters.
        7. Puncture cost between minimum of $21.89 and maximum of $121.06MM
        8. Puncture scenario yielded 55.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
117. "NPS4 Lochern BV to North Sask BV From 6-21-39-7W5 To 7-20-39-7W5
     1. Total Cumulative Length (m): 1060.5
     2. Likelihood of failure distributed between minimum of 1.357e-02 and maximum of 1.357e-02.
        1. Land use distributed as
           1. Agricultural: 1,060.50
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1976-01-01 and maximum of 1976-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 317.0 and maximum of 317.0 MPa
        6. Wall thickness between minimum of 3.17 and maximum of 3.17 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 3.260e-01 and maximum of 3.260e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $2.45 and maximum of $126.19MM
     4. Total length driven by Safety: 406.57 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 3.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
        5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 97.06 and maximum of 97.06 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 6.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 653.93 meters.
     7. Economic Loss Cost distributed between minimum of $2.45 and maximum of $5.14MM:
        1. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.27 and maximum of $2.96MM
        5. Leak scenario yielded 3.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $8.16 and maximum of $10.85MM
        8. Rupture scenario yielded 7.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $7,950,487.38 and maximum of $7,950,487.38
        10. Puncture cost between minimum of $2.21 and maximum of $4.90MM
        11. Puncture scenario yielded 6.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
        12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
118. "MEDICINE RIVER 10-22 TO 12-23 NPS 4
     1. Total Cumulative Length (m): 843.09
     2. Likelihood of failure distributed between minimum of 3.310e-03 and maximum of 1.376e-02.
        1. Land use distributed as
           1. Agricultural: 838.32
           2. Water Course: 4.77
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1991-01-01 and maximum of 1991-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.304e-01 and maximum of 3.304e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $7.53 and maximum of $12.31MM
     4. Total length driven by Environmental: 843.09 meters.
     5. Environmental Cost distributed between minimum of $7.23 and maximum of $12.00MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1871.69 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $43.48MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 244526.31 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $10.94MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61499.37 gallons
119. "CRIMSON LAKE TO 10-33 NPS 4
     1. Total Cumulative Length (m): 791.42
     2. Likelihood of failure distributed between minimum of 1.142e-03 and maximum of 4.755e-03.
        1. Land use distributed as
           1. Agricultural: 639.36
           2. Forested: 139.47
           3. Water Course: 12.58
        2. Depth of cover distributed as
           1. >= 0.91 to < 1.22m: 791.42
        3. Installation date between minimum of 1977-01-01 and maximum of 1977-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 241.0 and maximum of 241.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 5.56 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.071e-01 and maximum of 3.569e-01
        9. Class area location is/are 1.0, 2.0, 3.0.
     3. Consequence of failure distributed between minimum of $10.96 and maximum of $286.60MM
     4. Total length driven by Safety: 704.43 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $275.44MM:
        1. Leak cost between minimum of $0.00 and maximum of $28.51MM
        2. Leak scenario yielded 107.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted.
        3. Leak hazard radius distributed between minimum of 3.95 and maximum of 3.95 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $291.20MM
        5. Rupture scenario yielded 113.0 intersections with structures, with minimum of 0.0 and maximum of 30.33 of population impacted
        6. Rupture hazard radius distributed between minimum of 29.55 and maximum of 29.55 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $291.20MM
        8. Puncture scenario yielded 157.0 intersections with structures, with minimum of 0.0 and maximum of 30.33 of population impacted
        9. Puncture hazard radius distributed between minimum of 15.77 and maximum of 15.77 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0, 2.0, 3.0.
     6. Total length driven by Environmental: 86.99 meters.
     7. Environmental Cost distributed between minimum of $6.27 and maximum of $11.61MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.35MM
        2. Leak spill volume between a minimum of 1727.04 and maximum of 1991.25 gallons
        3. Rupture cost between minimum of $23.91 and maximum of $46.28MM
        4. Rupture spill volume is between a minimum of 225629.05 and maximum of 260147.24 gallons
        5. Puncture cost between minimum of $6.01 and maximum of $11.64MM
        6. Puncture spill volume is between a minimum of 56746.63 and maximum of 65428.1 gallons
120. "16-19-037-03W5 TO 10-19-037-03W5 NPS 4
     1. Total Cumulative Length (m): 761.03
     2. Likelihood of failure distributed between minimum of 1.371e-02 and maximum of 1.371e-02.
        1. Land use distributed as
           1. Agricultural: 761.03
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1991-01-01 and maximum of 1991-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.294e-01 and maximum of 3.294e-01
        9. Class area location is/are nan.
     3. Consequence of failure distributed between minimum of $1.65 and maximum of $1.66MM
     4. Total length driven by Environmental: 761.03 meters.
     5. Environmental Cost distributed between minimum of $1.41 and maximum of $1.43MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1854.82 and maximum of 1869.87 gallons
        3. Rupture cost between minimum of $25.68 and maximum of $25.89MM
        4. Rupture spill volume is between a minimum of 242322.23 and maximum of 244289.53 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.51MM
        6. Puncture spill volume is between a minimum of 60945.04 and maximum of 61439.82 gallons
121. "SS-06 NPS 10
     1. Total Cumulative Length (m): 733.66
     2. Likelihood of failure distributed between minimum of 1.646e-03 and maximum of 4.066e-03.
        1. Land use distributed as
           1. Agricultural: 712.11
           2. Remote: 21.55
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
        4. Outside diameter of 10.75 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 5.16 and maximum of 7.11 mm
        7. Toughness between minimum of 17.6 and maximum of 17.6 J
        8. Probability of failure given a hit between minimum of 9.767e-02 and maximum of 1.643e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $13.78 and maximum of $14.21MM
     4. Total length driven by Environmental: 733.66 meters.
     5. Environmental Cost distributed between minimum of $13.42 and maximum of $13.85MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.22MM
        2. Leak spill volume between a minimum of 1953.96 and maximum of 2040.11 gallons
        3. Rupture cost between minimum of $154.41 and maximum of $161.22MM
        4. Rupture spill volume is between a minimum of 1456802.82 and maximum of 1521030.62 gallons
        5. Puncture cost between minimum of $6.80 and maximum of $7.10MM
        6. Puncture spill volume is between a minimum of 64202.8 and maximum of 67033.38 gallons
122. "MI-99 NPS 4
     1. Total Cumulative Length (m): 649.96
     2. Likelihood of failure distributed between minimum of 2.759e-03 and maximum of 1.146e-02.
        1. Land use distributed as
           1. Agricultural: 640.84
           2. Remote: 0.40
           3. Water Course: 8.73
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1973-01-01 and maximum of 1973-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 241.0 and maximum of 241.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.754e-01 and maximum of 2.754e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $7.51 and maximum of $12.71MM
     4. Total length driven by Environmental: 649.96 meters.
     5. Environmental Cost distributed between minimum of $7.22 and maximum of $12.41MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.35MM
        2. Leak spill volume between a minimum of 1854.09 and maximum of 1940.98 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $45.12MM
        4. Rupture spill volume is between a minimum of 242227.0 and maximum of 253578.6 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $11.35MM
        6. Puncture spill volume is between a minimum of 60921.08 and maximum of 63776.06 gallons
123. "NPS4 BretonBV to BretonPS-South Line From 16-11-48-4W5 To 13-12-48-4W5
     1. Total Cumulative Length (m): 622.06
     2. Likelihood of failure distributed between minimum of 1.316e-02 and maximum of 1.316e-02.
        1. Land use distributed as
           1. Agricultural: 622.06
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1979-05-10 and maximum of 1979-05-10
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.162e-01 and maximum of 3.162e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $5.71 and maximum of $127.89MM
     4. Total length driven by Safety: 178.16 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $119.50MM:
        1. Leak cost between minimum of $0.00 and maximum of $21.89MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted.
        3. Leak hazard radius distributed between minimum of 10.31 and maximum of 10.31 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
        5. Rupture scenario yielded 4.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 72.68 and maximum of 72.68 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 4.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 42.43 and maximum of 42.43 meters.
        10. Product type is Condensate.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 443.9 meters.
     7. Environmental Cost distributed between minimum of $5.42 and maximum of $9.22MM:
        1. Leak cost between minimum of $0.15 and maximum of $0.25MM
        2. Leak spill volume between a minimum of 1394.69 and maximum of 1407.47 gallons
        3. Rupture cost between minimum of $19.31 and maximum of $32.71MM
        4. Rupture spill volume is between a minimum of 182209.13 and maximum of 183878.64 gallons
        5. Puncture cost between minimum of $4.86 and maximum of $8.23MM
        6. Puncture spill volume is between a minimum of 45826.35 and maximum of 46246.23 gallons
124. "SECT 8 RAPID CITY TO PORTAGE NPS 6
     1. Total Cumulative Length (m): 619.84
     2. Likelihood of failure distributed between minimum of 1.399e-03 and maximum of 9.390e-03.
        1. Land use distributed as
           1. Agricultural: 233.37
           2. Remote: 386.47
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1963-01-01 and maximum of 1963-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.83 and maximum of 7.11 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.396e-01 and maximum of 2.255e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $15.06 and maximum of $122.00MM
     4. Total length driven by Safety: 619.84 meters.
     5. Safety Cost distributed between minimum of $11.89 and maximum of $116.51MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 22.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
        4. Rupture cost between minimum of $12.11 and maximum of $121.06MM
        5. Rupture scenario yielded 75.0 intersections with structures, with minimum of 1.26 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
        7. Puncture cost between minimum of $12.11 and maximum of $121.06MM
        8. Puncture scenario yielded 45.0 intersections with structures, with minimum of 1.26 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0.
125. "NI-95 NPS 8
     1. Total Cumulative Length (m): 616.47
     2. Likelihood of failure distributed between minimum of 2.726e-03 and maximum of 1.176e-02.
        1. Land use distributed as
           1. Agricultural: 616.47
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 317.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 8.18 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 6.547e-02 and maximum of 2.826e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.32 and maximum of $41.35MM
     4. Total length driven by Environmental: 616.47 meters.
     5. Environmental Cost distributed between minimum of $9.99 and maximum of $40.69MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.19MM
        2. Leak spill volume between a minimum of 1797.99 and maximum of 1810.77 gallons
        3. Rupture cost between minimum of $91.46 and maximum of $92.11MM
        4. Rupture spill volume is between a minimum of 862925.14 and maximum of 869059.11 gallons
        5. Puncture cost between minimum of $6.26 and maximum of $6.31MM
        6. Puncture spill volume is between a minimum of 59077.9 and maximum of 59497.84 gallons
126. "HARMATTAN TO SUNDRE NPS 6
     1. Total Cumulative Length (m): 601.92
     2. Likelihood of failure distributed between minimum of 1.136e-03 and maximum of 6.375e-03.
        1. Land use distributed as
           1. Agricultural: 96.99
           2. Water Course: 504.93
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1962-01-01 and maximum of 2013-05-22
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 290.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 7.11 mm
        7. Toughness between minimum of 17.6 and maximum of 17.6 J
        8. Probability of failure given a hit between minimum of 9.572e-02 and maximum of 1.843e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.36 and maximum of $19.82MM
     4. Total length driven by Environmental: 601.92 meters.
     5. Environmental Cost distributed between minimum of $6.84 and maximum of $15.83MM:
        1. Leak cost between minimum of $0.10 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1976.32 and maximum of 2174.03 gallons
        3. Rupture cost between minimum of $27.54 and maximum of $51.27MM
        4. Rupture spill volume is between a minimum of 559622.77 and maximum of 615607.87 gallons
        5. Puncture cost between minimum of $3.20 and maximum of $5.95MM
        6. Puncture spill volume is between a minimum of 64937.22 and maximum of 71433.6 gallons
127. "FORT SASKATCHEWAN TO EST (YO-YO) NPS 16
     1. Total Cumulative Length (m): 594.44
     2. Likelihood of failure distributed between minimum of 1.031e-03 and maximum of 2.713e-03.
        1. Land use distributed as
           1. Agricultural: 590.50
           2. Water Course: 3.94
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
        4. Outside diameter of 16.0 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 5.56 and maximum of 7.92 mm
        7. Toughness between minimum of 17.6 and maximum of 17.6 J
        8. Probability of failure given a hit between minimum of 5.332e-02 and maximum of 1.032e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $10.61 and maximum of $39.78MM
     4. Total length driven by Safety: 594.44 meters.
     5. Safety Cost distributed between minimum of $5.98 and maximum of $34.44MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 32.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 10.2 and maximum of 10.2 meters.
        4. Rupture cost between minimum of $131.33 and maximum of $693.98MM
        5. Rupture scenario yielded 73.0 intersections with structures, with minimum of 13.68 and maximum of 72.29 of population impacted
        6. Rupture hazard radius distributed between minimum of 204.62 and maximum of 204.62 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
        8. Puncture scenario yielded 92.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
        9. Puncture hazard radius distributed between minimum of 47.09 and maximum of 47.09 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
128. "BUCK CREEK FRAC PLANT TO BRETON NPS 6
     1. Total Cumulative Length (m): 590.37
     2. Likelihood of failure distributed between minimum of 3.961e-03 and maximum of 7.428e-03.
        1. Land use distributed as
           1. Agricultural: 590.37
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1958-01-01 and maximum of 1958-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 207.0 and maximum of 207.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 7.11 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 9.515e-02 and maximum of 1.784e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $10.15 and maximum of $125.41MM
     4. Total length driven by Safety: 590.37 meters.
     5. Safety Cost distributed between minimum of $8.38 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 6.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 9.71 and maximum of 9.71 meters.
        4. Rupture cost between minimum of $43.78 and maximum of $121.06MM
        5. Rupture scenario yielded 33.0 intersections with structures, with minimum of 4.56 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 99.99 and maximum of 99.99 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 15.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 44.58 and maximum of 44.58 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
129. "DEWDNEY SPUR NPS 6
     1. Total Cumulative Length (m): 585.58
     2. Likelihood of failure distributed between minimum of 8.120e-03 and maximum of 8.120e-03.
        1. Land use distributed as
           1. Agricultural: 585.58
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1979-10-31 and maximum of 1979-10-31
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 241.0 and maximum of 241.0 MPa
        6. Wall thickness between minimum of 4.83 and maximum of 4.83 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.950e-01 and maximum of 1.950e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $15.04 and maximum of $144.91MM
     4. Total length driven by Safety: 585.58 meters.
     5. Safety Cost distributed between minimum of $11.86 and maximum of $121.60MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 10.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
        4. Rupture cost between minimum of $12.11 and maximum of $133.16MM
        5. Rupture scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 13.87 of population impacted
        6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
        7. Puncture cost between minimum of $12.11 and maximum of $121.06MM
        8. Puncture scenario yielded 20.0 intersections with structures, with minimum of 1.26 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0.
130. "NPS12 Medicine River Jct to Sundre From 9-27-39-3-W5 To 16-8-34-5-W5
     1. Total Cumulative Length (m): 584.76
     2. Likelihood of failure distributed between minimum of 1.296e-03 and maximum of 1.643e-03.
        1. Land use distributed as
           1. Agricultural: 584.76
        2. Depth of cover distributed as
           1. >= 0.91 to < 1.22m: 584.76
        3. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
        4. Outside diameter of 12.75 in.
        5. Grade between minimum of 290.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 5.72 and maximum of 6.35 mm
        7. Toughness between minimum of 17.6 and maximum of 17.6 J
        8. Probability of failure given a hit between minimum of 9.728e-02 and maximum of 1.233e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $10.05 and maximum of $40.53MM
     4. Total length driven by Safety: 497.68 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $29.54MM:
        1. Leak cost between minimum of $0.00 and maximum of $28.51MM
        2. Leak scenario yielded 55.0 intersections with structures, with minimum of 2.28 and maximum of 2.97 of population impacted.
        3. Leak hazard radius distributed between minimum of 3.84 and maximum of 3.95 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $55.88MM
        5. Rupture scenario yielded 97.0 intersections with structures, with minimum of 2.28 and maximum of 5.82 of population impacted
        6. Rupture hazard radius distributed between minimum of 74.13 and maximum of 76.25 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $28.51MM
        8. Puncture scenario yielded 80.0 intersections with structures, with minimum of 1.26 and maximum of 2.97 of population impacted
        9. Puncture hazard radius distributed between minimum of 15.33 and maximum of 15.77 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 87.07 meters.
     7. Environmental Cost distributed between minimum of $3.73 and maximum of $12.69MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.39MM
        2. Leak spill volume between a minimum of 1695.69 and maximum of 2211.76 gallons
        3. Rupture cost between minimum of $3.73 and maximum of $23.68MM
        4. Rupture spill volume is between a minimum of 35217.55 and maximum of 133093.78 gallons
        5. Puncture cost between minimum of $6.43 and maximum of $12.93MM
        6. Puncture spill volume is between a minimum of 55716.47 and maximum of 72673.47 gallons
131. "HARVEST LOON LATERAL NPS 4
     1. Total Cumulative Length (m): 584.7
     2. Likelihood of failure distributed between minimum of 1.012e-02 and maximum of 1.012e-02.
        1. Land use distributed as
           1. Agricultural: 584.70
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.431e-01 and maximum of 2.431e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $5.81 and maximum of $6.05MM
     4. Total length driven by Environmental: 584.7 meters.
     5. Environmental Cost distributed between minimum of $5.54 and maximum of $5.79MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.19MM
        2. Leak spill volume between a minimum of 1692.12 and maximum of 1764.96 gallons
        3. Rupture cost between minimum of $0.21 and maximum of $0.66MM
        4. Rupture spill volume is between a minimum of 1946.03 and maximum of 6233.47 gallons
        5. Puncture cost between minimum of $5.89 and maximum of $6.15MM
        6. Puncture spill volume is between a minimum of 55599.15 and maximum of 57992.44 gallons
132. "NPS3 Warburg Lateral to Mainline From 14-15-48-3W5 TO 6-15-48-3W5
     1. Total Cumulative Length (m): 533.31
     2. Likelihood of failure distributed between minimum of 1.585e-02 and maximum of 1.585e-02.
        1. Land use distributed as
           1. Agricultural: 533.31
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 3.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 2.77 and maximum of 2.77 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 3.808e-01 and maximum of 3.808e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $1.76 and maximum of $137.76MM
     4. Total length driven by Safety: 228.56 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $133.03MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 3.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.09 and maximum of 11.09 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $133.16MM
        5. Rupture scenario yielded 3.0 intersections with structures, with minimum of 12.61 and maximum of 13.87 of population impacted
        6. Rupture hazard radius distributed between minimum of 71.92 and maximum of 71.92 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $133.16MM
        8. Puncture scenario yielded 4.0 intersections with structures, with minimum of 12.61 and maximum of 13.87 of population impacted
        9. Puncture hazard radius distributed between minimum of 51.75 and maximum of 51.75 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 304.75 meters.
     7. Economic Loss Cost distributed between minimum of $1.76 and maximum of $4.72MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.25 and maximum of $2.94MM
        5. Leak scenario yielded 3.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $45,234.23 and maximum of $45,234.23
        7. Rupture cost between minimum of $3.78 and maximum of $6.74MM
        8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,957,075.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $3,574,956.57 and maximum of $3,574,956.57
        10. Puncture cost between minimum of $1.69 and maximum of $4.65MM
        11. Puncture scenario yielded 4.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,957,075.00 in cost of structures impacted
        12. Product Loss costs between minimum of $1,486,294.23 and maximum of $1,486,294.23"
133. "HARMATTAN TO SUNDRE NPS 6 FROM 14-3-32-4W5 TO 15-9-32-4W5
     1. Total Cumulative Length (m): 531.27
     2. Likelihood of failure distributed between minimum of 1.658e-03 and maximum of 6.892e-03.
        1. Land use distributed as
           1. Agricultural: 24.31
           2. Water Course: 506.96
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2009-01-01 and maximum of 2009-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.655e-01 and maximum of 1.655e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $15.66 and maximum of $34.09MM
     4. Total length driven by Environmental: 531.27 meters.
     5. Environmental Cost distributed between minimum of $15.32 and maximum of $33.64MM:
        1. Leak cost between minimum of $0.35 and maximum of $0.36MM
        2. Leak spill volume between a minimum of 1988.55 and maximum of 2014.43 gallons
        3. Rupture cost between minimum of $100.18 and maximum of $101.48MM
        4. Rupture spill volume is between a minimum of 563088.04 and maximum of 570414.24 gallons
        5. Puncture cost between minimum of $11.62 and maximum of $11.78MM
        6. Puncture spill volume is between a minimum of 65339.33 and maximum of 66189.44 gallons
134. "NORTH FERRIER 14-20 TO 8-20 NPS 4
     1. Total Cumulative Length (m): 524.96
     2. Likelihood of failure distributed between minimum of 2.516e-03 and maximum of 4.408e-03.
        1. Land use distributed as
           1. Agricultural: 524.96
        2. Depth of cover distributed as
           1. >= 0.91 to < 1.22m: 524.96
        3. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.17 and maximum of 4.77 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.889e-01 and maximum of 3.309e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $12.09 and maximum of $141.89MM
     4. Total length driven by Safety: 444.32 meters.
     5. Safety Cost distributed between minimum of $5.72 and maximum of $132.71MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 13.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 4.11 and maximum of 4.11 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $133.16MM
        5. Rupture scenario yielded 17.0 intersections with structures, with minimum of 12.61 and maximum of 13.87 of population impacted
        6. Rupture hazard radius distributed between minimum of 30.81 and maximum of 30.81 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $133.16MM
        8. Puncture scenario yielded 27.0 intersections with structures, with minimum of 12.61 and maximum of 13.87 of population impacted
        9. Puncture hazard radius distributed between minimum of 16.44 and maximum of 16.44 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 80.64 meters.
     7. Environmental Cost distributed between minimum of $5.75 and maximum of $5.98MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1867.31 gallons
        3. Rupture cost between minimum of $0.22 and maximum of $0.86MM
        4. Rupture spill volume is between a minimum of 2113.52 and maximum of 8093.15 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.50MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61355.69 gallons
135. "MI-97 NPS 10
     1. Total Cumulative Length (m): 509.15
     2. Likelihood of failure distributed between minimum of 1.894e-03 and maximum of 7.025e-03.
        1. Land use distributed as
           1. Agricultural: 509.15
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        4. Outside diameter of 10.75 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.19 and maximum of 9.27 mm
        7. Toughness between minimum of 17.6 and maximum of 17.6 J
        8. Probability of failure given a hit between minimum of 4.550e-02 and maximum of 1.688e-01
        9. Class area location is/are 2.0.
     3. Consequence of failure distributed between minimum of $10.24 and maximum of $22.55MM
     4. Total length driven by Safety: 43.13 meters.
     5. Safety Cost distributed between minimum of $0.53 and maximum of $12.49MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 6.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 3.59 and maximum of 3.59 meters.
        4. Rupture cost between minimum of $12.11 and maximum of $24.21MM
        5. Rupture scenario yielded 23.0 intersections with structures, with minimum of 1.26 and maximum of 2.52 of population impacted
        6. Rupture hazard radius distributed between minimum of 59.2 and maximum of 59.2 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 14.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 14.3 and maximum of 14.3 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 2.0.
     6. Total length driven by Environmental: 466.02 meters.
     7. Environmental Cost distributed between minimum of $9.03 and maximum of $9.59MM:
        1. Leak cost between minimum of $0.14 and maximum of $0.15MM
        2. Leak spill volume between a minimum of 1364.61 and maximum of 1401.84 gallons
        3. Rupture cost between minimum of $107.84 and maximum of $110.78MM
        4. Rupture spill volume is between a minimum of 1017402.61 and maximum of 1045156.43 gallons
        5. Puncture cost between minimum of $4.75 and maximum of $4.88MM
        6. Puncture spill volume is between a minimum of 44837.98 and maximum of 46061.12 gallons
136. "SECT 5 RICHARDSON TO GRENFELL NPS 6
     1. Total Cumulative Length (m): 477.2
     2. Likelihood of failure distributed between minimum of 2.258e-03 and maximum of 1.134e-02.
        1. Land use distributed as
           1. Agricultural: 142.72
           2. First Nations: 334.47
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1963-01-01 and maximum of 1963-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.06 and maximum of 7.11 mm
        7. Toughness between minimum of 10.0 and maximum of 10.0 J
        8. Probability of failure given a hit between minimum of 1.391e-01 and maximum of 2.724e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $2.92 and maximum of $45.60MM
     4. Total length driven by Safety: 465.42 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $42.13MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 18.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $165.41MM
        5. Rupture scenario yielded 59.0 intersections with structures, with minimum of 4.56 and maximum of 17.23 of population impacted
        6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $43.78MM
        8. Puncture scenario yielded 53.0 intersections with structures, with minimum of 0.0 and maximum of 4.56 of population impacted
        9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 11.78 meters.
     7. Economic Loss Cost distributed between minimum of $1.22 and maximum of $3.47MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.27 and maximum of $0.30MM
        5. Leak scenario yielded 18.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
        7. Rupture cost between minimum of $17.84 and maximum of $18.95MM
        8. Rupture scenario yielded 59.0 intersections with structures, with minimum of $539,736.00 and maximum of $1,079,472.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
        10. Puncture cost between minimum of $2.26 and maximum of $2.85MM
        11. Puncture scenario yielded 53.0 intersections with structures, with minimum of $25,000.00 and maximum of $564,736.00 in cost of structures impacted
        12. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
137. "CROOKED LAKE LATERAL 16-36 TO 3-5 NPS 4
     1. Total Cumulative Length (m): 473.78
     2. Likelihood of failure distributed between minimum of 1.354e-02 and maximum of 1.354e-02.
        1. Land use distributed as
           1. Agricultural: 473.78
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1993-01-01 and maximum of 1993-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.252e-01 and maximum of 3.252e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $6.85 and maximum of $6.94MM
     4. Total length driven by Environmental: 473.78 meters.
     5. Environmental Cost distributed between minimum of $6.57 and maximum of $6.64MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1691.93 and maximum of 1702.02 gallons
        3. Rupture cost between minimum of $23.43 and maximum of $23.57MM
        4. Rupture spill volume is between a minimum of 221041.71 and maximum of 222360.55 gallons
        5. Puncture cost between minimum of $5.89 and maximum of $5.93MM
        6. Puncture spill volume is between a minimum of 55592.9 and maximum of 55924.59 gallons
138. "ZAMA TO RAINBOW STATION NPS 20
     1. Total Cumulative Length (m): 463.32
     2. Likelihood of failure distributed between minimum of 1.230e-03 and maximum of 1.230e-03.
        1. Land use distributed as
           1. Forested: 0.20
           2. Remote: 0.49
           3. Water Course: 462.63
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
        4. Outside diameter of 20.0 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
        7. Toughness between minimum of 12.4 and maximum of 12.4 J
        8. Probability of failure given a hit between minimum of 1.228e-01 and maximum of 1.228e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.08 and maximum of $12.30MM
     4. Total length driven by Environmental: 463.32 meters.
     5. Environmental Cost distributed between minimum of $8.91 and maximum of $11.10MM:
        1. Leak cost between minimum of $0.27 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1506.97 and maximum of 1843.41 gallons
        3. Rupture cost between minimum of $20.54 and maximum of $41.80MM
        4. Rupture spill volume is between a minimum of 115463.98 and maximum of 234969.04 gallons
        5. Puncture cost between minimum of $8.81 and maximum of $10.78MM
        6. Puncture spill volume is between a minimum of 49515.72 and maximum of 60570.38 gallons
139. "NPS6 Station 8 to Buck Creek Frac Plant From 4-5-49-9W5 To 13-24-48-7W
     1. Total Cumulative Length (m): 459.35
     2. Likelihood of failure distributed between minimum of 1.792e-03 and maximum of 4.454e-03.
        1. Land use distributed as
           1. Agricultural: 459.35
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1958-01-01 and maximum of 1958-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 6.4 and maximum of 11.0 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 4.304e-02 and maximum of 1.070e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $18.12 and maximum of $125.94MM
     4. Total length driven by Safety: 459.35 meters.
     5. Safety Cost distributed between minimum of $15.58 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 6.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 10.87 and maximum of 10.87 meters.
        4. Rupture cost between minimum of $21.89 and maximum of $121.06MM
        5. Rupture scenario yielded 29.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 113.48 and maximum of 113.48 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 15.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 50.6 and maximum of 50.6 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
140. "NORTH FERRIER 08-20 TO 09-27 NPS 8
     1. Total Cumulative Length (m): 438.48
     2. Likelihood of failure distributed between minimum of 1.111e-03 and maximum of 2.350e-03.
        1. Land use distributed as
           1. Agricultural: 438.48
        2. Depth of cover distributed as
           1. >= 0.91 to < 1.22m: 438.48
        3. Installation date between minimum of 1980-01-01 and maximum of 2015-11-22
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 290.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 6.35 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 8.337e-02 and maximum of 1.764e-01
        9. Class area location is/are 1.0, 3.0.
     3. Consequence of failure distributed between minimum of $10.06 and maximum of $163.57MM
     4. Total length driven by Safety: 430.55 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $156.39MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 43.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 3.99 and maximum of 4.11 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $329.09MM
        5. Rupture scenario yielded 85.0 intersections with structures, with minimum of 2.28 and maximum of 34.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 53.97 and maximum of 55.69 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $165.41MM
        8. Puncture scenario yielded 67.0 intersections with structures, with minimum of 0.0 and maximum of 17.23 of population impacted
        9. Puncture hazard radius distributed between minimum of 15.93 and maximum of 16.44 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0, 3.0.
     6. Total length driven by Environmental: 7.93 meters.
     7. Environmental Cost distributed between minimum of $0.80 and maximum of $11.12MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.39MM
        2. Leak spill volume between a minimum of 1733.96 and maximum of 2169.2 gallons
        3. Rupture cost between minimum of $1.31 and maximum of $8.05MM
        4. Rupture spill volume is between a minimum of 12357.91 and maximum of 45256.14 gallons
        5. Puncture cost between minimum of $6.04 and maximum of $12.68MM
        6. Puncture spill volume is between a minimum of 56973.91 and maximum of 71275.0 gallons
141. "EMPRESS TO LAPORTE NPS 10
     1. Total Cumulative Length (m): 400.79
     2. Likelihood of failure distributed between minimum of 1.947e-03 and maximum of 6.361e-03.
        1. Land use distributed as
           1. Agricultural: 400.79
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
        4. Outside diameter of 10.75 in.
        5. Grade between minimum of 359.0 and maximum of 386.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 9.53 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 4.677e-02 and maximum of 1.528e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $11.79 and maximum of $165.81MM
     4. Total length driven by Safety: 370.8 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $161.07MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 4.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $165.41MM
        5. Rupture scenario yielded 14.0 intersections with structures, with minimum of 17.23 and maximum of 17.23 of population impacted
        6. Rupture hazard radius distributed between minimum of 186.5 and maximum of 186.5 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $165.41MM
        8. Puncture scenario yielded 10.0 intersections with structures, with minimum of 0.0 and maximum of 17.23 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 29.99 meters.
     7. Economic Loss Cost distributed between minimum of $4.19 and maximum of $20.16MM:
        1. Repair costs between minimum of $17,000.00 and maximum of $17,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.28 and maximum of $0.30MM
        5. Leak scenario yielded 4.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $45.59 and maximum of $46.20MM
        8. Rupture scenario yielded 14.0 intersections with structures, with minimum of $616,000.00 and maximum of $616,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $45,371,762.88 and maximum of $45,371,762.88
        10. Puncture cost between minimum of $2.22 and maximum of $2.81MM
        11. Puncture scenario yielded 10.0 intersections with structures, with minimum of $25,000.00 and maximum of $591,000.00 in cost of structures impacted
        12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
142. "NPS8 Empress to Laporte from 5-12-20-1W4 to 4-2-27-26W3
     1. Total Cumulative Length (m): 376.41
     2. Likelihood of failure distributed between minimum of 1.903e-03 and maximum of 7.906e-03.
        1. Land use distributed as
           1. Agricultural: 316.43
           2. Remote: 58.94
           3. Water Course: 1.04
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.22 and maximum of 8.18 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 6.648e-02 and maximum of 1.899e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.95 and maximum of $165.91MM
     4. Total length driven by Safety: 316.43 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $161.90MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 7.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $165.41MM
        5. Rupture scenario yielded 11.0 intersections with structures, with minimum of 17.23 and maximum of 17.23 of population impacted
        6. Rupture hazard radius distributed between minimum of 158.1 and maximum of 158.1 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $165.41MM
        8. Puncture scenario yielded 13.0 intersections with structures, with minimum of 17.23 and maximum of 17.23 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 59.98 meters.
     7. Economic Loss Cost distributed between minimum of $3.44 and maximum of $12.70MM:
        1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.28 and maximum of $0.31MM
        5. Leak scenario yielded 7.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $29.42 and maximum of $30.04MM
        8. Rupture scenario yielded 11.0 intersections with structures, with minimum of $616,000.00 and maximum of $616,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $29,206,998.79 and maximum of $29,206,998.79
        10. Puncture cost between minimum of $2.21 and maximum of $2.83MM
        11. Puncture scenario yielded 13.0 intersections with structures, with minimum of $591,000.00 and maximum of $616,000.00 in cost of structures impacted
        12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
143. "NPS4 BretonBV to BretonPS-North Line From 16-11-48-4W5 To 13-12-48-4W5
     1. Total Cumulative Length (m): 370.0
     2. Likelihood of failure distributed between minimum of 5.293e-03 and maximum of 1.317e-02.
        1. Land use distributed as
           1. Agricultural: 370.00
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1979-05-10 and maximum of 1979-05-10
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 6.02 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.271e-01 and maximum of 3.163e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $5.73 and maximum of $127.89MM
     4. Total length driven by Safety: 177.63 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $119.50MM:
        1. Leak cost between minimum of $0.00 and maximum of $21.89MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted.
        3. Leak hazard radius distributed between minimum of 10.31 and maximum of 10.31 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
        5. Rupture scenario yielded 4.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 72.68 and maximum of 72.68 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 4.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 42.43 and maximum of 42.43 meters.
        10. Product type is Condensate.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 192.37 meters.
     7. Environmental Cost distributed between minimum of $5.39 and maximum of $9.17MM:
        1. Leak cost between minimum of $0.15 and maximum of $0.25MM
        2. Leak spill volume between a minimum of 1397.14 and maximum of 1406.93 gallons
        3. Rupture cost between minimum of $19.35 and maximum of $32.69MM
        4. Rupture spill volume is between a minimum of 182529.56 and maximum of 183808.51 gallons
        5. Puncture cost between minimum of $4.87 and maximum of $8.22MM
        6. Puncture spill volume is between a minimum of 45906.93 and maximum of 46228.6 gallons
144. "LAPORTE TO KERROBERT NPS 10
     1. Total Cumulative Length (m): 367.89
     2. Likelihood of failure distributed between minimum of 1.945e-03 and maximum of 6.579e-03.
        1. Land use distributed as
           1. Agricultural: 367.89
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
        4. Outside diameter of 10.75 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 9.52 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 4.671e-02 and maximum of 1.580e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $11.77 and maximum of $165.95MM
     4. Total length driven by Safety: 367.89 meters.
     5. Safety Cost distributed between minimum of $7.59 and maximum of $161.21MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 6.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $165.41 and maximum of $165.41MM
        5. Rupture scenario yielded 24.0 intersections with structures, with minimum of 17.23 and maximum of 17.23 of population impacted
        6. Rupture hazard radius distributed between minimum of 186.5 and maximum of 186.5 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $165.41MM
        8. Puncture scenario yielded 12.0 intersections with structures, with minimum of 0.0 and maximum of 17.23 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0.
145. "NPS8 Laporte to Kerrobert from 4-2-27-26W3 to 4-34-33-22W3
     1. Total Cumulative Length (m): 346.24
     2. Likelihood of failure distributed between minimum of 1.903e-03 and maximum of 7.906e-03.
        1. Land use distributed as
           1. Agricultural: 316.24
           2. Water Course: 29.99
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.22 and maximum of 4.22 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.899e-01 and maximum of 1.899e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.95 and maximum of $165.89MM
     4. Total length driven by Safety: 316.24 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $161.90MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 5.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $165.41MM
        5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 17.23 and maximum of 17.23 of population impacted
        6. Rupture hazard radius distributed between minimum of 158.1 and maximum of 158.1 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $165.41MM
        8. Puncture scenario yielded 14.0 intersections with structures, with minimum of 0.0 and maximum of 17.23 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 29.99 meters.
     7. Economic Loss Cost distributed between minimum of $3.44 and maximum of $12.08MM:
        1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.28 and maximum of $0.31MM
        5. Leak scenario yielded 5.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $29.46 and maximum of $30.04MM
        8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $591,000.00 and maximum of $616,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $29,206,998.79 and maximum of $29,206,998.79
        10. Puncture cost between minimum of $2.21 and maximum of $2.81MM
        11. Puncture scenario yielded 14.0 intersections with structures, with minimum of $25,000.00 and maximum of $591,000.00 in cost of structures impacted
        12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
146. "CROMER TRUCK TERMINAL LATERAL NPS 6
     1. Total Cumulative Length (m): 325.31
     2. Likelihood of failure distributed between minimum of 1.655e-03 and maximum of 1.222e-02.
        1. Land use distributed as
           1. Agricultural: 297.90
           2. Bush/Creek: 27.41
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2003-01-01 and maximum of 2009-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.652e-01 and maximum of 2.936e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $3.94 and maximum of $14.80MM
     4. Total length driven by Environmental: 325.31 meters.
     5. Environmental Cost distributed between minimum of $3.67 and maximum of $14.47MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1861.35 gallons
        3. Rupture cost between minimum of $55.64 and maximum of $93.77MM
        4. Rupture spill volume is between a minimum of 524962.0 and maximum of 527069.99 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $10.88MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61159.88 gallons
147. "UTILITY NPS 8
     1. Total Cumulative Length (m): 319.7
     2. Likelihood of failure distributed between minimum of 1.557e-03 and maximum of 6.502e-03.
        1. Land use distributed as
           1. Agricultural: 254.76
           2. Forested: 64.46
           3. Water Course: 0.48
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.554e-01 and maximum of 1.562e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $27.55 and maximum of $60.05MM
     4. Total length driven by Safety: 319.7 meters.
     5. Safety Cost distributed between minimum of $23.59 and maximum of $56.51MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 10.66 and maximum of 10.66 meters.
        4. Rupture cost between minimum of $145.27 and maximum of $359.33MM
        5. Rupture scenario yielded 40.0 intersections with structures, with minimum of 15.13 and maximum of 37.43 of population impacted
        6. Rupture hazard radius distributed between minimum of 135.26 and maximum of 135.26 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $165.41MM
        8. Puncture scenario yielded 45.0 intersections with structures, with minimum of 0.0 and maximum of 17.23 of population impacted
        9. Puncture hazard radius distributed between minimum of 49.48 and maximum of 49.48 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
148. "14-02 to 12-02 NPS 24
     1. Total Cumulative Length (m): 317.4
     2. Likelihood of failure distributed between minimum of 2.463e-03 and maximum of 2.463e-03.
        1. Land use distributed as
           1. Agricultural: 317.40
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1998-01-01 and maximum of 1998-01-01
        4. Outside diameter of 24.0 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 5.916e-02 and maximum of 5.916e-02
        9. Class area location is/are nan.
     3. Consequence of failure distributed between minimum of $11.88 and maximum of $11.95MM
     4. Total length driven by Environmental: 317.4 meters.
     5. Environmental Cost distributed between minimum of $9.30 and maximum of $9.37MM:
        1. Leak cost between minimum of $0.09 and maximum of $0.09MM
        2. Leak spill volume between a minimum of 825.78 and maximum of 832.0 gallons
        3. Rupture cost between minimum of $325.26 and maximum of $327.70MM
        4. Rupture spill volume is between a minimum of 3068711.06 and maximum of 3091803.54 gallons
        5. Puncture cost between minimum of $2.88 and maximum of $2.90MM
        6. Puncture spill volume is between a minimum of 27133.36 and maximum of 27337.55 gallons
149. "Empress 4A line\_Propane
     1. Total Cumulative Length (m): 303.53
     2. Likelihood of failure distributed between minimum of 6.254e-03 and maximum of 6.254e-03.
        1. Land use distributed as
           1. Agricultural: 303.53
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 241.0 and maximum of 241.0 MPa
        6. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.502e-01 and maximum of 1.502e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $23.41 and maximum of $610.86MM
     4. Total length driven by Safety: 303.53 meters.
     5. Safety Cost distributed between minimum of $20.80 and maximum of $604.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 6.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $451.87 and maximum of $617.28MM
        5. Rupture scenario yielded 5.0 intersections with structures, with minimum of 47.07 and maximum of 64.3 of population impacted
        6. Rupture hazard radius distributed between minimum of 97.06 and maximum of 97.06 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $617.28MM
        8. Puncture scenario yielded 7.0 intersections with structures, with minimum of 12.61 and maximum of 64.3 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
150. "Empress 4B line\_Butane
     1. Total Cumulative Length (m): 302.58
     2. Likelihood of failure distributed between minimum of 6.254e-03 and maximum of 6.254e-03.
        1. Land use distributed as
           1. Agricultural: 302.58
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 241.0 and maximum of 241.0 MPa
        6. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.502e-01 and maximum of 1.502e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $23.41 and maximum of $610.86MM
     4. Total length driven by Safety: 302.58 meters.
     5. Safety Cost distributed between minimum of $20.80 and maximum of $604.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 6.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $451.87 and maximum of $617.28MM
        5. Rupture scenario yielded 5.0 intersections with structures, with minimum of 47.07 and maximum of 64.3 of population impacted
        6. Rupture hazard radius distributed between minimum of 97.06 and maximum of 97.06 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $617.28MM
        8. Puncture scenario yielded 7.0 intersections with structures, with minimum of 12.61 and maximum of 64.3 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
151. "Empress 4C line\_NGL
     1. Total Cumulative Length (m): 302.56
     2. Likelihood of failure distributed between minimum of 6.254e-03 and maximum of 6.254e-03.
        1. Land use distributed as
           1. Agricultural: 302.56
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 241.0 and maximum of 241.0 MPa
        6. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.502e-01 and maximum of 1.502e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $23.41 and maximum of $610.86MM
     4. Total length driven by Safety: 302.56 meters.
     5. Safety Cost distributed between minimum of $20.80 and maximum of $604.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 6.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $451.87 and maximum of $617.28MM
        5. Rupture scenario yielded 5.0 intersections with structures, with minimum of 47.07 and maximum of 64.3 of population impacted
        6. Rupture hazard radius distributed between minimum of 97.06 and maximum of 97.06 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $617.28MM
        8. Puncture scenario yielded 7.0 intersections with structures, with minimum of 12.61 and maximum of 64.3 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
152. "EV106/116/117 NPS 6
     1. Total Cumulative Length (m): 301.69
     2. Likelihood of failure distributed between minimum of 1.649e-03 and maximum of 7.475e-03.
        1. Land use distributed as
           1. Agricultural: 49.33
           2. Forested: 152.79
           3. Water Course: 99.58
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1989-01-01 and maximum of 1989-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 7.1 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 9.915e-02 and maximum of 1.796e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.02 and maximum of $17.47MM
     4. Total length driven by Environmental: 301.69 meters.
     5. Environmental Cost distributed between minimum of $9.11 and maximum of $17.12MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.38MM
        2. Leak spill volume between a minimum of 1632.3 and maximum of 2118.75 gallons
        3. Rupture cost between minimum of $59.32 and maximum of $106.74MM
        4. Rupture spill volume is between a minimum of 462208.64 and maximum of 599956.15 gallons
        5. Puncture cost between minimum of $6.88 and maximum of $12.39MM
        6. Puncture spill volume is between a minimum of 53633.53 and maximum of 69617.41 gallons
153. "SECT 3 HERBERT TO CARON NPS 6
     1. Total Cumulative Length (m): 291.76
     2. Likelihood of failure distributed between minimum of 6.241e-03 and maximum of 9.390e-03.
        1. Land use distributed as
           1. Agricultural: 291.76
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1963-01-01 and maximum of 1963-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 241.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.83 and maximum of 7.11 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.499e-01 and maximum of 2.255e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $13.10 and maximum of $24.90MM
     4. Total length driven by Safety: 291.76 meters.
     5. Safety Cost distributed between minimum of $10.18 and maximum of $21.68MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 9.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
        4. Rupture cost between minimum of $12.11 and maximum of $21.89MM
        5. Rupture scenario yielded 45.0 intersections with structures, with minimum of 1.26 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
        7. Puncture cost between minimum of $12.11 and maximum of $21.89MM
        8. Puncture scenario yielded 41.0 intersections with structures, with minimum of 1.26 and maximum of 2.28 of population impacted
        9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0.
154. "WAPELLA LATERAL WEST NPS 4
     1. Total Cumulative Length (m): 280.42
     2. Likelihood of failure distributed between minimum of 3.106e-03 and maximum of 1.291e-02.
        1. Land use distributed as
           1. Agricultural: 243.69
           2. Water Course: 36.73
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1999-01-01 and maximum of 1999-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.17 and maximum of 3.17 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.100e-01 and maximum of 3.100e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $7.51 and maximum of $12.42MM
     4. Total length driven by Environmental: 280.42 meters.
     5. Environmental Cost distributed between minimum of $7.23 and maximum of $12.11MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.34MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1890.81 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $43.95MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 247024.79 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $11.05MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 62127.75 gallons
155. "MOBIL EXXON 7-12 TO 16-10 NPS 6
     1. Total Cumulative Length (m): 275.59
     2. Likelihood of failure distributed between minimum of 1.595e-03 and maximum of 1.263e-02.
        1. Land use distributed as
           1. Agricultural: 269.82
           2. Water Course: 5.76
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.592e-01 and maximum of 3.035e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $7.90 and maximum of $15.15MM
     4. Total length driven by Environmental: 275.59 meters.
     5. Environmental Cost distributed between minimum of $7.60 and maximum of $14.84MM:
        1. Leak cost between minimum of $0.17 and maximum of $0.29MM
        2. Leak spill volume between a minimum of 1522.19 and maximum of 1651.85 gallons
        3. Rupture cost between minimum of $49.42 and maximum of $81.92MM
        4. Rupture spill volume is between a minimum of 431031.0 and maximum of 467747.06 gallons
        5. Puncture cost between minimum of $5.73 and maximum of $9.51MM
        6. Puncture spill volume is between a minimum of 50015.76 and maximum of 54276.2 gallons
156. "NPS12 Carway to border From 6-3-1-26W4 To 1-3-1-26W4
     1. Total Cumulative Length (m): 249.38
     2. Likelihood of failure distributed between minimum of 1.664e-03 and maximum of 1.664e-03.
        1. Land use distributed as
           1. Forested: 249.38
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
        4. Outside diameter of 12.75 in.
        5. Grade between minimum of 317.0 and maximum of 317.0 MPa
        6. Wall thickness between minimum of 4.8 and maximum of 4.8 mm
        7. Toughness between minimum of 14.0 and maximum of 14.0 J
        8. Probability of failure given a hit between minimum of 1.661e-01 and maximum of 1.661e-01
        9. Class area location is/are 2.0.
     3. Consequence of failure distributed between minimum of $11.04 and maximum of $12.06MM
     4. Total length driven by Safety: 249.38 meters.
     5. Safety Cost distributed between minimum of $6.01 and maximum of $9.12MM:
        1. Leak cost between minimum of $0.28 and maximum of $0.28MM
        2. Leak scenario yielded 0.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 9.46 and maximum of 9.46 meters.
        4. Rupture cost between minimum of $53.57 and maximum of $53.57MM
        5. Rupture scenario yielded 0.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
        6. Rupture hazard radius distributed between minimum of 131.02 and maximum of 131.02 meters.
        7. Puncture cost between minimum of $3.85 and maximum of $3.85MM
        8. Puncture scenario yielded 0.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
        9. Puncture hazard radius distributed between minimum of 35.14 and maximum of 35.14 meters.
        10. Product type is Crude / Butane Batch.
        11. Class area location is/are 2.0.
157. "NORTH FERRIER 10-36 TO 07-32 NPS 3
     1. Total Cumulative Length (m): 244.89
     2. Likelihood of failure distributed between minimum of 3.462e-03 and maximum of 3.462e-03.
        1. Land use distributed as
           1. Agricultural: 244.89
        2. Depth of cover distributed as
           1. >= 0.91 to < 1.22m: 244.89
        3. Installation date between minimum of 1985-01-01 and maximum of 1985-01-01
        4. Outside diameter of 3.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.599e-01 and maximum of 2.599e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $28.48 and maximum of $28.61MM
     4. Total length driven by Safety: 244.89 meters.
     5. Safety Cost distributed between minimum of $20.86 and maximum of $20.86MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 3.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
        4. Rupture cost between minimum of $21.89 and maximum of $21.89MM
        5. Rupture scenario yielded 12.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 68.4 and maximum of 68.4 meters.
        7. Puncture cost between minimum of $21.89 and maximum of $21.89MM
        8. Puncture scenario yielded 12.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
        9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
        10. Product type is LVP Products.
        11. Class area location is/are 1.0.
158. "SS-11 NPS 6
     1. Total Cumulative Length (m): 239.92
     2. Likelihood of failure distributed between minimum of 2.405e-03 and maximum of 2.405e-03.
        1. Land use distributed as
           1. Remote: 239.92
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1965-01-01 and maximum of 1965-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of 17.6 and maximum of 17.6 J
        8. Probability of failure given a hit between minimum of 2.401e-01 and maximum of 2.401e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $14.32 and maximum of $26.59MM
     4. Total length driven by Environmental: 239.92 meters.
     5. Environmental Cost distributed between minimum of $13.96 and maximum of $26.10MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1933.12 and maximum of 1958.94 gallons
        3. Rupture cost between minimum of $58.02 and maximum of $58.79MM
        4. Rupture spill volume is between a minimum of 547391.09 and maximum of 554702.8 gallons
        5. Puncture cost between minimum of $6.73 and maximum of $6.82MM
        6. Puncture spill volume is between a minimum of 63517.89 and maximum of 64366.32 gallons
159. "WOLF SOUTH PS TO BURLINGTON WOLF LAKE BV NPS 4
     1. Total Cumulative Length (m): 232.2
     2. Likelihood of failure distributed between minimum of 5.796e-03 and maximum of 7.852e-03.
        1. Land use distributed as
           1. Agricultural: 232.20
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1995-01-01 and maximum of 1995-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 6.02 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.392e-01 and maximum of 1.886e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $15.11 and maximum of $26.92MM
     4. Total length driven by Safety: 232.2 meters.
     5. Safety Cost distributed between minimum of $12.40 and maximum of $23.95MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.25 and maximum of 12.25 meters.
        4. Rupture cost between minimum of $24.21 and maximum of $24.21MM
        5. Rupture scenario yielded 8.0 intersections with structures, with minimum of 2.52 and maximum of 2.52 of population impacted
        6. Rupture hazard radius distributed between minimum of 97.09 and maximum of 97.09 meters.
        7. Puncture cost between minimum of $12.11 and maximum of $24.21MM
        8. Puncture scenario yielded 4.0 intersections with structures, with minimum of 1.26 and maximum of 2.52 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.86 and maximum of 57.86 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
160. "CROMER DELIVERY LATERAL NPS 8
     1. Total Cumulative Length (m): 218.89
     2. Likelihood of failure distributed between minimum of 2.077e-03 and maximum of 8.630e-03.
        1. Land use distributed as
           1. Agricultural: 51.66
           2. Bush/Creek: 167.23
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1900-01-01 and maximum of 1900-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.073e-01 and maximum of 2.073e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $12.64 and maximum of $26.98MM
     4. Total length driven by Environmental: 218.89 meters.
     5. Environmental Cost distributed between minimum of $12.33 and maximum of $26.57MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1854.53 and maximum of 1858.45 gallons
        3. Rupture cost between minimum of $94.54 and maximum of $158.69MM
        4. Rupture spill volume is between a minimum of 890061.32 and maximum of 891942.44 gallons
        5. Puncture cost between minimum of $6.47 and maximum of $10.86MM
        6. Puncture spill volume is between a minimum of 60935.7 and maximum of 61064.49 gallons
161. "BUCK CREEK TO STATION 1 NPS 3
     1. Total Cumulative Length (m): 216.01
     2. Likelihood of failure distributed between minimum of 3.391e-03 and maximum of 4.521e-03.
        1. Land use distributed as
           1. Agricultural: 216.01
        2. Depth of cover distributed as
           1. >= 0.91 to < 1.22m: 19.10, >= 1.22 to < 1.83m: 194.09, >= 1.83m : 2.82
        3. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
        4. Outside diameter of 3.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.394e-01 and maximum of 3.394e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $122.53 and maximum of $122.64MM
     4. Total length driven by Safety: 216.01 meters.
     5. Safety Cost distributed between minimum of $119.57 and maximum of $119.66MM:
        1. Leak cost between minimum of $121.06 and maximum of $121.06MM
        2. Leak scenario yielded 5.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.7 and maximum of 11.7 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $121.06MM
        5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 57.3 and maximum of 57.3 meters.
        7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
        8. Puncture scenario yielded 8.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 42.7 and maximum of 42.7 meters.
        10. Product type is Ethane.
        11. Class area location is/are 1.0.
162. "DEVON GIFT LATERAL NPS 4
     1. Total Cumulative Length (m): 214.67
     2. Likelihood of failure distributed between minimum of 1.012e-02 and maximum of 1.012e-02.
        1. Land use distributed as
           1. Agricultural: 214.67
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.431e-01 and maximum of 2.431e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $6.88 and maximum of $6.92MM
     4. Total length driven by Environmental: 214.67 meters.
     5. Environmental Cost distributed between minimum of $6.60 and maximum of $6.62MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1697.15 and maximum of 1700.32 gallons
        3. Rupture cost between minimum of $23.50 and maximum of $23.54MM
        4. Rupture spill volume is between a minimum of 221723.58 and maximum of 222137.8 gallons
        5. Puncture cost between minimum of $5.91 and maximum of $5.92MM
        6. Puncture spill volume is between a minimum of 55764.39 and maximum of 55868.57 gallons
163. "MI-98 NPS 6
     1. Total Cumulative Length (m): 185.65
     2. Likelihood of failure distributed between minimum of 1.795e-03 and maximum of 1.795e-03.
        1. Land use distributed as
           1. Forested: 133.43
           2. Remote: 0.10
           3. Water Course: 52.11
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1979-01-01 and maximum of 1979-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.791e-01 and maximum of 1.791e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.23 and maximum of $20.72MM
     4. Total length driven by Environmental: 185.65 meters.
     5. Environmental Cost distributed between minimum of $9.92 and maximum of $20.35MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.34MM
        2. Leak spill volume between a minimum of 1867.23 and maximum of 1913.54 gallons
        3. Rupture cost between minimum of $57.13 and maximum of $96.27MM
        4. Rupture spill volume is between a minimum of 528734.26 and maximum of 541847.34 gallons
        5. Puncture cost between minimum of $6.63 and maximum of $11.17MM
        6. Puncture spill volume is between a minimum of 61353.0 and maximum of 62874.61 gallons
164. "NORTH FERRIER 07-14 NPS 3
     1. Total Cumulative Length (m): 176.59
     2. Likelihood of failure distributed between minimum of 1.518e-02 and maximum of 4.796e-02.
        1. Land use distributed as
           1. Agricultural: 176.59
        2. Depth of cover distributed as
           1. >= 0.37 to < 0.43m: 2.00, >= 0.43 to < 0.49m: 31.91, >= 0.49 to < 0.55m: 6.47, >= 0.55 to < 0.61m: 13.22, >= 0.61 to < 0.67m: 30.98, >= 0.67 to < 0.76m: 51.05, >= 0.76 to < 0.91m: 40.96
        3. Installation date between minimum of 1977-01-01 and maximum of 1977-01-01
        4. Outside diameter of 3.5 in.
        5. Grade between minimum of 241.0 and maximum of 241.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.645e-01 and maximum of 3.645e-01
        9. Class area location is/are 2.0.
     3. Consequence of failure distributed between minimum of $6.47 and maximum of $6.54MM
     4. Total length driven by Environmental: 176.59 meters.
     5. Environmental Cost distributed between minimum of $6.20 and maximum of $6.25MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1691.87 and maximum of 1697.92 gallons
        3. Rupture cost between minimum of $14.17 and maximum of $14.22MM
        4. Rupture spill volume is between a minimum of 133711.98 and maximum of 134190.3 gallons
        5. Puncture cost between minimum of $5.89 and maximum of $5.91MM
        6. Puncture spill volume is between a minimum of 55590.98 and maximum of 55789.84 gallons
165. "SECT 6 GRENFELL TO MANSON NPS 6
     1. Total Cumulative Length (m): 175.01
     2. Likelihood of failure distributed between minimum of 2.262e-03 and maximum of 2.262e-03.
        1. Land use distributed as
           1. Remote: 175.01
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1963-07-01 and maximum of 1963-07-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.83 and maximum of 4.83 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.258e-01 and maximum of 2.258e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $122.03 and maximum of $122.03MM
     4. Total length driven by Safety: 175.01 meters.
     5. Safety Cost distributed between minimum of $116.52 and maximum of $116.52MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 10.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $121.06MM
        5. Rupture scenario yielded 67.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
        7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
        8. Puncture scenario yielded 43.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0.
166. "NIPISI CRUDE NPS 12
     1. Total Cumulative Length (m): 173.77
     2. Likelihood of failure distributed between minimum of 1.554e-03 and maximum of 1.554e-03.
        1. Land use distributed as
           1. Agricultural: 173.77
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1990-01-01 and maximum of 1990-01-01
        4. Outside diameter of 12.75 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 10.31 and maximum of 10.31 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.732e-02 and maximum of 3.732e-02
        9. Class area location is/are nan.
     3. Consequence of failure distributed between minimum of $17.77 and maximum of $17.80MM
     4. Total length driven by Environmental: 173.77 meters.
     5. Environmental Cost distributed between minimum of $16.65 and maximum of $16.68MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.92 and maximum of 1857.3 gallons
        3. Rupture cost between minimum of $206.09 and maximum of $206.46MM
        4. Rupture spill volume is between a minimum of 1944365.17 and maximum of 1947910.39 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.47MM
        6. Puncture spill volume is between a minimum of 60915.47 and maximum of 61026.54 gallons
167. "PECO PUMP TO BRAZEAU STATION NPS 4
     1. Total Cumulative Length (m): 173.57
     2. Likelihood of failure distributed between minimum of 1.308e-03 and maximum of 1.773e-03.
        1. Land use distributed as
           1. Forested: 173.57
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 6.02 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.306e-01 and maximum of 1.770e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $115.32 and maximum of $126.10MM
     4. Total length driven by Safety: 173.57 meters.
     5. Safety Cost distributed between minimum of $110.51 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 2.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $121.06MM
        5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 97.06 and maximum of 97.06 meters.
        7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
        8. Puncture scenario yielded 10.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
168. "SUNDRE TO SPRINGDALE NPS 12
     1. Total Cumulative Length (m): 158.5
     2. Likelihood of failure distributed between minimum of 1.892e-03 and maximum of 4.144e-03.
        1. Land use distributed as
           1. Agricultural: 158.50
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1985-01-01 and maximum of 1985-01-01
        4. Outside diameter of 12.75 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 6.35 and maximum of 9.52 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 4.545e-02 and maximum of 9.955e-02
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $10.16 and maximum of $22.67MM
     4. Total length driven by Safety: 29.99 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $17.96MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 21.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 4.15 and maximum of 4.15 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $55.88MM
        5. Rupture scenario yielded 85.0 intersections with structures, with minimum of 5.82 and maximum of 5.82 of population impacted
        6. Rupture hazard radius distributed between minimum of 80.22 and maximum of 80.22 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
        8. Puncture scenario yielded 54.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
        9. Puncture hazard radius distributed between minimum of 16.59 and maximum of 16.59 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 128.5 meters.
     7. Environmental Cost distributed between minimum of $3.57 and maximum of $14.88MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.45MM
        2. Leak spill volume between a minimum of 1911.78 and maximum of 2512.2 gallons
        3. Rupture cost between minimum of $4.78 and maximum of $30.65MM
        4. Rupture spill volume is between a minimum of 45109.23 and maximum of 172299.03 gallons
        5. Puncture cost between minimum of $6.92 and maximum of $14.69MM
        6. Puncture spill volume is between a minimum of 62816.84 and maximum of 82545.12 gallons
169. "GIFT LATERAL NPS 8
     1. Total Cumulative Length (m): 157.02
     2. Likelihood of failure distributed between minimum of 1.750e-03 and maximum of 1.750e-03.
        1. Land use distributed as
           1. Forested: 24.83
           2. Water Course: 132.19
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of 17.6 and maximum of 17.6 J
        8. Probability of failure given a hit between minimum of 1.746e-01 and maximum of 1.746e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.09 and maximum of $10.95MM
     4. Total length driven by Environmental: 157.02 meters.
     5. Environmental Cost distributed between minimum of $9.81 and maximum of $10.67MM:
        1. Leak cost between minimum of $0.33 and maximum of $0.35MM
        2. Leak spill volume between a minimum of 1843.22 and maximum of 1975.34 gallons
        3. Rupture cost between minimum of $1.69 and maximum of $4.95MM
        4. Rupture spill volume is between a minimum of 9515.9 and maximum of 27834.87 gallons
        5. Puncture cost between minimum of $10.78 and maximum of $11.55MM
        6. Puncture spill volume is between a minimum of 60564.17 and maximum of 64905.02 gallons
170. "RAVEN RIVER PS TO SUNDRE PS NPS 8
     1. Total Cumulative Length (m): 155.57
     2. Likelihood of failure distributed between minimum of 1.153e-03 and maximum of 2.139e-03.
        1. Land use distributed as
           1. Agricultural: 155.57
        2. Depth of cover distributed as
           1. >= 0.91 to < 1.22m: 155.57
        3. Installation date between minimum of 1999-01-01 and maximum of 1999-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 7.04 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 8.655e-02 and maximum of 1.605e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.73 and maximum of $27.02MM
     4. Total length driven by Safety: 145.88 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $20.28MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 4.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
        5. Rupture scenario yielded 26.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
        8. Puncture scenario yielded 13.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
        9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
        10. Product type is LVP Products.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 9.68 meters.
     7. Environmental Cost distributed between minimum of $6.15 and maximum of $12.66MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.43MM
        2. Leak spill volume between a minimum of 1991.58 and maximum of 2398.97 gallons
        3. Rupture cost between minimum of $2.27 and maximum of $9.57MM
        4. Rupture spill volume is between a minimum of 14553.3 and maximum of 53808.39 gallons
        5. Puncture cost between minimum of $6.94 and maximum of $14.02MM
        6. Puncture spill volume is between a minimum of 65438.68 and maximum of 78824.57 gallons
171. "NPS3 Eta Lake to Cynthia Booster Station From 2-7-51-11W5 To 9-16-51
     1. Total Cumulative Length (m): 150.93
     2. Likelihood of failure distributed between minimum of 3.326e-03 and maximum of 1.382e-02.
        1. Land use distributed as
           1. Agricultural: 94.58
           2. Forested: 56.35
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1989-01-01 and maximum of 1989-01-01
        4. Outside diameter of 3.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 5.49 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.591e-01 and maximum of 3.320e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $119.32 and maximum of $125.39MM
     4. Total length driven by Safety: 150.93 meters.
     5. Safety Cost distributed between minimum of $115.15 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 10.79 and maximum of 10.79 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $121.06MM
        5. Rupture scenario yielded 4.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 69.76 and maximum of 69.76 meters.
        7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
        8. Puncture scenario yielded 4.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 50.19 and maximum of 50.19 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
172. "NPS4 ENBRIDGE TRANSFER from 2-34-33-22W3 to 10-34-33-22W3
     1. Total Cumulative Length (m): 139.66
     2. Likelihood of failure distributed between minimum of 1.275e-02 and maximum of 1.275e-02.
        1. Land use distributed as
           1. Agricultural: 139.66
        2. Depth of cover distributed as
           1. >= 0.76 to < 0.91m: 46.69
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.062e-01 and maximum of 3.062e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $1.34 and maximum of $1.37MM
     4. Total length driven by Environmental: 139.66 meters.
     5. Environmental Cost distributed between minimum of $1.12 and maximum of $1.12MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1935.35 and maximum of 1935.35 gallons
        3. Rupture cost between minimum of $26.80 and maximum of $26.80MM
        4. Rupture spill volume is between a minimum of 252844.1 and maximum of 252844.1 gallons
        5. Puncture cost between minimum of $6.74 and maximum of $6.74MM
        6. Puncture spill volume is between a minimum of 63591.33 and maximum of 63591.33 gallons
173. "STATION 1 TO BUCK CREEK FRAC PLANT NPS 3
     1. Total Cumulative Length (m): 122.71
     2. Likelihood of failure distributed between minimum of 6.858e-03 and maximum of 1.483e-02.
        1. Land use distributed as
           1. Agricultural: 122.71
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1958-01-01 and maximum of 1958-01-01
        4. Outside diameter of 3.5 in.
        5. Grade between minimum of 241.0 and maximum of 241.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 5.49 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.647e-01 and maximum of 3.563e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $122.34 and maximum of $124.78MM
     4. Total length driven by Safety: 122.71 meters.
     5. Safety Cost distributed between minimum of $118.68 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 8.97 and maximum of 8.97 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $121.06MM
        5. Rupture scenario yielded 4.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 56.62 and maximum of 56.62 meters.
        7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
        8. Puncture scenario yielded 2.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 28.72 and maximum of 28.72 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
174. "SSPL TRUNK LINE NPS 12
     1. Total Cumulative Length (m): 116.97
     2. Likelihood of failure distributed between minimum of 1.383e-03 and maximum of 5.746e-03.
        1. Land use distributed as
           1. Agricultural: 82.41
           2. Remote: 0.10
           3. Water Course: 34.47
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1956-01-01 and maximum of 1956-01-01
        4. Outside diameter of 12.75 in.
        5. Grade between minimum of 241.0 and maximum of 317.0 MPa
        6. Wall thickness between minimum of 6.35 and maximum of 8.38 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 9.949e-02 and maximum of 1.380e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.22 and maximum of $24.14MM
     4. Total length driven by Safety: 82.21 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $21.89MM:
        1. Leak cost between minimum of $0.00 and maximum of $21.89MM
        2. Leak scenario yielded 53.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted.
        3. Leak hazard radius distributed between minimum of 3.95 and maximum of 3.97 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
        5. Rupture scenario yielded 77.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 76.31 and maximum of 76.72 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
        8. Puncture scenario yielded 84.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
        9. Puncture hazard radius distributed between minimum of 15.78 and maximum of 15.87 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 34.76 meters.
     7. Environmental Cost distributed between minimum of $1.05 and maximum of $12.24MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.38MM
        2. Leak spill volume between a minimum of 1805.27 and maximum of 2126.42 gallons
        3. Rupture cost between minimum of $4.98 and maximum of $19.18MM
        4. Rupture spill volume is between a minimum of 46942.35 and maximum of 107783.09 gallons
        5. Puncture cost between minimum of $6.64 and maximum of $12.43MM
        6. Puncture spill volume is between a minimum of 59317.1 and maximum of 69869.38 gallons
175. "NPS6 Brazeau NGL Lateral to Stn 8 From 5-31-48-12W5 To 4-5-49-9W5
     1. Total Cumulative Length (m): 113.38
     2. Likelihood of failure distributed between minimum of 1.032e-03 and maximum of 1.032e-03.
        1. Land use distributed as
           1. Forested: 113.38
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1979-01-01 and maximum of 1979-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 6.4 and maximum of 6.4 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.030e-01 and maximum of 1.030e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $108.86 and maximum of $126.12MM
     4. Total length driven by Safety: 113.38 meters.
     5. Safety Cost distributed between minimum of $104.17 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 3.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.49 and maximum of 11.49 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $121.06MM
        5. Rupture scenario yielded 49.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 120.73 and maximum of 120.73 meters.
        7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
        8. Puncture scenario yielded 20.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 53.83 and maximum of 53.83 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
176. "PETRO VERA TO LONE ROCK NPS 8
     1. Total Cumulative Length (m): 101.26
     2. Likelihood of failure distributed between minimum of 3.995e-03 and maximum of 3.995e-03.
        1. Land use distributed as
           1. Agricultural: 101.26
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 9.597e-02 and maximum of 9.597e-02
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $13.29 and maximum of $13.33MM
     4. Total length driven by Safety: 101.26 meters.
     5. Safety Cost distributed between minimum of $12.03 and maximum of $12.03MM:
        1. Leak cost between minimum of $12.11 and maximum of $12.11MM
        2. Leak scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 2.28 and maximum of 2.28 meters.
        4. Rupture cost between minimum of $12.11 and maximum of $12.11MM
        5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 30.46 and maximum of 30.46 meters.
        7. Puncture cost between minimum of $12.11 and maximum of $12.11MM
        8. Puncture scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 8.99 and maximum of 8.99 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0.
177. "HARMATTAN TO SUNDRE NPS 6 FROM 4-35-31-4W5 TO 14-3-32-4W5
     1. Total Cumulative Length (m): 81.16
     2. Likelihood of failure distributed between minimum of 9.463e-03 and maximum of 9.463e-03.
        1. Land use distributed as
           1. Agricultural: 81.16
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1962-01-01 and maximum of 1962-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.273e-01 and maximum of 2.273e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.61 and maximum of $21.18MM
     4. Total length driven by Environmental: 81.16 meters.
     5. Environmental Cost distributed between minimum of $10.29 and maximum of $20.69MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1973.38 and maximum of 2014.16 gallons
        3. Rupture cost between minimum of $59.23 and maximum of $60.45MM
        4. Rupture spill volume is between a minimum of 558791.97 and maximum of 570339.58 gallons
        5. Puncture cost between minimum of $6.87 and maximum of $7.01MM
        6. Puncture spill volume is between a minimum of 64840.82 and maximum of 66180.78 gallons
178. "NPS4 Lanaway From 15-34-035-03W5 To 04-18-036-03W5
     1. Total Cumulative Length (m): 70.53
     2. Likelihood of failure distributed between minimum of 2.285e-03 and maximum of 9.494e-03.
        1. Land use distributed as
           1. Agricultural: 0.39
           2. Water Course: 70.13
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2012-07-21 and maximum of 2012-07-21
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.280e-01 and maximum of 2.280e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $11.36 and maximum of $12.12MM
     4. Total length driven by Environmental: 70.53 meters.
     5. Environmental Cost distributed between minimum of $11.06 and maximum of $11.83MM:
        1. Leak cost between minimum of $0.31 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1744.17 and maximum of 1852.37 gallons
        3. Rupture cost between minimum of $40.54 and maximum of $43.06MM
        4. Rupture spill volume is between a minimum of 227867.03 and maximum of 242003.05 gallons
        5. Puncture cost between minimum of $10.20 and maximum of $10.83MM
        6. Puncture spill volume is between a minimum of 57309.49 and maximum of 60864.76 gallons
179. "NPS6 Emerge From 2-6-49-27W3 To 11-33-48-27W3
     1. Total Cumulative Length (m): 65.88
     2. Likelihood of failure distributed between minimum of 3.804e-03 and maximum of 6.842e-03.
        1. Land use distributed as
           1. Agricultural: 65.88
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2010-01-01 and maximum of 2010-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.8 and maximum of 7.1 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 9.138e-02 and maximum of 1.643e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $18.19 and maximum of $20.11MM
     4. Total length driven by Safety: 65.88 meters.
     5. Safety Cost distributed between minimum of $10.22 and maximum of $12.11MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 6.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 4.11 and maximum of 4.11 meters.
        4. Rupture cost between minimum of $12.11 and maximum of $12.11MM
        5. Rupture scenario yielded 10.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 43.81 and maximum of 43.81 meters.
        7. Puncture cost between minimum of $12.11 and maximum of $12.11MM
        8. Puncture scenario yielded 12.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 16.44 and maximum of 16.44 meters.
        10. Product type is Blend.
        11. Class area location is/are 1.0.
180. "SS-21 NPS 4
     1. Total Cumulative Length (m): 64.14
     2. Likelihood of failure distributed between minimum of 1.514e-02 and maximum of 3.997e-02.
        1. Land use distributed as
           1. Agricultural: 64.14
        2. Depth of cover distributed as
           1. >= 0.37 to < 0.43m: 5.18, >= 0.49 to < 0.55m: 0.89, >= 0.61 to < 0.67m: 3.27, >= 0.67 to < 0.76m: 6.45, >= 0.76 to < 0.91m: 48.36
        3. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 6.02 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.769e-01 and maximum of 3.637e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $4.26 and maximum of $6.35MM
     4. Total length driven by Environmental: 64.14 meters.
     5. Environmental Cost distributed between minimum of $4.01 and maximum of $6.05MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.16MM
        2. Leak spill volume between a minimum of 1545.39 and maximum of 1547.49 gallons
        3. Rupture cost between minimum of $21.40 and maximum of $21.43MM
        4. Rupture spill volume is between a minimum of 201897.55 and maximum of 202171.96 gallons
        5. Puncture cost between minimum of $5.38 and maximum of $5.39MM
        6. Puncture spill volume is between a minimum of 50778.06 and maximum of 50847.08 gallons
181. "SYLVAN LAKE SOUTH 10-21 TO 16-19 NPS 4
     1. Total Cumulative Length (m): 54.04
     2. Likelihood of failure distributed between minimum of 1.223e-02 and maximum of 1.529e-02.
        1. Land use distributed as
           1. Agricultural: 54.04
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1961-01-01 and maximum of 1961-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.937e-01 and maximum of 3.672e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $4.68 and maximum of $4.78MM
     4. Total length driven by Environmental: 54.04 meters.
     5. Environmental Cost distributed between minimum of $4.43 and maximum of $4.53MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1719.01 and maximum of 1739.13 gallons
        3. Rupture cost between minimum of $23.80 and maximum of $24.08MM
        4. Rupture spill volume is between a minimum of 224580.06 and maximum of 227208.62 gallons
        5. Puncture cost between minimum of $5.99 and maximum of $6.06MM
        6. Puncture spill volume is between a minimum of 56482.81 and maximum of 57143.9 gallons
182. "NIPISI 11-02 TO 14-02 NPS 16
     1. Total Cumulative Length (m): 53.99
     2. Likelihood of failure distributed between minimum of 1.031e-02 and maximum of 1.562e-02.
        1. Land use distributed as
           1. Agricultural: 53.99
        2. Depth of cover distributed as
           1. < 0.24m: 7.93, >= 0.24 to < 0.30m: 1.29, >= 0.30 to < 0.37m: 2.78, >= 0.37 to < 0.43m: 8.23, >= 0.43 to < 0.49m: 32.87, >= 0.49 to < 0.55m: 0.89
        3. Installation date between minimum of 1996-08-01 and maximum of 1996-08-01
        4. Outside diameter of 16.0 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 9.378e-02 and maximum of 9.378e-02
        9. Class area location is/are nan.
     3. Consequence of failure distributed between minimum of $1.36 and maximum of $1.41MM
     4. Total length driven by Economic Loss: 53.99 meters.
     5. Economic Loss Cost distributed between minimum of $0.86 and maximum of $0.86MM:
        1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.87 and maximum of $0.87MM
        5. Leak scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $903.67 and maximum of $907.58
        7. Rupture cost between minimum of $2.39 and maximum of $2.44MM
        8. Rupture scenario yielded 5.0 intersections with structures, with minimum of $50,000.00 and maximum of $100,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $1,492,510.39 and maximum of $1,498,965.83
        10. Puncture cost between minimum of $0.90 and maximum of $0.92MM
        11. Puncture scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        12. Product Loss costs between minimum of $29,692.55 and maximum of $29,820.98"
183. "SS-74 NPS 6
     1. Total Cumulative Length (m): 53.75
     2. Likelihood of failure distributed between minimum of 1.653e-03 and maximum of 6.869e-03.
        1. Land use distributed as
           1. Agricultural: 19.58
           2. Water Course: 34.18
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2012-01-31 and maximum of 2012-01-31
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.650e-01 and maximum of 1.650e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $14.83 and maximum of $15.92MM
     4. Total length driven by Environmental: 53.75 meters.
     5. Environmental Cost distributed between minimum of $14.50 and maximum of $15.58MM:
        1. Leak cost between minimum of $0.33 and maximum of $0.36MM
        2. Leak spill volume between a minimum of 1873.05 and maximum of 2020.29 gallons
        3. Rupture cost between minimum of $94.36 and maximum of $101.78MM
        4. Rupture spill volume is between a minimum of 530381.83 and maximum of 572075.6 gallons
        5. Puncture cost between minimum of $10.95 and maximum of $11.81MM
        6. Puncture spill volume is between a minimum of 61544.18 and maximum of 66382.22 gallons
184. "DULWICH TO LONE ROCK BLEND NPS 10
     1. Total Cumulative Length (m): 50.56
     2. Likelihood of failure distributed between minimum of 1.527e-03 and maximum of 1.973e-03.
        1. Land use distributed as
           1. Agricultural: 48.44
           2. Remote: 0.10
           3. Water Course: 2.02
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 10.75 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 9.27 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 4.739e-02 and maximum of 1.524e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.26 and maximum of $18.46MM
     4. Total length driven by Safety: 48.44 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 7.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 4.02 and maximum of 4.02 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
        5. Rupture scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 66.55 and maximum of 66.55 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 9.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 16.08 and maximum of 16.08 meters.
        10. Product type is Blend.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 2.12 meters.
     7. Environmental Cost distributed between minimum of $5.46 and maximum of $9.98MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.35MM
        2. Leak spill volume between a minimum of 1764.77 and maximum of 1942.94 gallons
        3. Rupture cost between minimum of $2.04 and maximum of $6.44MM
        4. Rupture spill volume is between a minimum of 19252.17 and maximum of 36223.07 gallons
        5. Puncture cost between minimum of $6.15 and maximum of $11.36MM
        6. Puncture spill volume is between a minimum of 57986.33 and maximum of 63840.74 gallons
185. "NPS8 Petro Vera to Lone Rock From 13-11-47-27-W3 To 16-10-47-27-W3
     1. Total Cumulative Length (m): 46.08
     2. Likelihood of failure distributed between minimum of 3.966e-03 and maximum of 3.966e-03.
        1. Land use distributed as
           1. Agricultural: 46.08
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 5.6 and maximum of 5.6 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 9.527e-02 and maximum of 9.527e-02
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $13.28 and maximum of $13.32MM
     4. Total length driven by Safety: 46.08 meters.
     5. Safety Cost distributed between minimum of $12.03 and maximum of $12.03MM:
        1. Leak cost between minimum of $12.11 and maximum of $12.11MM
        2. Leak scenario yielded 5.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 2.28 and maximum of 2.28 meters.
        4. Rupture cost between minimum of $12.11 and maximum of $12.11MM
        5. Rupture scenario yielded 3.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 30.46 and maximum of 30.46 meters.
        7. Puncture cost between minimum of $12.11 and maximum of $12.11MM
        8. Puncture scenario yielded 6.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 8.99 and maximum of 8.99 meters.
        10. Product type is Blend.
        11. Class area location is/are 1.0.
186. "GRANADA LATERAL NPS 3
     1. Total Cumulative Length (m): 38.95
     2. Likelihood of failure distributed between minimum of 1.979e-03 and maximum of 2.309e-03.
        1. Land use distributed as
           1. Agricultural: 38.95
        2. Depth of cover distributed as
           1. >= 1.22 to < 1.83m: 9.81, >= 1.83m : 29.14
        3. Installation date between minimum of 1982-01-01 and maximum of 1982-01-01
        4. Outside diameter of 3.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.981e-01 and maximum of 1.981e-01
        9. Class area location is/are nan.
     3. Consequence of failure distributed between minimum of $122.91 and maximum of $122.97MM
     4. Total length driven by Safety: 38.95 meters.
     5. Safety Cost distributed between minimum of $119.98 and maximum of $120.04MM:
        1. Leak cost between minimum of $121.06 and maximum of $121.06MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $286.46 and maximum of $286.46MM
        5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 29.84 and maximum of 29.84 of population impacted
        6. Rupture hazard radius distributed between minimum of 80.38 and maximum of 80.38 meters.
        7. Puncture cost between minimum of $286.46 and maximum of $286.46MM
        8. Puncture scenario yielded 3.0 intersections with structures, with minimum of 29.84 and maximum of 29.84 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is NGL.
        11. Class area location is/are nan.
187. "MILK RIVER REPLACEMENT LINE NPS 10
     1. Total Cumulative Length (m): 33.73
     2. Likelihood of failure distributed between minimum of 1.199e-03 and maximum of 4.984e-03.
        1. Land use distributed as
           1. Agricultural: 0.68
           2. Water Course: 33.06
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2012-01-01 and maximum of 2012-01-01
        4. Outside diameter of 10.75 in.
        5. Grade between minimum of 386.0 and maximum of 386.0 MPa
        6. Wall thickness between minimum of 5.6 and maximum of 6.4 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 9.425e-02 and maximum of 1.197e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.86 and maximum of $12.68MM
     4. Total length driven by Environmental: 33.73 meters.
     5. Environmental Cost distributed between minimum of $10.51 and maximum of $12.39MM:
        1. Leak cost between minimum of $0.36 and maximum of $0.39MM
        2. Leak spill volume between a minimum of 2006.13 and maximum of 2198.65 gallons
        3. Rupture cost between minimum of $11.71 and maximum of $21.30MM
        4. Rupture spill volume is between a minimum of 65806.23 and maximum of 119722.18 gallons
        5. Puncture cost between minimum of $11.73 and maximum of $12.85MM
        6. Puncture spill volume is between a minimum of 65916.82 and maximum of 72242.74 gallons
188. "NPS8 RL-1 From 9-10-109-8W6 To 4-11-109-8W6
     1. Total Cumulative Length (m): 29.36
     2. Likelihood of failure distributed between minimum of 2.110e-03 and maximum of 2.110e-03.
        1. Land use distributed as
           1. Remote: 29.36
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1966-01-01 and maximum of 1966-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.0 and maximum of 4.0 mm
        7. Toughness between minimum of 17.6 and maximum of 17.6 J
        8. Probability of failure given a hit between minimum of 2.106e-01 and maximum of 2.106e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.93 and maximum of $10.93MM
     4. Total length driven by Environmental: 29.36 meters.
     5. Environmental Cost distributed between minimum of $10.60 and maximum of $10.60MM:
        1. Leak cost between minimum of $0.15 and maximum of $0.15MM
        2. Leak spill volume between a minimum of 1419.13 and maximum of 1419.13 gallons
        3. Rupture cost between minimum of $72.19 and maximum of $72.19MM
        4. Rupture spill volume is between a minimum of 681095.43 and maximum of 681095.43 gallons
        5. Puncture cost between minimum of $4.94 and maximum of $4.94MM
        6. Puncture spill volume is between a minimum of 46629.4 and maximum of 46629.4 gallons
189. "EV-105/EV-107 NPS 4
     1. Total Cumulative Length (m): 27.67
     2. Likelihood of failure distributed between minimum of 1.891e-03 and maximum of 1.372e-02.
        1. Land use distributed as
           1. Agricultural: 5.68
           2. Forested: 0.17
           3. Remote: 0.08
           4. Water Course: 21.74
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1983-01-01 and maximum of 1983-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.888e-01 and maximum of 3.297e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $8.08 and maximum of $15.24MM
     4. Total length driven by Environmental: 27.67 meters.
     5. Environmental Cost distributed between minimum of $7.79 and maximum of $14.92MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.37MM
        2. Leak spill volume between a minimum of 1991.21 and maximum of 2054.19 gallons
        3. Rupture cost between minimum of $27.65 and maximum of $47.75MM
        4. Rupture spill volume is between a minimum of 260141.49 and maximum of 268369.14 gallons
        5. Puncture cost between minimum of $6.96 and maximum of $12.01MM
        6. Puncture spill volume is between a minimum of 65426.65 and maximum of 67495.94 gallons
190. "NPS12 Rimbey to Medicine River Jct From 13-23-42-2-W5 To 9-27-39-3-W5
     1. Total Cumulative Length (m): 26.54
     2. Likelihood of failure distributed between minimum of 1.599e-03 and maximum of 1.640e-03.
        1. Land use distributed as
           1. Agricultural: 26.54
        2. Depth of cover distributed as
           1. >= 0.91 to < 1.22m: 26.54
        3. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
        4. Outside diameter of 12.75 in.
        5. Grade between minimum of 317.0 and maximum of 317.0 MPa
        6. Wall thickness between minimum of 5.6 and maximum of 5.7 mm
        7. Toughness between minimum of 17.6 and maximum of 17.6 J
        8. Probability of failure given a hit between minimum of 1.200e-01 and maximum of 1.231e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.55 and maximum of $11.86MM
     4. Total length driven by Environmental: 26.54 meters.
     5. Environmental Cost distributed between minimum of $9.65 and maximum of $10.95MM:
        1. Leak cost between minimum of $9.67 and maximum of $10.88MM
        2. Leak spill volume between a minimum of 54329.6 and maximum of 61151.03 gallons
        3. Rupture cost between minimum of $9.59 and maximum of $12.20MM
        4. Rupture spill volume is between a minimum of 53890.46 and maximum of 68568.37 gallons
        5. Puncture cost between minimum of $9.67 and maximum of $10.88MM
        6. Puncture spill volume is between a minimum of 54329.6 and maximum of 61151.03 gallons
191. "CACTUS LAKE TO KERROBERT NPS 10
     1. Total Cumulative Length (m): 20.0
     2. Likelihood of failure distributed between minimum of 1.403e-03 and maximum of 5.829e-03.
        1. Land use distributed as
           1. Agricultural: 1.85
           2. Remote: 0.10
           3. Water Course: 18.05
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        4. Outside diameter of 10.75 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 5.16 and maximum of 5.16 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.400e-01 and maximum of 1.400e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.04 and maximum of $13.43MM
     4. Total length driven by Environmental: 20.0 meters.
     5. Environmental Cost distributed between minimum of $9.77 and maximum of $13.13MM:
        1. Leak cost between minimum of $0.34 and maximum of $0.46MM
        2. Leak spill volume between a minimum of 1898.72 and maximum of 2561.62 gallons
        3. Rupture cost between minimum of $3.27 and maximum of $10.29MM
        4. Rupture spill volume is between a minimum of 18384.28 and maximum of 57813.76 gallons
        5. Puncture cost between minimum of $11.10 and maximum of $14.97MM
        6. Puncture spill volume is between a minimum of 62387.54 and maximum of 84168.99 gallons
192. "SS-67 NPS 4
     1. Total Cumulative Length (m): 18.24
     2. Likelihood of failure distributed between minimum of 1.721e-03 and maximum of 7.151e-03.
        1. Land use distributed as
           1. Agricultural: 1.50
           2. Water Course: 16.74
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 5.16 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.718e-01 and maximum of 1.891e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $11.99 and maximum of $14.33MM
     4. Total length driven by Environmental: 18.24 meters.
     5. Environmental Cost distributed between minimum of $11.69 and maximum of $14.01MM:
        1. Leak cost between minimum of $0.33 and maximum of $0.34MM
        2. Leak spill volume between a minimum of 1856.98 and maximum of 1898.11 gallons
        3. Rupture cost between minimum of $43.16 and maximum of $44.12MM
        4. Rupture spill volume is between a minimum of 242604.43 and maximum of 247977.91 gallons
        5. Puncture cost between minimum of $10.86 and maximum of $11.10MM
        6. Puncture spill volume is between a minimum of 61016.01 and maximum of 62367.46 gallons
193. "PETROFUND LATERAL NPS 4
     1. Total Cumulative Length (m): 14.05
     2. Likelihood of failure distributed between minimum of 2.397e-03 and maximum of 1.341e-02.
        1. Land use distributed as
           1. Agricultural: 5.96
           2. Water Course: 8.09
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 317.0 and maximum of 317.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.392e-01 and maximum of 3.221e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $6.97 and maximum of $11.41MM
     4. Total length driven by Environmental: 14.05 meters.
     5. Environmental Cost distributed between minimum of $6.67 and maximum of $11.13MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.30MM
        2. Leak spill volume between a minimum of 1702.94 and maximum of 1709.32 gallons
        3. Rupture cost between minimum of $23.67 and maximum of $39.58MM
        4. Rupture spill volume is between a minimum of 222480.21 and maximum of 223314.51 gallons
        5. Puncture cost between minimum of $5.95 and maximum of $9.96MM
        6. Puncture spill volume is between a minimum of 55954.69 and maximum of 56164.52 gallons
194. "10-34-033-22W3 TO 10-34-033-22W3 NPS 6
     1. Total Cumulative Length (m): 13.01
     2. Likelihood of failure distributed between minimum of 1.223e-02 and maximum of 1.223e-02.
        1. Land use distributed as
           1. Agricultural: 13.01
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2018-01-01 and maximum of 2018-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 2.938e-01 and maximum of 2.938e-01
        9. Class area location is/are nan.
     3. Consequence of failure distributed between minimum of $9.46 and maximum of $9.46MM
     4. Total length driven by Environmental: 13.01 meters.
     5. Environmental Cost distributed between minimum of $9.13 and maximum of $9.13MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1976.71 and maximum of 1976.71 gallons
        3. Rupture cost between minimum of $59.33 and maximum of $59.33MM
        4. Rupture spill volume is between a minimum of 559734.6 and maximum of 559734.6 gallons
        5. Puncture cost between minimum of $6.88 and maximum of $6.88MM
        6. Puncture spill volume is between a minimum of 64950.2 and maximum of 64950.2 gallons
195. "COED BV 203 TO EST NPS 8
     1. Total Cumulative Length (m): 11.93
     2. Likelihood of failure distributed between minimum of 1.081e-03 and maximum of 2.214e-03.
        1. Land use distributed as
           1. Commercial/Industrial: 11.11
           2. Water Course: 0.81
        2. Depth of cover distributed as
           1. >= 0.30 to < 0.37m: 4.60, >= 0.37 to < 0.43m: 2.02, >= 0.55 to < 0.61m: 1.03, >= 0.61 to < 0.67m: 1.16, >= 0.67 to < 0.76m: 2.30, >= 0.76 to < 0.91m: 0.81
        3. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.076e-01 and maximum of 2.076e-01
        9. Class area location is/are 2.0.
     3. Consequence of failure distributed between minimum of $15.00 and maximum of $158.67MM
     4. Total length driven by Safety: 11.93 meters.
     5. Safety Cost distributed between minimum of $9.28 and maximum of $149.98MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $513.60MM
        5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 53.5 of population impacted
        6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 46.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
        10. Product type is Condensate.
        11. Class area location is/are 2.0.
196. "NIPISI 14-02 TO 11-02 NPS24
     1. Total Cumulative Length (m): 10.56
     2. Likelihood of failure distributed between minimum of 1.345e-02 and maximum of 2.037e-02.
        1. Land use distributed as
           1. Agricultural: 10.56
        2. Depth of cover distributed as
           1. < 0.24m: 3.06, >= 0.24 to < 0.30m: 5.64, >= 0.30 to < 0.37m: 0.97, >= 0.49 to < 0.55m: 0.89
        3. Installation date between minimum of 1996-08-01 and maximum of 1996-08-01
        4. Outside diameter of 24.0 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.224e-01 and maximum of 1.224e-01
        9. Class area location is/are nan.
     3. Consequence of failure distributed between minimum of $3.01 and maximum of $3.43MM
     4. Total length driven by Economic Loss: 10.56 meters.
     5. Economic Loss Cost distributed between minimum of $2.47 and maximum of $2.48MM:
        1. Repair costs between minimum of $73,000.00 and maximum of $73,000.00.
        2. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $2.50 and maximum of $2.50MM
        5. Leak scenario yielded 23.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $902.81 and maximum of $905.85
        7. Rupture cost between minimum of $5.93 and maximum of $5.94MM
        8. Rupture scenario yielded 2.0 intersections with structures, with minimum of $100,000.00 and maximum of $100,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $3,354,945.27 and maximum of $3,366,266.89
        10. Puncture cost between minimum of $2.53 and maximum of $2.53MM
        11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Product Loss costs between minimum of $29,664.23 and maximum of $29,764.33"
197. "SS-01A NPS 8
     1. Total Cumulative Length (m): 8.08
     2. Likelihood of failure distributed between minimum of 1.049e-02 and maximum of 1.590e-02.
        1. Land use distributed as
           1. Agricultural: 8.08
        2. Depth of cover distributed as
           1. < 0.24m: 0.79, >= 0.37 to < 0.43m: 2.71, >= 0.43 to < 0.49m: 2.50, >= 0.49 to < 0.55m: 2.07
        3. Installation date between minimum of 2000-01-01 and maximum of 2000-01-01
        4. Outside diameter of 8.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 9.549e-02 and maximum of 9.549e-02
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $4.43 and maximum of $4.93MM
     4. Total length driven by Environmental: 8.08 meters.
     5. Environmental Cost distributed between minimum of $4.15 and maximum of $4.64MM:
        1. Leak cost between minimum of $0.15 and maximum of $0.15MM
        2. Leak spill volume between a minimum of 1382.65 and maximum of 1382.65 gallons
        3. Rupture cost between minimum of $70.33 and maximum of $70.33MM
        4. Rupture spill volume is between a minimum of 663589.15 and maximum of 663589.15 gallons
        5. Puncture cost between minimum of $4.82 and maximum of $4.82MM
        6. Puncture spill volume is between a minimum of 45430.88 and maximum of 45430.88 gallons
198. "NPS4 RL-139 from 16-32-110-5W6 to 13-3-111-5W6
     1. Total Cumulative Length (m): 7.61
     2. Likelihood of failure distributed between minimum of 2.484e-03 and maximum of 2.484e-03.
        1. Land use distributed as
           1. Water Course: 7.61
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2004-01-01 and maximum of 2004-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.480e-01 and maximum of 2.480e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $12.32 and maximum of $12.45MM
     4. Total length driven by Environmental: 7.61 meters.
     5. Environmental Cost distributed between minimum of $12.02 and maximum of $12.14MM:
        1. Leak cost between minimum of $0.34 and maximum of $0.34MM
        2. Leak spill volume between a minimum of 1890.21 and maximum of 1909.31 gallons
        3. Rupture cost between minimum of $43.94 and maximum of $44.38MM
        4. Rupture spill volume is between a minimum of 246945.7 and maximum of 249441.39 gallons
        5. Puncture cost between minimum of $11.05 and maximum of $11.16MM
        6. Puncture spill volume is between a minimum of 62107.86 and maximum of 62735.53 gallons
199. "ELLERSLIE TO STRATHCONA NPS 12
     1. Total Cumulative Length (m): 7.19
     2. Likelihood of failure distributed between minimum of 1.408e-03 and maximum of 1.409e-03.
        1. Land use distributed as
           1. Water Course: 7.19
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1960-01-01 and maximum of 1960-01-01
        4. Outside diameter of 12.75 in.
        5. Grade between minimum of 317.0 and maximum of 317.0 MPa
        6. Wall thickness between minimum of 5.16 and maximum of 5.16 mm
        7. Toughness between minimum of 17.6 and maximum of 17.6 J
        8. Probability of failure given a hit between minimum of 1.405e-01 and maximum of 1.406e-01
        9. Class area location is/are 1.0, 2.0.
     3. Consequence of failure distributed between minimum of $10.60 and maximum of $12.02MM
     4. Total length driven by Environmental: 7.19 meters.
     5. Environmental Cost distributed between minimum of $9.56 and maximum of $10.13MM:
        1. Leak cost between minimum of $0.31 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1743.18 and maximum of 1826.76 gallons
        3. Rupture cost between minimum of $7.76 and maximum of $12.14MM
        4. Rupture spill volume is between a minimum of 43610.87 and maximum of 68217.54 gallons
        5. Puncture cost between minimum of $10.19 and maximum of $10.68MM
        6. Puncture spill volume is between a minimum of 57277.08 and maximum of 60023.18 gallons
200. "DIAMOND VALLEY 06-20 TO 14-20 NPS 6
     1. Total Cumulative Length (m): 6.0
     2. Likelihood of failure distributed between minimum of 1.543e-03 and maximum of 1.543e-03.
        1. Land use distributed as
           1. Water Course: 6.00
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.541e-01 and maximum of 1.541e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $14.11 and maximum of $14.34MM
     4. Total length driven by Environmental: 6.0 meters.
     5. Environmental Cost distributed between minimum of $13.79 and maximum of $14.01MM:
        1. Leak cost between minimum of $0.32 and maximum of $0.32MM
        2. Leak spill volume between a minimum of 1790.39 and maximum of 1790.39 gallons
        3. Rupture cost between minimum of $90.20 and maximum of $90.20MM
        4. Rupture spill volume is between a minimum of 506975.23 and maximum of 506975.23 gallons
        5. Puncture cost between minimum of $10.47 and maximum of $10.47MM
        6. Puncture spill volume is between a minimum of 58828.14 and maximum of 58828.14 gallons
201. "NPS20 ENBRIDGE CONDENSATE TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
     1. Total Cumulative Length (m): 6.0
     2. Likelihood of failure distributed between minimum of 9.999e-04 and maximum of 2.381e-03.
        1. Land use distributed as
           1. Remote: 6.00
        2. Depth of cover distributed as
           1. < 0.24m: 1.53, >= 0.30 to < 0.37m: 0.66, >= 0.43 to < 0.49m: 0.35, >= 0.49 to < 0.55m: 1.62, >= 0.55 to < 0.61m: 0.47, >= 0.61 to < 0.67m: 0.67, >= 0.67 to < 0.76m: 0.71
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 20.0 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 5.941e-02 and maximum of 5.941e-02
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.03 and maximum of $11.91MM
     4. Total length driven by Environmental: 6.0 meters.
     5. Environmental Cost distributed between minimum of $7.00 and maximum of $8.40MM:
        1. Leak cost between minimum of $0.06 and maximum of $0.06MM
        2. Leak spill volume between a minimum of 529.42 and maximum of 541.3 gallons
        3. Rupture cost between minimum of $144.81 and maximum of $148.06MM
        4. Rupture spill volume is between a minimum of 1366242.13 and maximum of 1396891.33 gallons
        5. Puncture cost between minimum of $1.84 and maximum of $1.89MM
        6. Puncture spill volume is between a minimum of 17395.54 and maximum of 17785.77 gallons
202. "NPS20 ENBRIDGE BLEND TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
     1. Total Cumulative Length (m): 4.79
     2. Likelihood of failure distributed between minimum of 1.108e-02 and maximum of 1.518e-02.
        1. Land use distributed as
           1. Agricultural: 4.79
        2. Depth of cover distributed as
           1. < 0.24m: 3.73, >= 0.43 to < 0.49m: 1.06
        3. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        4. Outside diameter of 20.0 in.
        5. Grade between minimum of 241.0 and maximum of 241.0 MPa
        6. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 9.115e-02 and maximum of 9.115e-02
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $6.73 and maximum of $6.94MM
     4. Total length driven by Environmental: 4.79 meters.
     5. Environmental Cost distributed between minimum of $5.80 and maximum of $6.00MM:
        1. Leak cost between minimum of $0.05 and maximum of $0.05MM
        2. Leak spill volume between a minimum of 510.83 and maximum of 510.83 gallons
        3. Rupture cost between minimum of $139.73 and maximum of $139.73MM
        4. Rupture spill volume is between a minimum of 1318272.77 and maximum of 1318272.77 gallons
        5. Puncture cost between minimum of $1.78 and maximum of $1.78MM
        6. Puncture spill volume is between a minimum of 16784.77 and maximum of 16784.77 gallons
203. "NPS4 Westerose - Lact From 04-03-046-28 W4M To 02-06-46-27W4M
     1. Total Cumulative Length (m): 4.68
     2. Likelihood of failure distributed between minimum of 2.272e-03 and maximum of 9.441e-03.
        1. Land use distributed as
           1. Agricultural: 0.10
           2. Water Course: 4.58
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2011-10-01 and maximum of 2011-10-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.268e-01 and maximum of 2.268e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $11.64 and maximum of $12.05MM
     4. Total length driven by Environmental: 4.68 meters.
     5. Environmental Cost distributed between minimum of $11.33 and maximum of $11.77MM:
        1. Leak cost between minimum of $0.32 and maximum of $0.32MM
        2. Leak spill volume between a minimum of 1788.53 and maximum of 1800.88 gallons
        3. Rupture cost between minimum of $41.57 and maximum of $41.86MM
        4. Rupture spill volume is between a minimum of 233662.84 and maximum of 235275.72 gallons
        5. Puncture cost between minimum of $10.46 and maximum of $10.53MM
        6. Puncture spill volume is between a minimum of 58767.16 and maximum of 59172.81 gallons
204. "NPS4 SS-12 From 15-15-16-17-W3 To 15-15-16-17W3
     1. Total Cumulative Length (m): 4.65
     2. Likelihood of failure distributed between minimum of 1.613e-02 and maximum of 3.103e-02.
        1. Land use distributed as
           1. Agricultural: 4.65
        2. Depth of cover distributed as
           1. < 0.24m: 4.48, >= 0.61 to < 0.67m: 0.17
        3. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.863e-01 and maximum of 1.863e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $3.91 and maximum of $4.72MM
     4. Total length driven by Environmental: 4.65 meters.
     5. Environmental Cost distributed between minimum of $3.64 and maximum of $4.44MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1854.46 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.68MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242275.67 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 60933.33 gallons
205. "SS-66 NPS 4
     1. Total Cumulative Length (m): 3.96
     2. Likelihood of failure distributed between minimum of 1.011e-02 and maximum of 1.011e-02.
        1. Land use distributed as
           1. Agricultural: 3.96
        2. Depth of cover distributed as
           1. >= 0.76 to < 0.91m: 3.96
        3. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 317.0 and maximum of 317.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.428e-01 and maximum of 2.428e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $1.29 and maximum of $2.62MM
     4. Total length driven by Environmental: 3.96 meters.
     5. Environmental Cost distributed between minimum of $1.07 and maximum of $2.36MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1855.27 and maximum of 1856.63 gallons
        3. Rupture cost between minimum of $25.69 and maximum of $25.71MM
        4. Rupture spill volume is between a minimum of 242381.76 and maximum of 242559.62 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.47MM
        6. Puncture spill volume is between a minimum of 60960.01 and maximum of 61004.74 gallons
206. "SS-73 NPS 4
     1. Total Cumulative Length (m): 3.14
     2. Likelihood of failure distributed between minimum of 1.793e-03 and maximum of 1.793e-03.
        1. Land use distributed as
           1. Remote: 0.59
           2. Water Course: 2.54
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2011-11-29 and maximum of 2011-11-29
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.790e-01 and maximum of 1.790e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $12.19 and maximum of $16.31MM
     4. Total length driven by Environmental: 3.14 meters.
     5. Environmental Cost distributed between minimum of $11.88 and maximum of $16.00MM:
        1. Leak cost between minimum of $0.34 and maximum of $0.35MM
        2. Leak spill volume between a minimum of 1892.07 and maximum of 1946.44 gallons
        3. Rupture cost between minimum of $43.98 and maximum of $45.24MM
        4. Rupture spill volume is between a minimum of 247189.36 and maximum of 254292.01 gallons
        5. Puncture cost between minimum of $11.06 and maximum of $11.38MM
        6. Puncture spill volume is between a minimum of 62169.14 and maximum of 63955.48 gallons
207. "SS-27 NPS 4
     1. Total Cumulative Length (m): 2.81
     2. Likelihood of failure distributed between minimum of 3.093e-02 and maximum of 3.093e-02.
        1. Land use distributed as
           1. Agricultural: 2.81
        2. Depth of cover distributed as
           1. < 0.24m: 2.81
        3. Installation date between minimum of 1956-01-01 and maximum of 1956-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.857e-01 and maximum of 1.857e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $2.23 and maximum of $2.23MM
     4. Total length driven by Environmental: 2.81 meters.
     5. Environmental Cost distributed between minimum of $2.00 and maximum of $2.00MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1861.88 and maximum of 1861.88 gallons
        3. Rupture cost between minimum of $25.78 and maximum of $25.78MM
        4. Rupture spill volume is between a minimum of 243245.68 and maximum of 243245.68 gallons
        5. Puncture cost between minimum of $6.48 and maximum of $6.48MM
        6. Puncture spill volume is between a minimum of 61177.29 and maximum of 61177.29 gallons
208. "Windsor to Detroit NPS12
     1. Total Cumulative Length (m): 2.63
     2. Likelihood of failure distributed between minimum of 1.010e-03 and maximum of 1.010e-03.
        1. Land use distributed as
           1. Water Course: 2.63
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1974-01-01 and maximum of 1974-01-01
        4. Outside diameter of 12.75 in.
        5. Grade between minimum of 414.0 and maximum of 414.0 MPa
        6. Wall thickness between minimum of 7.11 and maximum of 7.11 mm
        7. Toughness between minimum of 10.0 and maximum of 10.0 J
        8. Probability of failure given a hit between minimum of 1.008e-01 and maximum of 1.008e-01
        9. Class area location is/are 2.0.
     3. Consequence of failure distributed between minimum of $235.86 and maximum of $235.86MM
     4. Total length driven by Safety: 2.63 meters.
     5. Safety Cost distributed between minimum of $210.41 and maximum of $210.41MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 9.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 11.61 and maximum of 11.61 meters.
        4. Rupture cost between minimum of $290.53 and maximum of $290.53MM
        5. Rupture scenario yielded 8.0 intersections with structures, with minimum of 30.26 and maximum of 30.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 199.6 and maximum of 199.6 meters.
        7. Puncture cost between minimum of $242.11 and maximum of $242.11MM
        8. Puncture scenario yielded 23.0 intersections with structures, with minimum of 25.22 and maximum of 25.22 of population impacted
        9. Puncture hazard radius distributed between minimum of 54.47 and maximum of 54.47 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 2.0.
209. "SS-71 NPS 4
     1. Total Cumulative Length (m): 2.59
     2. Likelihood of failure distributed between minimum of 3.124e-02 and maximum of 3.545e-02.
        1. Land use distributed as
           1. Agricultural: 2.59
        2. Depth of cover distributed as
           1. >= 0.55 to < 0.61m: 0.84, >= 0.61 to < 0.67m: 1.74
        3. Installation date between minimum of 2004-01-01 and maximum of 2004-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 241.3 and maximum of 241.3 MPa
        6. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.608e-01 and maximum of 3.608e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $8.81 and maximum of $8.82MM
     4. Total length driven by Environmental: 2.59 meters.
     5. Environmental Cost distributed between minimum of $8.48 and maximum of $8.52MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1854.6 and maximum of 1855.3 gallons
        3. Rupture cost between minimum of $25.68 and maximum of $25.69MM
        4. Rupture spill volume is between a minimum of 242294.5 and maximum of 242385.09 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
        6. Puncture spill volume is between a minimum of 60938.06 and maximum of 60960.85 gallons
210. "SS-28 NPS 4
     1. Total Cumulative Length (m): 2.55
     2. Likelihood of failure distributed between minimum of 1.297e-02 and maximum of 1.297e-02.
        1. Land use distributed as
           1. Agricultural: 2.55
        2. Depth of cover distributed as
           1. >= 0.67 to < 0.76m: 2.55
        3. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.854e-01 and maximum of 1.854e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $1.65 and maximum of $3.37MM
     4. Total length driven by Environmental: 2.55 meters.
     5. Environmental Cost distributed between minimum of $1.43 and maximum of $3.11MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1857.2 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.72MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242633.59 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.47MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61023.34 gallons
211. "NPS4 NI-128 From 12-28-80-9-W5 To 14-11-81-9-W5
     1. Total Cumulative Length (m): 2.12
     2. Likelihood of failure distributed between minimum of 1.800e-03 and maximum of 1.800e-03.
        1. Land use distributed as
           1. Remote: 0.10
           2. Water Course: 2.02
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1990-01-01 and maximum of 1990-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.797e-01 and maximum of 1.797e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.42 and maximum of $10.44MM
     4. Total length driven by Environmental: 2.12 meters.
     5. Environmental Cost distributed between minimum of $10.14 and maximum of $10.14MM:
        1. Leak cost between minimum of $0.29 and maximum of $0.29MM
        2. Leak spill volume between a minimum of 1614.52 and maximum of 1614.52 gallons
        3. Rupture cost between minimum of $37.53 and maximum of $37.53MM
        4. Rupture spill volume is between a minimum of 210928.18 and maximum of 210928.18 gallons
        5. Puncture cost between minimum of $9.44 and maximum of $9.44MM
        6. Puncture spill volume is between a minimum of 53049.3 and maximum of 53049.3 gallons
212. "SS-72 NPS 6
     1. Total Cumulative Length (m): 1.94
     2. Likelihood of failure distributed between minimum of 2.140e-03 and maximum of 8.894e-03.
        1. Land use distributed as
           1. Agricultural: 0.97
           2. Water Course: 0.97
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.136e-01 and maximum of 2.136e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $14.76 and maximum of $14.82MM
     4. Total length driven by Environmental: 1.94 meters.
     5. Environmental Cost distributed between minimum of $14.43 and maximum of $14.51MM:
        1. Leak cost between minimum of $0.33 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1873.87 and maximum of 1873.87 gallons
        3. Rupture cost between minimum of $94.40 and maximum of $94.40MM
        4. Rupture spill volume is between a minimum of 530612.76 and maximum of 530612.76 gallons
        5. Puncture cost between minimum of $10.95 and maximum of $10.95MM
        6. Puncture spill volume is between a minimum of 61570.98 and maximum of 61570.98 gallons
213. "Sarnia 6 inch tied into 6 inch E/P line
     1. Total Cumulative Length (m): 1.63
     2. Likelihood of failure distributed between minimum of 1.659e-03 and maximum of 1.659e-03.
        1. Land use distributed as
           1. Water Course: 1.63
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        4. Outside diameter of 6.625 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.656e-01 and maximum of 1.656e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $12.62 and maximum of $12.62MM
     4. Total length driven by Safety: 1.63 meters.
     5. Safety Cost distributed between minimum of $11.97 and maximum of $11.97MM:
        1. Leak cost between minimum of $12.11 and maximum of $12.11MM
        2. Leak scenario yielded 40.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
        4. Rupture cost between minimum of $12.11 and maximum of $12.11MM
        5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
        7. Puncture cost between minimum of $12.11 and maximum of $12.11MM
        8. Puncture scenario yielded 47.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
214. "NPS4 Homeglen From 3-32-43-1W5 To 14-29-43-1W5
     1. Total Cumulative Length (m): 1.38
     2. Likelihood of failure distributed between minimum of 2.277e-03 and maximum of 2.277e-03.
        1. Land use distributed as
           1. Water Course: 1.38
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 2013-03-12 and maximum of 2013-03-12
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 359.0 and maximum of 359.0 MPa
        6. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 2.273e-01 and maximum of 2.273e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $11.00 and maximum of $11.05MM
     4. Total length driven by Environmental: 1.38 meters.
     5. Environmental Cost distributed between minimum of $10.70 and maximum of $10.76MM:
        1. Leak cost between minimum of $0.30 and maximum of $0.30MM
        2. Leak spill volume between a minimum of 1687.97 and maximum of 1687.97 gallons
        3. Rupture cost between minimum of $39.23 and maximum of $39.23MM
        4. Rupture spill volume is between a minimum of 220524.24 and maximum of 220524.24 gallons
        5. Puncture cost between minimum of $9.87 and maximum of $9.87MM
        6. Puncture spill volume is between a minimum of 55462.75 and maximum of 55462.75 gallons
215. "MEDICINE RIVER LATERAL 10-14 TO 09-27 NPS4
     1. Total Cumulative Length (m): 1.14
     2. Likelihood of failure distributed between minimum of 1.061e-03 and maximum of 1.061e-03.
        1. Land use distributed as
           1. Water Course: 1.14
        2. Depth of cover distributed as
           1. >= 0.91 to < 1.22m: 1.14
        3. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 3.17 and maximum of 3.17 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.309e-01 and maximum of 3.309e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $11.87 and maximum of $11.87MM
     4. Total length driven by Environmental: 1.14 meters.
     5. Environmental Cost distributed between minimum of $11.57 and maximum of $11.57MM:
        1. Leak cost between minimum of $0.34 and maximum of $0.34MM
        2. Leak spill volume between a minimum of 1899.13 and maximum of 1899.13 gallons
        3. Rupture cost between minimum of $44.14 and maximum of $44.14MM
        4. Rupture spill volume is between a minimum of 248112.2 and maximum of 248112.2 gallons
        5. Puncture cost between minimum of $11.10 and maximum of $11.10MM
        6. Puncture spill volume is between a minimum of 62401.24 and maximum of 62401.24 gallons
216. "NPS4 NI-124 From 4-8-79-8W5 To 10-13-79-8W5
     1. Total Cumulative Length (m): 1.0
     2. Likelihood of failure distributed between minimum of 1.887e-03 and maximum of 1.887e-03.
        1. Land use distributed as
           1. Water Course: 1.00
        2. Depth of cover distributed as
           1. nan
        3. Installation date between minimum of 1988-01-01 and maximum of 1988-01-01
        4. Outside diameter of 4.5 in.
        5. Grade between minimum of 290.0 and maximum of 290.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 1.883e-01 and maximum of 1.883e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $12.55 and maximum of $12.55MM
     4. Total length driven by Environmental: 1.0 meters.
     5. Environmental Cost distributed between minimum of $12.25 and maximum of $12.25MM:
        1. Leak cost between minimum of $0.35 and maximum of $0.35MM
        2. Leak spill volume between a minimum of 1945.94 and maximum of 1945.94 gallons
        3. Rupture cost between minimum of $45.23 and maximum of $45.23MM
        4. Rupture spill volume is between a minimum of 254227.7 and maximum of 254227.7 gallons
        5. Puncture cost between minimum of $11.38 and maximum of $11.38MM
        6. Puncture spill volume is between a minimum of 63939.31 and maximum of 63939.31 gallons
217. "BV 204 TO EST NPS 12
     1. Total Cumulative Length (m): 0.8
     2. Likelihood of failure distributed between minimum of 1.261e-03 and maximum of 1.261e-03.
        1. Land use distributed as
           1. Water Course: 0.80
        2. Depth of cover distributed as
           1. >= 0.76 to < 0.91m: 0.80
        3. Installation date between minimum of 1976-01-01 and maximum of 1976-01-01
        4. Outside diameter of 12.75 in.
        5. Grade between minimum of 317.0 and maximum of 317.0 MPa
        6. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        7. Toughness between minimum of 20.0 and maximum of 20.0 J
        8. Probability of failure given a hit between minimum of 1.259e-01 and maximum of 1.259e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $126.92 and maximum of $126.92MM
     4. Total length driven by Safety: 0.8 meters.
     5. Safety Cost distributed between minimum of $121.06 and maximum of $121.06MM:
        1. Leak cost between minimum of $121.06 and maximum of $121.06MM
        2. Leak scenario yielded 55.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 9.03 and maximum of 9.03 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $121.06MM
        5. Rupture scenario yielded 11.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 150.44 and maximum of 150.44 meters.
        7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
        8. Puncture scenario yielded 57.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 28.91 and maximum of 28.91 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0.
218. "MEDICINE RIVER 14-33 TO 04-18 NPS 3
     1. Total Cumulative Length (m): 0.38
     2. Likelihood of failure distributed between minimum of 1.101e-03 and maximum of 1.101e-03.
        1. Land use distributed as
           1. Water Course: 0.38
        2. Depth of cover distributed as
           1. >= 0.91 to < 1.22m: 0.38
        3. Installation date between minimum of 2005-01-01 and maximum of 2005-01-01
        4. Outside diameter of 3.5 in.
        5. Grade between minimum of 241.0 and maximum of 241.0 MPa
        6. Wall thickness between minimum of 3.4 and maximum of 3.4 mm
        7. Toughness between minimum of nan and maximum of nan J
        8. Probability of failure given a hit between minimum of 3.433e-01 and maximum of 3.433e-01
        9. Class area location is/are 1.0.
     3. Consequence of failure distributed between minimum of $10.62 and maximum of $10.62MM
     4. Total length driven by Environmental: 0.38 meters.
     5. Environmental Cost distributed between minimum of $10.33 and maximum of $10.33MM:
        1. Leak cost between minimum of $0.33 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1853.91 gallons
        3. Rupture cost between minimum of $26.07 and maximum of $26.07MM
        4. Rupture spill volume is between a minimum of 146518.41 and maximum of 146518.41 gallons
        5. Puncture cost between minimum of $10.84 and maximum of $10.84MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 60915.28 gallons
     6. Manufacturing Defects Reportable Pipeline Segments
        1. MD Method 1
219. "SECT 7 MANSON TO RAPID CITY NPS 6
     1. Total Cumulative Length (m): 106821.69
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1963-07-01 and maximum of 1963-07-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 71.83 and maximum of 71.83% SMYS
     3. Consequence of failure distributed between minimum of $3.17 and maximum of $127.06MM
     4. Total length driven by Safety: 785.6 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 17.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
        5. Rupture scenario yielded 55.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 39.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 106036.1 meters.
     7. Economic Loss Cost distributed between minimum of $3.17 and maximum of $6.00MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.27 and maximum of $2.96MM
        5. Leak scenario yielded 17.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
        7. Rupture cost between minimum of $17.84 and maximum of $20.55MM
        8. Rupture scenario yielded 55.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
        10. Puncture cost between minimum of $2.26 and maximum of $4.95MM
        11. Puncture scenario yielded 39.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
        12. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
220. "SECT 1 EMPRESS TO CABRI NPS 6
     1. Total Cumulative Length (m): 93694.11
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1963-01-01 and maximum of 1963-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 48.74 and maximum of 59.7% SMYS
     3. Consequence of failure distributed between minimum of $3.18 and maximum of $144.59MM
     4. Total length driven by Safety: 2225.61 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 18.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
        5. Rupture scenario yielded 45.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 41.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 91468.5 meters.
     7. Economic Loss Cost distributed between minimum of $3.18 and maximum of $23.54MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.27 and maximum of $20.62MM
        5. Leak scenario yielded 18.0 intersections with structures, with minimum of $25,000.00 and maximum of $20,349,375.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
        7. Rupture cost between minimum of $17.84 and maximum of $38.21MM
        8. Rupture scenario yielded 45.0 intersections with structures, with minimum of $25,000.00 and maximum of $20,374,375.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
        10. Puncture cost between minimum of $2.26 and maximum of $22.63MM
        11. Puncture scenario yielded 41.0 intersections with structures, with minimum of $25,000.00 and maximum of $20,374,375.00 in cost of structures impacted
        12. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
221. "MADDEN 13-30 TO SUNDRE 16-8 NPS 8
     1. Total Cumulative Length (m): 61506.43
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1956-01-01 and maximum of 2017-09-19
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 40.11 and maximum of 68.71% SMYS
     3. Consequence of failure distributed between minimum of $0.52 and maximum of $348.89MM
     4. Total length driven by Safety: 1000.92 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $345.43MM:
        1. Leak cost between minimum of $0.00 and maximum of $345.43MM
        2. Leak scenario yielded 53.0 intersections with structures, with minimum of 0.0 and maximum of 35.98 of population impacted.
        3. Leak hazard radius distributed between minimum of 3.7 and maximum of 3.7 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $345.43MM
        5. Rupture scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 35.98 of population impacted
        6. Rupture hazard radius distributed between minimum of 50.04 and maximum of 50.04 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $345.43MM
        8. Puncture scenario yielded 70.0 intersections with structures, with minimum of 0.0 and maximum of 35.98 of population impacted
        9. Puncture hazard radius distributed between minimum of 14.77 and maximum of 14.77 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 60505.51 meters.
     7. Environmental Cost distributed between minimum of $0.30 and maximum of $3.24MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1464.91 and maximum of 1831.89 gallons
        3. Rupture cost between minimum of $0.37 and maximum of $13.52MM
        4. Rupture spill volume is between a minimum of 3484.36 and maximum of 86523.49 gallons
        5. Puncture cost between minimum of $5.10 and maximum of $10.70MM
        6. Puncture spill volume is between a minimum of 48133.5 and maximum of 60191.76 gallons
        7. Land use distributed as
           1. Agricultural: 58,895.59
           2. Forested: 1,099.91
           3. Water Course: 1,510.93
222. "BUCK CREEK FRAC PLANT TO BRETON NPS 6
     1. Total Cumulative Length (m): 30302.96
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1958-01-01 and maximum of 1958-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 42.22 and maximum of 42.22% SMYS
     3. Consequence of failure distributed between minimum of $1.66 and maximum of $125.41MM
     4. Total length driven by Safety: 1981.26 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 6.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 9.71 and maximum of 9.71 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
        5. Rupture scenario yielded 33.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 99.99 and maximum of 99.99 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 15.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 44.58 and maximum of 44.58 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 28321.69 meters.
     7. Economic Loss Cost distributed between minimum of $1.66 and maximum of $4.35MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.24 and maximum of $2.93MM
        5. Leak scenario yielded 6.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $30,397.21 and maximum of $30,397.21
        7. Rupture cost between minimum of $8.82 and maximum of $15.40MM
        8. Rupture scenario yielded 33.0 intersections with structures, with minimum of $18,600.00 and maximum of $6,579,225.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $8,607,418.48 and maximum of $8,607,418.48
        10. Puncture cost between minimum of $1.21 and maximum of $3.90MM
        11. Puncture scenario yielded 15.0 intersections with structures, with minimum of $18,600.00 and maximum of $2,688,250.00 in cost of structures impacted
        12. Product Loss costs between minimum of $998,783.28 and maximum of $998,783.28"
223. "BONAVISTA 10-28 TO 10-7 NPS 4
     1. Total Cumulative Length (m): 29200.75
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 30.79 and maximum of 51.5% SMYS
     3. Consequence of failure distributed between minimum of $0.71 and maximum of $23.54MM
     4. Total length driven by Safety: 85.12 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $21.89MM:
        1. Leak cost between minimum of $0.00 and maximum of $21.89MM
        2. Leak scenario yielded 5.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
        3. Leak hazard radius distributed between minimum of 3.7 and maximum of 3.79 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
        5. Rupture scenario yielded 29.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 27.68 and maximum of 28.36 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
        8. Puncture scenario yielded 27.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
        9. Puncture hazard radius distributed between minimum of 14.77 and maximum of 15.13 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 29115.63 meters.
     7. Environmental Cost distributed between minimum of $0.49 and maximum of $4.63MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1464.91 and maximum of 1852.07 gallons
        3. Rupture cost between minimum of $0.04 and maximum of $2.73MM
        4. Rupture spill volume is between a minimum of 379.55 and maximum of 15469.9 gallons
        5. Puncture cost between minimum of $5.10 and maximum of $10.80MM
        6. Puncture spill volume is between a minimum of 48133.5 and maximum of 60854.75 gallons
        7. Land use distributed as
           1. Agricultural: 28,199.35
           2. Forested: 920.77
           3. Water Course: 80.64
224. "OLDS TO HARMATTAN NPS 3
     1. Total Cumulative Length (m): 23864.29
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 40.08 and maximum of 40.08% SMYS
     3. Consequence of failure distributed between minimum of $0.63 and maximum of $4.65MM
     4. Total length driven by Safety: 127.74 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $3.27MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 7.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.09 and maximum of 11.09 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
        5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 63.72 and maximum of 63.72 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
        8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
        9. Puncture hazard radius distributed between minimum of 45.25 and maximum of 45.25 meters.
        10. Product type is Condensate.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 23736.55 meters.
     7. Environmental Cost distributed between minimum of $0.42 and maximum of $1.98MM:
        1. Leak cost between minimum of $0.17 and maximum of $0.35MM
        2. Leak spill volume between a minimum of 1644.98 and maximum of 1961.34 gallons
        3. Rupture cost between minimum of $0.21 and maximum of $1.29MM
        4. Rupture spill volume is between a minimum of 1968.37 and maximum of 8828.65 gallons
        5. Puncture cost between minimum of $5.73 and maximum of $11.47MM
        6. Puncture spill volume is between a minimum of 54050.34 and maximum of 64445.07 gallons
        7. Land use distributed as
           1. Agricultural: 22,809.60
           2. Forested: 216.28
           3. Remote: 582.76
           4. Water Course: 255.65
225. "CROOKED LAKE TO GILBY LATERAL NPS 6
     1. Total Cumulative Length (m): 20761.47
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1965-01-01 and maximum of 1965-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 30.86 and maximum of 55.4% SMYS
     3. Consequence of failure distributed between minimum of $0.53 and maximum of $4.86MM
     4. Total length driven by Safety: 84.12 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $3.51MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 3.95 and maximum of 3.95 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
        5. Rupture scenario yielded 11.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 42.02 and maximum of 42.02 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
        8. Puncture scenario yielded 2.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
        9. Puncture hazard radius distributed between minimum of 15.77 and maximum of 15.77 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 20677.35 meters.
     7. Environmental Cost distributed between minimum of $0.32 and maximum of $2.22MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.38MM
        2. Leak spill volume between a minimum of 1691.87 and maximum of 2146.46 gallons
        3. Rupture cost between minimum of $0.48 and maximum of $6.15MM
        4. Rupture spill volume is between a minimum of 4509.16 and maximum of 34560.63 gallons
        5. Puncture cost between minimum of $5.89 and maximum of $12.55MM
        6. Puncture spill volume is between a minimum of 55590.98 and maximum of 70527.72 gallons
        7. Land use distributed as
           1. Agricultural: 19,716.60
           2. Forested: 945.01
           3. Water Course: 99.85
226. "ZN-70/ZN-89/ZN-90 NPS 8
     1. Total Cumulative Length (m): 16094.08
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1968-01-01 and maximum of 1968-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 30.33 and maximum of 44.69% SMYS
     3. Consequence of failure distributed between minimum of $12.00 and maximum of $21.10MM
     4. Total length driven by Environmental: 16094.08 meters.
     5. Environmental Cost distributed between minimum of $11.67 and maximum of $20.72MM:
        1. Leak cost between minimum of $0.15 and maximum of $0.26MM
        2. Leak spill volume between a minimum of 1398.53 and maximum of 1606.02 gallons
        3. Rupture cost between minimum of $71.14 and maximum of $123.62MM
        4. Rupture spill volume is between a minimum of 671208.81 and maximum of 770790.15 gallons
        5. Puncture cost between minimum of $4.87 and maximum of $8.46MM
        6. Puncture spill volume is between a minimum of 45952.54 and maximum of 52770.12 gallons
        7. Land use distributed as
           1. Forested: 7,263.99
           2. Remote: 8,790.23
           3. Water Course: 39.86
227. "SYLVAN LAKE 01-21 TO 13-32 NPS 4
     1. Total Cumulative Length (m): 13938.58
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 41.07 and maximum of 61.77% SMYS
     3. Consequence of failure distributed between minimum of $0.37 and maximum of $4.81MM
     4. Total length driven by Safety: 85.52 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $4.27MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 13.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 19.59 and maximum of 19.59 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
        5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 85.15 and maximum of 85.15 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
        8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
        9. Puncture hazard radius distributed between minimum of 53.75 and maximum of 53.75 meters.
        10. Product type is Butane/Condensate.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 13315.37 meters.
     7. Environmental Cost distributed between minimum of $0.16 and maximum of $0.54MM:
        1. Leak cost between minimum of $0.09 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1883.71 and maximum of 2157.03 gallons
        3. Rupture cost between minimum of $0.06 and maximum of $0.74MM
        4. Rupture spill volume is between a minimum of 1251.39 and maximum of 8935.04 gallons
        5. Puncture cost between minimum of $3.05 and maximum of $5.89MM
        6. Puncture spill volume is between a minimum of 61894.42 and maximum of 70875.09 gallons
        7. Land use distributed as
           1. Agricultural: 13,434.48
           2. Forested: 308.69
           3. Remote: 110.57
           4. Water Course: 84.85
     8. Total length driven by Economic Loss: 537.69 meters.
     9. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.28MM:
        1. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Butane/Condensate.
        4. Leak cost between minimum of $0.21 and maximum of $0.24MM
        5. Leak scenario yielded 13.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $2,825.56 and maximum of $3,235.54
        7. Rupture cost between minimum of $0.21 and maximum of $0.51MM
        8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $1,877.09 and maximum of $13,402.56
        10. Puncture cost between minimum of $0.30 and maximum of $0.36MM
        11. Puncture scenario yielded 19.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        12. Product Loss costs between minimum of $92,841.62 and maximum of $106,312.63"
228. "AMERADA FERRIER 1-6 TO 10-33 JUNCTION NPS 4
     1. Total Cumulative Length (m): 12612.56
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1961-01-01 and maximum of 1961-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 36.32 and maximum of 61.87% SMYS
     3. Consequence of failure distributed between minimum of $4.63 and maximum of $142.13MM
     4. Total length driven by Safety: 1679.99 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $133.69MM:
        1. Leak cost between minimum of $0.00 and maximum of $21.89MM
        2. Leak scenario yielded 4.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.55 and maximum of 11.55 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $306.46MM
        5. Rupture scenario yielded 38.0 intersections with structures, with minimum of 0.0 and maximum of 31.92 of population impacted
        6. Rupture hazard radius distributed between minimum of 80.3 and maximum of 80.3 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $284.57MM
        8. Puncture scenario yielded 28.0 intersections with structures, with minimum of 0.0 and maximum of 29.64 of population impacted
        9. Puncture hazard radius distributed between minimum of 46.87 and maximum of 46.87 meters.
        10. Product type is LVP Products.
        11. Class area location is/are 1.0, 2.0, 3.0.
     6. Total length driven by Environmental: 10932.57 meters.
     7. Environmental Cost distributed between minimum of $4.38 and maximum of $8.87MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.37MM
        2. Leak spill volume between a minimum of 1801.03 and maximum of 2062.65 gallons
        3. Rupture cost between minimum of $24.94 and maximum of $47.89MM
        4. Rupture spill volume is between a minimum of 235295.0 and maximum of 269474.56 gallons
        5. Puncture cost between minimum of $6.27 and maximum of $12.04MM
        6. Puncture spill volume is between a minimum of 59177.66 and maximum of 67773.96 gallons
        7. Land use distributed as
           1. Agricultural: 5,876.31
           2. Forested: 6,682.16
           3. Water Course: 54.09
229. "SUNDRE TO HARTELL NPS 12
     1. Total Cumulative Length (m): 9808.45
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1966-01-01 and maximum of 1966-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 60.51 and maximum of 71.07% SMYS
     3. Consequence of failure distributed between minimum of $1.27 and maximum of $5.22MM
     4. Total length driven by Safety: 399.97 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $3.61MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 2697.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 4.11 and maximum of 4.11 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
        5. Rupture scenario yielded 293.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 79.49 and maximum of 79.49 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
        8. Puncture scenario yielded 752.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
        9. Puncture hazard radius distributed between minimum of 16.44 and maximum of 16.44 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 1649.74 meters.
     7. Environmental Cost distributed between minimum of $0.42 and maximum of $1.22MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.22MM
        2. Leak spill volume between a minimum of 1853.95 and maximum of 2050.84 gallons
        3. Rupture cost between minimum of $0.94 and maximum of $5.67MM
        4. Rupture spill volume is between a minimum of 8834.32 and maximum of 53499.14 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $7.14MM
        6. Puncture spill volume is between a minimum of 60916.68 and maximum of 67385.89 gallons
        7. Land use distributed as
           1. Agricultural: 9,808.45
     8. Total length driven by Economic Loss: 7758.74 meters.
     9. Economic Loss Cost distributed between minimum of $0.85 and maximum of $0.90MM:
        1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.85 and maximum of $0.87MM
        5. Leak scenario yielded 2697.0 intersections with structures, with minimum of $0.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $2,057.00 and maximum of $2,275.45
        7. Rupture cost between minimum of $0.85 and maximum of $1.14MM
        8. Rupture scenario yielded 293.0 intersections with structures, with minimum of $0.00 and maximum of $269,868.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $9,801.89 and maximum of $59,358.57
        10. Puncture cost between minimum of $0.91 and maximum of $0.94MM
        11. Puncture scenario yielded 752.0 intersections with structures, with minimum of $0.00 and maximum of $25,000.00 in cost of structures impacted
        12. Product Loss costs between minimum of $67,588.50 and maximum of $74,766.25"
230. "UTILITY NPS 8
     1. Total Cumulative Length (m): 7825.84
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 51.76 and maximum of 51.76% SMYS
     3. Consequence of failure distributed between minimum of $3.08 and maximum of $99.17MM
     4. Total length driven by Safety: 3432.4 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $95.33MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 10.66 and maximum of 10.66 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $568.51MM
        5. Rupture scenario yielded 40.0 intersections with structures, with minimum of 0.0 and maximum of 59.22 of population impacted
        6. Rupture hazard radius distributed between minimum of 135.26 and maximum of 135.26 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $320.46MM
        8. Puncture scenario yielded 45.0 intersections with structures, with minimum of 0.0 and maximum of 33.38 of population impacted
        9. Puncture hazard radius distributed between minimum of 49.48 and maximum of 49.48 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 4393.44 meters.
     7. Economic Loss Cost distributed between minimum of $2.97 and maximum of $4.66MM:
        1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.25 and maximum of $0.52MM
        5. Leak scenario yielded 16.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $40,141.48 and maximum of $40,141.48
        7. Rupture cost between minimum of $19.48 and maximum of $25.75MM
        8. Rupture scenario yielded 40.0 intersections with structures, with minimum of $25,000.00 and maximum of $6,266,540.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $19,265,442.30 and maximum of $19,265,442.30
        10. Puncture cost between minimum of $1.53 and maximum of $5.33MM
        11. Puncture scenario yielded 45.0 intersections with structures, with minimum of $25,000.00 and maximum of $3,792,943.00 in cost of structures impacted
        12. Product Loss costs between minimum of $1,318,957.76 and maximum of $1,318,957.76"
231. "NPS8 SARNIA CONDENSATE TO SUNCOR
     1. Total Cumulative Length (m): 7802.27
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 36.07 and maximum of 71.91% SMYS
     3. Consequence of failure distributed between minimum of $16.21 and maximum of $107.98MM
     4. Total length driven by Safety: 2199.25 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $90.93MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.8 and maximum of 11.8 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $546.62MM
        5. Rupture scenario yielded 38.0 intersections with structures, with minimum of 0.0 and maximum of 56.94 of population impacted
        6. Rupture hazard radius distributed between minimum of 135.89 and maximum of 135.89 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $221.29MM
        8. Puncture scenario yielded 49.0 intersections with structures, with minimum of 0.0 and maximum of 23.05 of population impacted
        9. Puncture hazard radius distributed between minimum of 47.76 and maximum of 47.76 meters.
        10. Product type is Condensate.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 5603.03 meters.
     7. Environmental Cost distributed between minimum of $15.82 and maximum of $29.41MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.35MM
        2. Leak spill volume between a minimum of 1889.11 and maximum of 1989.97 gallons
        3. Rupture cost between minimum of $96.10 and maximum of $169.14MM
        4. Rupture spill volume is between a minimum of 906656.27 and maximum of 955064.68 gallons
        5. Puncture cost between minimum of $6.58 and maximum of $11.58MM
        6. Puncture spill volume is between a minimum of 62071.83 and maximum of 65385.99 gallons
        7. Land use distributed as
           1. Agricultural: 1,826.34
           2. Forested: 1,528.89
           3. Utility Corridor: 4,445.74
           4. Water Course: 1.30
232. "SS-09/SS-08 NPS 4
     1. Total Cumulative Length (m): 7319.88
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1966-01-01 and maximum of 1966-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 39.18 and maximum of 39.18% SMYS
     3. Consequence of failure distributed between minimum of $5.38 and maximum of $6.14MM
     4. Total length driven by Environmental: 7319.88 meters.
     5. Environmental Cost distributed between minimum of $5.12 and maximum of $5.87MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.19MM
        2. Leak spill volume between a minimum of 1545.39 and maximum of 1772.8 gallons
        3. Rupture cost between minimum of $21.40 and maximum of $24.55MM
        4. Rupture spill volume is between a minimum of 201897.55 and maximum of 231607.68 gallons
        5. Puncture cost between minimum of $5.38 and maximum of $6.17MM
        6. Puncture spill volume is between a minimum of 50778.06 and maximum of 58250.28 gallons
        7. Land use distributed as
           1. Agricultural: 7,319.88
233. "SS-69/SS-34 NPS 4
     1. Total Cumulative Length (m): 5765.38
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1966-01-01 and maximum of 1966-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 31.34 and maximum of 47.13% SMYS
     3. Consequence of failure distributed between minimum of $4.66 and maximum of $7.29MM
     4. Total length driven by Environmental: 5765.38 meters.
     5. Environmental Cost distributed between minimum of $4.41 and maximum of $7.01MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.30MM
        2. Leak spill volume between a minimum of 1695.14 and maximum of 1822.72 gallons
        3. Rupture cost between minimum of $23.47 and maximum of $39.57MM
        4. Rupture spill volume is between a minimum of 221461.88 and maximum of 238128.96 gallons
        5. Puncture cost between minimum of $5.90 and maximum of $9.95MM
        6. Puncture spill volume is between a minimum of 55698.57 and maximum of 59890.41 gallons
        7. Land use distributed as
           1. Agricultural: 5,764.36
           2. Water Course: 1.02
234. "BONAVISTA LATERAL 14-24 TO 3-27 NPS 4
     1. Total Cumulative Length (m): 5496.62
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1960-01-01 and maximum of 1960-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 37.34 and maximum of 56.17% SMYS
     3. Consequence of failure distributed between minimum of $4.55 and maximum of $36.93MM
     4. Total length driven by Safety: 578.92 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $31.48MM:
        1. Leak cost between minimum of $0.00 and maximum of $28.51MM
        2. Leak scenario yielded 39.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted.
        3. Leak hazard radius distributed between minimum of 3.86 and maximum of 3.94 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $57.02MM
        5. Rupture scenario yielded 25.0 intersections with structures, with minimum of 0.0 and maximum of 5.94 of population impacted
        6. Rupture hazard radius distributed between minimum of 28.92 and maximum of 29.5 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $28.51MM
        8. Puncture scenario yielded 42.0 intersections with structures, with minimum of 0.0 and maximum of 2.97 of population impacted
        9. Puncture hazard radius distributed between minimum of 15.43 and maximum of 15.74 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 4917.7 meters.
     7. Environmental Cost distributed between minimum of $4.30 and maximum of $7.88MM:
        1. Leak cost between minimum of $0.17 and maximum of $0.32MM
        2. Leak spill volume between a minimum of 1613.33 and maximum of 1799.07 gallons
        3. Rupture cost between minimum of $22.34 and maximum of $41.66MM
        4. Rupture spill volume is between a minimum of 210773.22 and maximum of 235039.37 gallons
        5. Puncture cost between minimum of $5.62 and maximum of $10.48MM
        6. Puncture spill volume is between a minimum of 53010.33 and maximum of 59113.37 gallons
        7. Land use distributed as
           1. Agricultural: 5,448.29
           2. Water Course: 48.33
235. "SS-15 NPS 6
     1. Total Cumulative Length (m): 5229.36
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 40.51 and maximum of 55.87% SMYS
     3. Consequence of failure distributed between minimum of $1.63 and maximum of $1.83MM
     4. Total length driven by Environmental: 5229.36 meters.
     5. Environmental Cost distributed between minimum of $1.39 and maximum of $1.59MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1962.4 gallons
        3. Rupture cost between minimum of $55.64 and maximum of $58.90MM
        4. Rupture spill volume is between a minimum of 524962.0 and maximum of 555682.93 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.83MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 64480.05 gallons
        7. Land use distributed as
           1. Agricultural: 5,229.36
236. "MONTEREY 5-24 TO 4-31 NPS 4
     1. Total Cumulative Length (m): 3370.21
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1959-01-01 and maximum of 1959-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 32.51 and maximum of 61.63% SMYS
     3. Consequence of failure distributed between minimum of $4.98 and maximum of $6.18MM
     4. Total length driven by Environmental: 3370.21 meters.
     5. Environmental Cost distributed between minimum of $4.72 and maximum of $5.88MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1923.83 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $26.64MM
        4. Rupture spill volume is between a minimum of 242204.18 and maximum of 251338.07 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.70MM
        6. Puncture spill volume is between a minimum of 60915.35 and maximum of 63212.56 gallons
        7. Land use distributed as
           1. Agricultural: 3,370.21
237. "NPS6 RL-17 From 13-6-111-6-W6M To 12-32-110-6-W6M
     1. Total Cumulative Length (m): 3072.36
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 31.37 and maximum of 31.37% SMYS
     3. Consequence of failure distributed between minimum of $7.34 and maximum of $7.66MM
     4. Total length driven by Environmental: 3072.36 meters.
     5. Environmental Cost distributed between minimum of $7.01 and maximum of $7.32MM:
        1. Leak cost between minimum of $0.15 and maximum of $0.15MM
        2. Leak spill volume between a minimum of 1398.76 and maximum of 1462.2 gallons
        3. Rupture cost between minimum of $41.98 and maximum of $43.89MM
        4. Rupture spill volume is between a minimum of 396079.23 and maximum of 414044.27 gallons
        5. Puncture cost between minimum of $4.87 and maximum of $5.09MM
        6. Puncture spill volume is between a minimum of 45960.04 and maximum of 48044.66 gallons
        7. Land use distributed as
           1. Forested: 1,486.03
           2. Remote: 1,586.33
238. "SYLVAN LAKE SOUTH 10-21 TO 16-19 NPS 4
     1. Total Cumulative Length (m): 3035.69
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1961-01-01 and maximum of 1961-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 34.1 and maximum of 51.25% SMYS
     3. Consequence of failure distributed between minimum of $4.68 and maximum of $5.78MM
     4. Total length driven by Environmental: 3035.69 meters.
     5. Environmental Cost distributed between minimum of $4.43 and maximum of $5.49MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.19MM
        2. Leak spill volume between a minimum of 1691.87 and maximum of 1745.74 gallons
        3. Rupture cost between minimum of $23.43 and maximum of $24.17MM
        4. Rupture spill volume is between a minimum of 221034.09 and maximum of 228072.45 gallons
        5. Puncture cost between minimum of $5.89 and maximum of $6.08MM
        6. Puncture spill volume is between a minimum of 55590.98 and maximum of 57361.16 gallons
        7. Land use distributed as
           1. Agricultural: 3,035.69
239. "SUNDRE LATERAL 10-4 TO 16-8 NPS 4
     1. Total Cumulative Length (m): 2987.16
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 32.58 and maximum of 61.77% SMYS
     3. Consequence of failure distributed between minimum of $4.87 and maximum of $8.21MM
     4. Total length driven by Environmental: 2987.16 meters.
     5. Environmental Cost distributed between minimum of $4.58 and maximum of $7.94MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1801.18 and maximum of 1862.87 gallons
        3. Rupture cost between minimum of $24.94 and maximum of $43.27MM
        4. Rupture spill volume is between a minimum of 235315.52 and maximum of 243374.63 gallons
        5. Puncture cost between minimum of $6.27 and maximum of $10.88MM
        6. Puncture spill volume is between a minimum of 59182.82 and maximum of 61209.72 gallons
        7. Land use distributed as
           1. Agricultural: 2,983.25
           2. Water Course: 3.91
240. "SS-24 NPS 4
     1. Total Cumulative Length (m): 2797.85
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 32.7 and maximum of 61.99% SMYS
     3. Consequence of failure distributed between minimum of $4.65 and maximum of $5.58MM
     4. Total length driven by Environmental: 2797.85 meters.
     5. Environmental Cost distributed between minimum of $4.37 and maximum of $5.28MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.19MM
        2. Leak spill volume between a minimum of 1694.94 and maximum of 1752.98 gallons
        3. Rupture cost between minimum of $23.47 and maximum of $24.27MM
        4. Rupture spill volume is between a minimum of 221434.64 and maximum of 229017.59 gallons
        5. Puncture cost between minimum of $5.90 and maximum of $6.10MM
        6. Puncture spill volume is between a minimum of 55691.72 and maximum of 57598.87 gallons
        7. Land use distributed as
           1. Agricultural: 2,797.85
241. "SS-13 NPS 4
     1. Total Cumulative Length (m): 2691.52
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 32.51 and maximum of 32.51% SMYS
     3. Consequence of failure distributed between minimum of $5.23 and maximum of $6.15MM
     4. Total length driven by Environmental: 2691.52 meters.
     5. Environmental Cost distributed between minimum of $4.94 and maximum of $5.84MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1909.74 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $26.44MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 249498.09 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.65MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 62749.79 gallons
        7. Land use distributed as
           1. Agricultural: 2,474.07
           2. Remote: 217.45
242. "NPS6 Station 8 to Buck Creek Frac Plant From 4-5-49-9W5 To 13-24-48-7W
     1. Total Cumulative Length (m): 2688.02
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1958-01-01 and maximum of 1958-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 31.51 and maximum of 31.51% SMYS
     3. Consequence of failure distributed between minimum of $2.20 and maximum of $125.94MM
     4. Total length driven by Safety: 454.07 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 6.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 10.87 and maximum of 10.87 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
        5. Rupture scenario yielded 29.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 113.48 and maximum of 113.48 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 15.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 50.6 and maximum of 50.6 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 2233.94 meters.
     7. Economic Loss Cost distributed between minimum of $2.20 and maximum of $4.89MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.25 and maximum of $2.94MM
        5. Leak scenario yielded 6.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $42,598.99 and maximum of $42,598.99
        7. Rupture cost between minimum of $12.27 and maximum of $14.96MM
        8. Rupture scenario yielded 29.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $12,062,533.44 and maximum of $12,062,533.44
        10. Puncture cost between minimum of $1.61 and maximum of $4.30MM
        11. Puncture scenario yielded 15.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
        12. Product Loss costs between minimum of $1,399,706.16 and maximum of $1,399,706.16"
243. "COED BV 203 TO EST NPS 8
     1. Total Cumulative Length (m): 2259.9
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 63.39 and maximum of 63.39% SMYS
     3. Consequence of failure distributed between minimum of $5.08 and maximum of $158.72MM
     4. Total length driven by Safety: 1694.93 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $150.03MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $513.60MM
        5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 53.5 of population impacted
        6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $392.54MM
        8. Puncture scenario yielded 46.0 intersections with structures, with minimum of 0.0 and maximum of 40.89 of population impacted
        9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
        10. Product type is Condensate.
        11. Class area location is/are 2.0.
     6. Total length driven by Environmental: 564.97 meters.
     7. Environmental Cost distributed between minimum of $4.66 and maximum of $13.35MM:
        1. Leak cost between minimum of $0.13 and maximum of $0.35MM
        2. Leak spill volume between a minimum of 1973.38 and maximum of 2019.77 gallons
        3. Rupture cost between minimum of $64.53 and maximum of $169.76MM
        4. Rupture spill volume is between a minimum of 947101.66 and maximum of 969363.57 gallons
        5. Puncture cost between minimum of $4.42 and maximum of $11.62MM
        6. Puncture spill volume is between a minimum of 64840.82 and maximum of 66364.92 gallons
        7. Land use distributed as
           1. Commercial/Industrial: 2,256.78
           2. Water Course: 3.12
244. "PRIME WEST 7-8 TO PIPELINE TIE-IN 16-6 NPS 4
     1. Total Cumulative Length (m): 1815.43
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 35.89 and maximum of 35.89% SMYS
     3. Consequence of failure distributed between minimum of $4.22 and maximum of $8.24MM
     4. Total length driven by Environmental: 1815.43 meters.
     5. Environmental Cost distributed between minimum of $3.97 and maximum of $7.98MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.27MM
        2. Leak spill volume between a minimum of 1464.91 and maximum of 1502.57 gallons
        3. Rupture cost between minimum of $20.28 and maximum of $34.86MM
        4. Rupture spill volume is between a minimum of 191382.56 and maximum of 196303.16 gallons
        5. Puncture cost between minimum of $5.10 and maximum of $8.77MM
        6. Puncture spill volume is between a minimum of 48133.5 and maximum of 49371.05 gallons
        7. Land use distributed as
           1. Agricultural: 1,539.42
           2. Remote: 272.92
           3. Water Course: 3.10
245. "NPS4 SS-35 From 5-34-11-19-W3 To 5-35-11-19-W3
     1. Total Cumulative Length (m): 1532.63
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1968-01-01 and maximum of 1968-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 42.9 and maximum of 42.9% SMYS
     3. Consequence of failure distributed between minimum of $1.17 and maximum of $1.22MM
     4. Total length driven by Environmental: 1532.63 meters.
     5. Environmental Cost distributed between minimum of $0.96 and maximum of $0.98MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.17MM
        2. Leak spill volume between a minimum of 1545.39 and maximum of 1577.19 gallons
        3. Rupture cost between minimum of $21.40 and maximum of $21.84MM
        4. Rupture spill volume is between a minimum of 201897.55 and maximum of 206051.63 gallons
        5. Puncture cost between minimum of $5.38 and maximum of $5.49MM
        6. Puncture spill volume is between a minimum of 50778.06 and maximum of 51822.83 gallons
        7. Land use distributed as
           1. Agricultural: 1,532.63
246. "SS-39 NPS 4
     1. Total Cumulative Length (m): 1056.12
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 32.51 and maximum of 40.98% SMYS
     3. Consequence of failure distributed between minimum of $4.96 and maximum of $6.03MM
     4. Total length driven by Environmental: 1056.12 meters.
     5. Environmental Cost distributed between minimum of $4.71 and maximum of $5.74MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1854.79 and maximum of 1875.83 gallons
        3. Rupture cost between minimum of $25.68 and maximum of $25.98MM
        4. Rupture spill volume is between a minimum of 242318.72 and maximum of 245067.64 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.53MM
        6. Puncture spill volume is between a minimum of 60944.15 and maximum of 61635.52 gallons
        7. Land use distributed as
           1. Agricultural: 1,056.12
247. "NPS12 Carway to border From 6-3-1-26W4 To 1-3-1-26W4
     1. Total Cumulative Length (m): 700.9
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 69.38 and maximum of 69.67% SMYS
     3. Consequence of failure distributed between minimum of $2.54 and maximum of $11.17MM
     4. Total length driven by Safety: 187.71 meters.
     5. Safety Cost distributed between minimum of $0.52 and maximum of $9.12MM:
        1. Leak cost between minimum of $0.02 and maximum of $0.28MM
        2. Leak scenario yielded 0.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 9.46 and maximum of 9.46 meters.
        4. Rupture cost between minimum of $3.04 and maximum of $53.57MM
        5. Rupture scenario yielded 0.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
        6. Rupture hazard radius distributed between minimum of 131.02 and maximum of 131.02 meters.
        7. Puncture cost between minimum of $0.22 and maximum of $3.85MM
        8. Puncture scenario yielded 0.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
        9. Puncture hazard radius distributed between minimum of 35.14 and maximum of 35.14 meters.
        10. Product type is Crude / Butane Batch.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 513.19 meters.
     7. Environmental Cost distributed between minimum of $1.04 and maximum of $2.39MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.28MM
        2. Leak spill volume between a minimum of 1544.14 and maximum of 1559.42 gallons
        3. Rupture cost between minimum of $5.00 and maximum of $12.26MM
        4. Rupture spill volume is between a minimum of 47212.84 and maximum of 68934.95 gallons
        5. Puncture cost between minimum of $5.38 and maximum of $9.11MM
        6. Puncture spill volume is between a minimum of 50736.84 and maximum of 51239.12 gallons
        7. Land use distributed as
           1. Forested: 698.43
           2. Water Course: 2.47
248. "SS-21 NPS 4
     1. Total Cumulative Length (m): 418.91
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 34.32 and maximum of 42.83% SMYS
     3. Consequence of failure distributed between minimum of $4.00 and maximum of $4.66MM
     4. Total length driven by Environmental: 418.91 meters.
     5. Environmental Cost distributed between minimum of $3.75 and maximum of $4.38MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.16MM
        2. Leak spill volume between a minimum of 1545.39 and maximum of 1555.9 gallons
        3. Rupture cost between minimum of $21.40 and maximum of $21.54MM
        4. Rupture spill volume is between a minimum of 201897.55 and maximum of 203270.9 gallons
        5. Puncture cost between minimum of $5.38 and maximum of $5.42MM
        6. Puncture spill volume is between a minimum of 50778.06 and maximum of 51123.47 gallons
        7. Land use distributed as
           1. Agricultural: 263.76
           2. Remote: 155.15
249. "CROMER DELIVERY LATERAL NPS 8
     1. Total Cumulative Length (m): 218.89
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1900-01-01 and maximum of 1900-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 63.45 and maximum of 63.45% SMYS
     3. Consequence of failure distributed between minimum of $12.64 and maximum of $26.98MM
     4. Total length driven by Environmental: 218.89 meters.
     5. Environmental Cost distributed between minimum of $12.33 and maximum of $26.57MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1854.53 and maximum of 1858.45 gallons
        3. Rupture cost between minimum of $94.54 and maximum of $158.69MM
        4. Rupture spill volume is between a minimum of 890061.32 and maximum of 891942.44 gallons
        5. Puncture cost between minimum of $6.47 and maximum of $10.86MM
        6. Puncture spill volume is between a minimum of 60935.7 and maximum of 61064.49 gallons
        7. Land use distributed as
           1. Agricultural: 51.66
           2. Bush/Creek: 167.23
250. "SS-27 NPS 4
     1. Total Cumulative Length (m): 201.64
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1956-01-01 and maximum of 1956-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 32.51 and maximum of 32.51% SMYS
     3. Consequence of failure distributed between minimum of $1.13 and maximum of $2.23MM
     4. Total length driven by Environmental: 201.64 meters.
     5. Environmental Cost distributed between minimum of $0.90 and maximum of $2.00MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1861.88 and maximum of 1861.88 gallons
        3. Rupture cost between minimum of $25.78 and maximum of $25.78MM
        4. Rupture spill volume is between a minimum of 243245.68 and maximum of 243245.68 gallons
        5. Puncture cost between minimum of $6.48 and maximum of $6.48MM
        6. Puncture spill volume is between a minimum of 61177.29 and maximum of 61177.29 gallons
        7. Land use distributed as
           1. Agricultural: 201.64
251. "FORT WHYTE INLET PIPING NPS 6
     1. Total Cumulative Length (m): 181.78
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1900-01-01 and maximum of 1900-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 40.51 and maximum of 40.51% SMYS
     3. Consequence of failure distributed between minimum of $0.75 and maximum of $0.75MM
     4. Total length driven by Economic Loss: 181.78 meters.
     5. Economic Loss Cost distributed between minimum of $0.66 and maximum of $0.66MM:
        1. Repair costs between minimum of $40,000.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.30 and maximum of $0.30MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $17.48 and maximum of $17.48MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $17,232,190.63 and maximum of $17,232,190.63
        10. Puncture cost between minimum of $2.24 and maximum of $2.24MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
252. "SS-28 NPS 4
     1. Total Cumulative Length (m): 128.4
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 32.51 and maximum of 32.51% SMYS
     3. Consequence of failure distributed between minimum of $1.49 and maximum of $3.37MM
     4. Total length driven by Environmental: 128.4 meters.
     5. Environmental Cost distributed between minimum of $1.27 and maximum of $3.11MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1859.61 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.75MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242948.7 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.48MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61102.6 gallons
        7. Land use distributed as
           1. Agricultural: 128.40
253. "PINCHER CREEK TO CARWAY NPS 12
     1. Total Cumulative Length (m): 29.99
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1967-01-01 and maximum of 1967-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 69.74 and maximum of 69.74% SMYS
     3. Consequence of failure distributed between minimum of $2.14 and maximum of $2.14MM
     4. Total length driven by Environmental: 29.99 meters.
     5. Environmental Cost distributed between minimum of $1.28 and maximum of $1.28MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1659.95 and maximum of 1659.95 gallons
        3. Rupture cost between minimum of $6.30 and maximum of $6.30MM
        4. Rupture spill volume is between a minimum of 59454.03 and maximum of 59454.03 gallons
        5. Puncture cost between minimum of $5.78 and maximum of $5.78MM
        6. Puncture spill volume is between a minimum of 54542.16 and maximum of 54542.16 gallons
        7. Land use distributed as
           1. Forested: 29.99
254. "NPS4 SS-12 From 15-15-16-17-W3 To 15-15-16-17W3
     1. Total Cumulative Length (m): 26.48
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
        2. Pipe seam type of ERW
        3. Maximum Operating Stress percentage between minimum of 32.51 and maximum of 32.51% SMYS
     3. Consequence of failure distributed between minimum of $2.59 and maximum of $4.72MM
     4. Total length driven by Environmental: 26.48 meters.
     5. Environmental Cost distributed between minimum of $2.33 and maximum of $4.44MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1854.46 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.68MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242275.67 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 60933.33 gallons
        7. Land use distributed as
           1. Agricultural: 26.48
     6. Stress Corrosion Cracking Reportable Pipeline Segments
        1. SCC Method 1b
255. "LONE ROCK TO DULWICH NPS 6
     1. Total Cumulative Length (m): 1965.71
     2. Likelihood of failure distributed between minimum of 1.013e-02 and maximum of 2.726e-01.
        1. ILI Date of 2017-04-10
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 1963.0
        4. Depth fraction between 0.1 and 0.36
        5. Length between 4.0 mm and 10682.0
     3. Consequence of failure distributed between minimum of $1.02 and maximum of $13.41MM
     4. Total length driven by Safety: 202.41 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $12.11MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 3.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.41 and maximum of 11.41 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
        5. Rupture scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 107.45 and maximum of 107.45 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 5.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 46.39 and maximum of 46.39 meters.
        10. Product type is Condensate.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 1763.31 meters.
     7. Environmental Cost distributed between minimum of $0.80 and maximum of $1.46MM:
        1. Leak cost between minimum of $0.69 and maximum of $1.36MM
        2. Leak spill volume between a minimum of 6507.56 and maximum of 12852.25 gallons
        3. Rupture cost between minimum of $0.98 and maximum of $1.65MM
        4. Rupture spill volume is between a minimum of 9239.46 and maximum of 15545.55 gallons
        5. Puncture cost between minimum of $0.69 and maximum of $1.36MM
        6. Puncture spill volume is between a minimum of 6507.56 and maximum of 12852.25 gallons
        7. Land use distributed as
           1. Agricultural: 1,120.80
           2. Remote: 844.91
256. "UNITY TO LONE ROCK NPS 4
     1. Total Cumulative Length (m): 1439.69
     2. Likelihood of failure distributed between minimum of 1.399e-03 and maximum of 4.713e-01.
        1. ILI Date of 2017-04-25
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 1575.0
        4. Depth fraction between 0.11 and 0.49
        5. Length between 4.0 mm and 3196.0
     3. Consequence of failure distributed between minimum of $10.01 and maximum of $20.28MM
     4. Total length driven by Environmental: 1439.69 meters.
     5. Environmental Cost distributed between minimum of $9.70 and maximum of $19.92MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.37MM
        2. Leak spill volume between a minimum of 1972.39 and maximum of 2569.18 gallons
        3. Rupture cost between minimum of $27.31 and maximum of $47.98MM
        4. Rupture spill volume is between a minimum of 257682.32 and maximum of 335650.0 gallons
        5. Puncture cost between minimum of $6.87 and maximum of $12.07MM
        6. Puncture spill volume is between a minimum of 64808.16 and maximum of 84417.35 gallons
        7. Land use distributed as
           1. Agricultural: 897.92
           2. Remote: 537.36
           3. Water Course: 4.41
257. "CACTUS LAKE TO KERROBERT NPS 10
     1. Total Cumulative Length (m): 1347.24
     2. Likelihood of failure distributed between minimum of 1.050e-02 and maximum of 9.468e-01.
        1. ILI Date of 2017-07-27
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 4182.0
        4. Depth fraction between 0.12 and 0.47
        5. Length between 4.0 mm and 3256.0
     3. Consequence of failure distributed between minimum of $0.61 and maximum of $4.39MM
     4. Total length driven by Environmental: 1347.24 meters.
     5. Environmental Cost distributed between minimum of $0.38 and maximum of $4.13MM:
        1. Leak cost between minimum of $0.22 and maximum of $0.28MM
        2. Leak spill volume between a minimum of 2039.55 and maximum of 2686.48 gallons
        3. Rupture cost between minimum of $0.43 and maximum of $6.08MM
        4. Rupture spill volume is between a minimum of 4071.35 and maximum of 57372.97 gallons
        5. Puncture cost between minimum of $7.10 and maximum of $9.36MM
        6. Puncture spill volume is between a minimum of 67015.13 and maximum of 88271.77 gallons
        7. Land use distributed as
           1. Agricultural: 1,017.32
           2. Remote: 329.92
258. "NORTH FERRIER 08-20 TO 09-27 NPS 8
     1. Total Cumulative Length (m): 599.86
     2. Likelihood of failure distributed between minimum of 1.150e-02 and maximum of 7.381e-01.
        1. ILI Date of 2019-05-01
        2. ILI tool of MFL/AFD/Geometry
        3. Anomalies identified 2051.0
        4. Depth fraction between 0.1 and 0.5
        5. Length between 4.8 mm and 371.7
     3. Consequence of failure distributed between minimum of $0.86 and maximum of $5.31MM
     4. Total length driven by Safety: 29.99 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $4.12MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 43.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 3.99 and maximum of 4.11 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
        5. Rupture scenario yielded 85.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 53.97 and maximum of 55.69 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
        8. Puncture scenario yielded 67.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
        9. Puncture hazard radius distributed between minimum of 15.93 and maximum of 16.44 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 569.87 meters.
     7. Environmental Cost distributed between minimum of $0.64 and maximum of $2.25MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.34MM
        2. Leak spill volume between a minimum of 1757.69 and maximum of 2019.68 gallons
        3. Rupture cost between minimum of $1.43 and maximum of $4.79MM
        4. Rupture spill volume is between a minimum of 13457.31 and maximum of 40103.54 gallons
        5. Puncture cost between minimum of $6.12 and maximum of $11.22MM
        6. Puncture spill volume is between a minimum of 57753.54 and maximum of 66362.06 gallons
        7. Land use distributed as
           1. Agricultural: 329.92
           2. Forested: 239.94
           3. Water Course: 29.99
259. "DULWICH TO LONE ROCK BLEND NPS 10
     1. Total Cumulative Length (m): 468.19
     2. Likelihood of failure distributed between minimum of 1.589e-02 and maximum of 3.277e-01.
        1. ILI Date of 2016-09-23
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 1212.0
        4. Depth fraction between 0.1 and 0.43
        5. Length between 4.0 mm and 966.0
     3. Consequence of failure distributed between minimum of $1.13 and maximum of $3.04MM
     4. Total length driven by Environmental: 468.19 meters.
     5. Environmental Cost distributed between minimum of $0.91 and maximum of $2.80MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.22MM
        2. Leak spill volume between a minimum of 1783.07 and maximum of 2107.15 gallons
        3. Rupture cost between minimum of $0.88 and maximum of $2.63MM
        4. Rupture spill volume is between a minimum of 8343.34 and maximum of 24771.68 gallons
        5. Puncture cost between minimum of $6.21 and maximum of $7.34MM
        6. Puncture spill volume is between a minimum of 58587.74 and maximum of 69236.2 gallons
        7. Land use distributed as
           1. Agricultural: 339.25
           2. Remote: 128.95
260. "NPS8 SARNIA CONDENSATE TO SUNCOR
     1. Total Cumulative Length (m): 418.85
     2. Likelihood of failure distributed between minimum of 1.336e-03 and maximum of 8.748e-02.
        1. ILI Date of 2016-02-19
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 549.0
        4. Depth fraction between 0.11 and 0.38
        5. Length between 8.0 mm and 3026.0
     3. Consequence of failure distributed between minimum of $17.05 and maximum of $57.07MM
     4. Total length driven by Safety: 39.57 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $38.44MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 21.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.8 and maximum of 11.8 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $167.16MM
        5. Rupture scenario yielded 38.0 intersections with structures, with minimum of 0.0 and maximum of 17.41 of population impacted
        6. Rupture hazard radius distributed between minimum of 135.89 and maximum of 135.89 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 49.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 47.76 and maximum of 47.76 meters.
        10. Product type is Condensate.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 379.28 meters.
     7. Environmental Cost distributed between minimum of $16.66 and maximum of $29.41MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1891.4 and maximum of 1989.97 gallons
        3. Rupture cost between minimum of $96.21 and maximum of $101.23MM
        4. Rupture spill volume is between a minimum of 907756.46 and maximum of 955064.68 gallons
        5. Puncture cost between minimum of $6.59 and maximum of $6.93MM
        6. Puncture spill volume is between a minimum of 62147.16 and maximum of 65385.99 gallons
        7. Land use distributed as
           1. Agricultural: 179.38
           2. Forested: 89.80
           3. Utility Corridor: 149.67
261. "SUNDRE TO BENTLEY NPS 8
     1. Total Cumulative Length (m): 267.65
     2. Likelihood of failure distributed between minimum of 1.908e-02 and maximum of 9.797e-01.
        1. ILI Date of 2016-09-14
        2. ILI tool of AFD
        3. Anomalies identified 60.0
        4. Depth fraction between 0.1 and 0.54
        5. Length between 12.0 mm and 469.0
     3. Consequence of failure distributed between minimum of $0.79 and maximum of $2.25MM
     4. Total length driven by Environmental: 267.65 meters.
     5. Environmental Cost distributed between minimum of $0.56 and maximum of $1.97MM:
        1. Leak cost between minimum of $0.11 and maximum of $0.11MM
        2. Leak spill volume between a minimum of 2144.81 and maximum of 2302.93 gallons
        3. Rupture cost between minimum of $1.08 and maximum of $2.70MM
        4. Rupture spill volume is between a minimum of 21857.14 and maximum of 54951.93 gallons
        5. Puncture cost between minimum of $3.47 and maximum of $3.72MM
        6. Puncture spill volume is between a minimum of 70473.43 and maximum of 75669.01 gallons
        7. Land use distributed as
           1. Agricultural: 267.65
262. "NPS6 Brookfield to Joffre From 15-20-38-25W4 To 15-17-39-26W4
     1. Total Cumulative Length (m): 261.35
     2. Likelihood of failure distributed between minimum of 1.348e-03 and maximum of 1.576e-01.
        1. ILI Date of 2016-04-21
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 133.0
        4. Depth fraction between 0.1 and 0.44
        5. Length between 6.0 mm and 72.0
     3. Consequence of failure distributed between minimum of $14.05 and maximum of $26.77MM
     4. Total length driven by Environmental: 261.35 meters.
     5. Environmental Cost distributed between minimum of $13.70 and maximum of $26.28MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.22MM
        2. Leak spill volume between a minimum of 1919.14 and maximum of 2102.02 gallons
        3. Rupture cost between minimum of $57.60 and maximum of $63.09MM
        4. Rupture spill volume is between a minimum of 543432.51 and maximum of 595218.48 gallons
        5. Puncture cost between minimum of $6.68 and maximum of $7.32MM
        6. Puncture spill volume is between a minimum of 63058.55 and maximum of 69067.66 gallons
        7. Land use distributed as
           1. Agricultural: 261.35
263. "SS-49 NPS 6
     1. Total Cumulative Length (m): 239.92
     2. Likelihood of failure distributed between minimum of 1.247e-03 and maximum of 2.915e-02.
        1. ILI Date of 2017-05-26
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 1612.0
        4. Depth fraction between 0.1 and 0.36
        5. Length between 4.0 mm and 100.0
     3. Consequence of failure distributed between minimum of $11.39 and maximum of $39.74MM
     4. Total length driven by Environmental: 239.92 meters.
     5. Environmental Cost distributed between minimum of $11.06 and maximum of $39.25MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1770.33 and maximum of 1831.09 gallons
        3. Rupture cost between minimum of $53.13 and maximum of $92.10MM
        4. Rupture spill volume is between a minimum of 501293.88 and maximum of 518498.98 gallons
        5. Puncture cost between minimum of $6.17 and maximum of $10.69MM
        6. Puncture spill volume is between a minimum of 58168.89 and maximum of 60165.32 gallons
        7. Land use distributed as
           1. Agricultural: 85.31
           2. Remote: 144.42
           3. Water Course: 10.19
264. "SS-11 NPS 6
     1. Total Cumulative Length (m): 239.92
     2. Likelihood of failure distributed between minimum of 1.023e-03 and maximum of 5.485e-01.
        1. ILI Date of 2017-05-24
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 686.0
        4. Depth fraction between 0.1 and 0.48
        5. Length between 4.0 mm and 352.0
     3. Consequence of failure distributed between minimum of $14.32 and maximum of $26.59MM
     4. Total length driven by Environmental: 239.92 meters.
     5. Environmental Cost distributed between minimum of $13.96 and maximum of $26.10MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1933.12 and maximum of 1958.94 gallons
        3. Rupture cost between minimum of $58.02 and maximum of $58.79MM
        4. Rupture spill volume is between a minimum of 547391.09 and maximum of 554702.8 gallons
        5. Puncture cost between minimum of $6.73 and maximum of $6.82MM
        6. Puncture spill volume is between a minimum of 63517.89 and maximum of 64366.32 gallons
        7. Land use distributed as
           1. Remote: 239.92
265. "NI-95 NPS 8
     1. Total Cumulative Length (m): 217.94
     2. Likelihood of failure distributed between minimum of 3.843e-03 and maximum of 6.921e-01.
        1. ILI Date of 2018-03-01
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 813.0
        4. Depth fraction between 0.1 and 0.49
        5. Length between 4.0 mm and 256.0
     3. Consequence of failure distributed between minimum of $20.02 and maximum of $41.35MM
     4. Total length driven by Environmental: 217.94 meters.
     5. Environmental Cost distributed between minimum of $19.57 and maximum of $40.69MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.19MM
        2. Leak spill volume between a minimum of 1797.99 and maximum of 1810.77 gallons
        3. Rupture cost between minimum of $91.46 and maximum of $92.11MM
        4. Rupture spill volume is between a minimum of 862925.14 and maximum of 869059.11 gallons
        5. Puncture cost between minimum of $6.26 and maximum of $6.31MM
        6. Puncture spill volume is between a minimum of 59077.9 and maximum of 59497.84 gallons
        7. Land use distributed as
           1. Agricultural: 217.94
266. "CRIMSON LAKE TO 10-33 NPS 4
     1. Total Cumulative Length (m): 125.79
     2. Likelihood of failure distributed between minimum of 1.393e-03 and maximum of 7.005e-02.
        1. ILI Date of 2016-02-23
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 144.0
        4. Depth fraction between 0.11 and 0.45
        5. Length between 4.0 mm and 80.0
     3. Consequence of failure distributed between minimum of $5.84 and maximum of $13.95MM
     4. Total length driven by Environmental: 125.79 meters.
     5. Environmental Cost distributed between minimum of $5.57 and maximum of $11.61MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.32MM
        2. Leak spill volume between a minimum of 1705.83 and maximum of 1909.12 gallons
        3. Rupture cost between minimum of $23.62 and maximum of $41.39MM
        4. Rupture spill volume is between a minimum of 222858.4 and maximum of 249416.5 gallons
        5. Puncture cost between minimum of $5.94 and maximum of $10.41MM
        6. Puncture spill volume is between a minimum of 56049.8 and maximum of 62729.27 gallons
        7. Land use distributed as
           1. Forested: 122.19
           2. Water Course: 3.61
267. "SECT 7 MANSON TO RAPID CITY NPS 6
     1. Total Cumulative Length (m): 119.99
     2. Likelihood of failure distributed between minimum of 1.063e-02 and maximum of 7.817e-02.
        1. ILI Date of 2016-03-01
        2. ILI tool of MFL
        3. Anomalies identified 8.0
        4. Depth fraction between 0.13 and 0.48
        5. Length between 13.46 mm and 115.94
     3. Consequence of failure distributed between minimum of $3.52 and maximum of $5.21MM
     4. Total length driven by Economic Loss: 119.99 meters.
     5. Economic Loss Cost distributed between minimum of $3.52 and maximum of $5.21MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.27 and maximum of $0.27MM
        5. Leak scenario yielded 17.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
        7. Rupture cost between minimum of $17.84 and maximum of $17.86MM
        8. Rupture scenario yielded 55.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
        10. Puncture cost between minimum of $2.26 and maximum of $2.26MM
        11. Puncture scenario yielded 39.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
268. "NPS6 Bentley to Silver Springs
     1. Total Cumulative Length (m): 119.92
     2. Likelihood of failure distributed between minimum of 1.385e-02 and maximum of 3.905e-02.
        1. ILI Date of 2016-03-28
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 124.0
        4. Depth fraction between 0.1 and 0.33
        5. Length between 4.0 mm and 106.0
     3. Consequence of failure distributed between minimum of $2.74 and maximum of $4.87MM
     4. Total length driven by Environmental: 119.92 meters.
     5. Environmental Cost distributed between minimum of $2.50 and maximum of $4.61MM:
        1. Leak cost between minimum of $0.22 and maximum of $0.25MM
        2. Leak spill volume between a minimum of 2063.09 and maximum of 2356.88 gallons
        3. Rupture cost between minimum of $2.21 and maximum of $4.42MM
        4. Rupture spill volume is between a minimum of 20852.29 and maximum of 41695.34 gallons
        5. Puncture cost between minimum of $7.19 and maximum of $8.21MM
        6. Puncture spill volume is between a minimum of 67788.53 and maximum of 77441.8 gallons
        7. Land use distributed as
           1. Agricultural: 89.94
           2. Forested: 29.98
269. "GIFT LATERAL NPS 8
     1. Total Cumulative Length (m): 119.83
     2. Likelihood of failure distributed between minimum of 1.882e-02 and maximum of 1.286e-01.
        1. ILI Date of 2017-02-23
        2. ILI tool of AFD
        3. Anomalies identified 22.0
        4. Depth fraction between 0.1 and 0.39
        5. Length between 11.0 mm and 169.0
     3. Consequence of failure distributed between minimum of $0.81 and maximum of $1.26MM
     4. Total length driven by Environmental: 119.83 meters.
     5. Environmental Cost distributed between minimum of $0.58 and maximum of $1.03MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1728.22 and maximum of 1948.65 gallons
        3. Rupture cost between minimum of $0.69 and maximum of $1.32MM
        4. Rupture spill volume is between a minimum of 6523.15 and maximum of 12433.05 gallons
        5. Puncture cost between minimum of $6.02 and maximum of $6.79MM
        6. Puncture spill volume is between a minimum of 56785.47 and maximum of 64028.3 gallons
        7. Land use distributed as
           1. Forested: 119.83
270. "MEDICINE RIVER 14-33 TO 04-18 NPS 3
     1. Total Cumulative Length (m): 118.61
     2. Likelihood of failure distributed between minimum of 1.168e-02 and maximum of 2.715e-01.
        1. ILI Date of 2019-01-24
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 123.0
        4. Depth fraction between 0.16 and 0.48
        5. Length between 4.0 mm and 55.0
     3. Consequence of failure distributed between minimum of $7.20 and maximum of $7.42MM
     4. Total length driven by Environmental: 118.61 meters.
     5. Environmental Cost distributed between minimum of $6.92 and maximum of $7.14MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1859.97 and maximum of 1894.18 gallons
        3. Rupture cost between minimum of $15.58 and maximum of $15.87MM
        4. Rupture spill volume is between a minimum of 146997.58 and maximum of 149701.04 gallons
        5. Puncture cost between minimum of $6.48 and maximum of $6.60MM
        6. Puncture spill volume is between a minimum of 61114.49 and maximum of 62238.46 gallons
        7. Land use distributed as
           1. Agricultural: 118.61
271. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5
     1. Total Cumulative Length (m): 90.0
     2. Likelihood of failure distributed between minimum of 2.451e-03 and maximum of 9.981e-01.
        1. ILI Date of 2015-07-27
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 21.0
        4. Depth fraction between 0.1 and 0.58
        5. Length between 14.0 mm and 243.0
     3. Consequence of failure distributed between minimum of $23.38 and maximum of $49.62MM
     4. Total length driven by Environmental: 90.0 meters.
     5. Environmental Cost distributed between minimum of $22.75 and maximum of $48.89MM:
        1. Leak cost between minimum of $0.13 and maximum of $0.22MM
        2. Leak spill volume between a minimum of 1849.92 and maximum of 2047.2 gallons
        3. Rupture cost between minimum of $64.62 and maximum of $104.14MM
        4. Rupture spill volume is between a minimum of 887849.94 and maximum of 982532.16 gallons
        5. Puncture cost between minimum of $4.42 and maximum of $7.13MM
        6. Puncture spill volume is between a minimum of 60784.31 and maximum of 67266.48 gallons
        7. Land use distributed as
           1. Forested: 30.00
           2. Low Density Residential: 30.00
           3. Remote: 30.00
272. "NPS8 Red Earth to Rainbow P/L tie-in From 9-18-87-8-W5 To 15-29-81-9-W
     1. Total Cumulative Length (m): 89.98
     2. Likelihood of failure distributed between minimum of 1.638e-03 and maximum of 1.581e-01.
        1. ILI Date of 2016-02-09
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 22.0
        4. Depth fraction between 0.13 and 0.57
        5. Length between 8.0 mm and 148.0
     3. Consequence of failure distributed between minimum of $24.83 and maximum of $56.06MM
     4. Total length driven by Environmental: 89.98 meters.
     5. Environmental Cost distributed between minimum of $24.36 and maximum of $55.26MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.27MM
        2. Leak spill volume between a minimum of 1787.92 and maximum of 2511.21 gallons
        3. Rupture cost between minimum of $90.95 and maximum of $127.74MM
        4. Rupture spill volume is between a minimum of 858090.93 and maximum of 1205225.89 gallons
        5. Puncture cost between minimum of $6.23 and maximum of $8.75MM
        6. Puncture spill volume is between a minimum of 58746.93 and maximum of 82512.62 gallons
        7. Land use distributed as
           1. Forested: 89.98
273. "NPS8 Empress to Laporte from 5-12-20-1W4 to 4-2-27-26W3
     1. Total Cumulative Length (m): 89.97
     2. Likelihood of failure distributed between minimum of 8.395e-03 and maximum of 3.490e-02.
        1. ILI Date of 2018-10-11
        2. ILI tool of MFL
        3. Anomalies identified 46.0
        4. Depth fraction between 0.13 and 0.21
        5. Length between 8.0 mm and 1278.0
     3. Consequence of failure distributed between minimum of $9.21 and maximum of $12.70MM
     4. Total length driven by Economic Loss: 89.97 meters.
     5. Economic Loss Cost distributed between minimum of $9.21 and maximum of $12.70MM:
        1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.28 and maximum of $0.31MM
        5. Leak scenario yielded 7.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $29.42 and maximum of $29.46MM
        8. Rupture scenario yielded 11.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $29,206,998.79 and maximum of $29,206,998.79
        10. Puncture cost between minimum of $2.21 and maximum of $2.25MM
        11. Puncture scenario yielded 13.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
274. "SS-03 NPS 6
     1. Total Cumulative Length (m): 75.32
     2. Likelihood of failure distributed between minimum of 2.792e-02 and maximum of 9.494e-01.
        1. ILI Date of 2016-07-21
        2. ILI tool of AFD
        3. Anomalies identified 83.0
        4. Depth fraction between 0.1 and 0.42
        5. Length between 11.0 mm and 250.0
     3. Consequence of failure distributed between minimum of $19.53 and maximum of $24.45MM
     4. Total length driven by Environmental: 75.32 meters.
     5. Environmental Cost distributed between minimum of $19.11 and maximum of $23.96MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.19MM
        2. Leak spill volume between a minimum of 1805.58 and maximum of 1815.99 gallons
        3. Rupture cost between minimum of $54.19 and maximum of $54.50MM
        4. Rupture spill volume is between a minimum of 511276.35 and maximum of 514224.45 gallons
        5. Puncture cost between minimum of $6.29 and maximum of $6.32MM
        6. Puncture spill volume is between a minimum of 59327.23 and maximum of 59669.32 gallons
        7. Land use distributed as
           1. Agricultural: 75.32
275. "STRACHAN TO ROCKY MOUNTAIN HOUSE NGL NPS 6
     1. Total Cumulative Length (m): 59.93
     2. Likelihood of failure distributed between minimum of 2.370e-03 and maximum of 1.039e-02.
        1. ILI Date of 2017-08-31
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 91.0
        4. Depth fraction between 0.1 and 0.36
        5. Length between 4.0 mm and 1200.0
     3. Consequence of failure distributed between minimum of $4.57 and maximum of $79.23MM
     4. Total length driven by Safety: 29.97 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $70.80MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 20.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 10.89 and maximum of 10.89 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $91.10MM
        5. Rupture scenario yielded 77.0 intersections with structures, with minimum of 9.49 and maximum of 9.49 of population impacted
        6. Rupture hazard radius distributed between minimum of 113.66 and maximum of 113.66 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $91.10MM
        8. Puncture scenario yielded 50.0 intersections with structures, with minimum of 9.49 and maximum of 9.49 of population impacted
        9. Puncture hazard radius distributed between minimum of 50.68 and maximum of 50.68 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 29.97 meters.
     7. Economic Loss Cost distributed between minimum of $4.57 and maximum of $8.43MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.25 and maximum of $0.25MM
        5. Leak scenario yielded 20.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $42,776.72 and maximum of $42,776.72
        7. Rupture cost between minimum of $12.32 and maximum of $18.88MM
        8. Rupture scenario yielded 77.0 intersections with structures, with minimum of $6,560,625.00 and maximum of $6,560,625.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $12,112,859.08 and maximum of $12,112,859.08
        10. Puncture cost between minimum of $1.62 and maximum of $8.18MM
        11. Puncture scenario yielded 50.0 intersections with structures, with minimum of $6,560,625.00 and maximum of $6,560,625.00 in cost of structures impacted
        12. Puncture product Loss costs between minimum of $1,405,545.82 and maximum of $1,405,545.82"
276. "SS-48 NPS 6
     1. Total Cumulative Length (m): 59.93
     2. Likelihood of failure distributed between minimum of 3.711e-02 and maximum of 9.882e-02.
        1. ILI Date of 2017-05-26
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 3.0
        4. Depth fraction between 0.17 and 0.22
        5. Length between 10.0 mm and 178.0
     3. Consequence of failure distributed between minimum of $21.40 and maximum of $22.07MM
     4. Total length driven by Environmental: 59.93 meters.
     5. Environmental Cost distributed between minimum of $20.97 and maximum of $21.63MM:
        1. Leak cost between minimum of $0.17 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1650.03 and maximum of 1653.49 gallons
        3. Rupture cost between minimum of $49.52 and maximum of $49.63MM
        4. Rupture spill volume is between a minimum of 467229.46 and maximum of 468209.42 gallons
        5. Puncture cost between minimum of $5.75 and maximum of $5.76MM
        6. Puncture spill volume is between a minimum of 54216.14 and maximum of 54329.85 gallons
        7. Land use distributed as
           1. Remote: 59.93
277. "ZAMA TO RAINBOW STATION NPS 20
     1. Total Cumulative Length (m): 46.69
     2. Likelihood of failure distributed between minimum of 3.259e-02 and maximum of 6.054e-02.
        1. ILI Date of 2019-02-14
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 44.0
        4. Depth fraction between 0.08 and 0.42
        5. Length between 14.0 mm and 112.0
     3. Consequence of failure distributed between minimum of $2.90 and maximum of $3.01MM
     4. Total length driven by Environmental: 46.69 meters.
     5. Environmental Cost distributed between minimum of $2.00 and maximum of $2.10MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.16MM
        2. Leak spill volume between a minimum of 1517.12 and maximum of 1517.37 gallons
        3. Rupture cost between minimum of $4.05 and maximum of $4.40MM
        4. Rupture spill volume is between a minimum of 38171.54 and maximum of 41527.42 gallons
        5. Puncture cost between minimum of $5.28 and maximum of $5.28MM
        6. Puncture spill volume is between a minimum of 49849.12 and maximum of 49857.23 gallons
        7. Land use distributed as
           1. Remote: 46.69
278. "SUNDRE TO SPRINGDALE NPS 12
     1. Total Cumulative Length (m): 29.99
     2. Likelihood of failure distributed between minimum of 9.700e-03 and maximum of 9.700e-03.
        1. ILI Date of 2019-04-08
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 2.0
        4. Depth fraction between 0.19 and 0.3
        5. Length between 22.0 mm and 108.2
     3. Consequence of failure distributed between minimum of $22.67 and maximum of $22.67MM
     4. Total length driven by Safety: 29.99 meters.
     5. Safety Cost distributed between minimum of $17.96 and maximum of $17.96MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 21.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 4.15 and maximum of 4.15 meters.
        4. Rupture cost between minimum of $55.88 and maximum of $55.88MM
        5. Rupture scenario yielded 85.0 intersections with structures, with minimum of 5.82 and maximum of 5.82 of population impacted
        6. Rupture hazard radius distributed between minimum of 80.22 and maximum of 80.22 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
        8. Puncture scenario yielded 54.0 intersections with structures, with minimum of nan and maximum of nan of population impacted
        9. Puncture hazard radius distributed between minimum of 16.59 and maximum of 16.59 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 2.0.
279. "NPS8 Laporte to Kerrobert from 4-2-27-26W3 to 4-34-33-22W3
     1. Total Cumulative Length (m): 29.99
     2. Likelihood of failure distributed between minimum of 1.540e-02 and maximum of 1.540e-02.
        1. ILI Date of 2018-10-21
        2. ILI tool of MFL
        3. Anomalies identified 23.0
        4. Depth fraction between 0.1 and 0.27
        5. Length between 4.0 mm and 88.0
     3. Consequence of failure distributed between minimum of $12.08 and maximum of $12.08MM
     4. Total length driven by Economic Loss: 29.99 meters.
     5. Economic Loss Cost distributed between minimum of $12.08 and maximum of $12.08MM:
        1. Repair costs between minimum of $50,000.00 and maximum of $50,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.31 and maximum of $0.31MM
        5. Leak scenario yielded 5.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $29.46 and maximum of $29.46MM
        8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $29,206,998.79 and maximum of $29,206,998.79
        10. Puncture cost between minimum of $2.25 and maximum of $2.25MM
        11. Puncture scenario yielded 14.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
280. "EMPRESS TO LAPORTE NPS 10
     1. Total Cumulative Length (m): 29.99
     2. Likelihood of failure distributed between minimum of 4.154e-01 and maximum of 4.154e-01.
        1. ILI Date of 2016-12-14
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 4.0
        4. Depth fraction between 0.11 and 0.45
        5. Length between 24.0 mm and 60.0
     3. Consequence of failure distributed between minimum of $20.16 and maximum of $20.16MM
     4. Total length driven by Economic Loss: 29.99 meters.
     5. Economic Loss Cost distributed between minimum of $20.16 and maximum of $20.16MM:
        1. Repair costs between minimum of $17,000.00 and maximum of $17,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.28 and maximum of $0.28MM
        5. Leak scenario yielded 4.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $45.59 and maximum of $45.59MM
        8. Rupture scenario yielded 14.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $45,371,762.88 and maximum of $45,371,762.88
        10. Puncture cost between minimum of $2.22 and maximum of $2.22MM
        11. Puncture scenario yielded 10.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
281. "SYLVAN LAKE 01-21 TO 13-32 NPS 4
     1. Total Cumulative Length (m): 29.98
     2. Likelihood of failure distributed between minimum of 1.460e-02 and maximum of 1.460e-02.
        1. ILI Date of 2017-03-20
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 18.0
        4. Depth fraction between 0.15 and 0.38
        5. Length between 4.0 mm and 36.0 mm
     3. Consequence of failure distributed between minimum of $4.81 and maximum of $4.81MM
     4. Total length driven by Safety: 29.98 meters.
     5. Safety Cost distributed between minimum of $4.27 and maximum of $4.27MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 13.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 19.59 and maximum of 19.59 meters.
        4. Rupture cost between minimum of $21.89 and maximum of $21.89MM
        5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 85.15 and maximum of 85.15 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
        8. Puncture scenario yielded 19.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
        9. Puncture hazard radius distributed between minimum of 53.75 and maximum of 53.75 meters.
        10. Product type is Butane/Condensate.
        11. Class area location is/are 1.0.
282. "ELLERSLIE TO STRATHCONA NPS 12
     1. Total Cumulative Length (m): 29.98
     2. Likelihood of failure distributed between minimum of 2.411e-01 and maximum of 2.411e-01.
        1. ILI Date of 2016-05-25
        2. ILI tool of AFD
        3. Anomalies identified 5.0
        4. Depth fraction between 0.14 and 0.31
        5. Length between 21.0 mm and 147.0
     3. Consequence of failure distributed between minimum of $2.52 and maximum of $2.52MM
     4. Total length driven by Environmental: 29.98 meters.
     5. Environmental Cost distributed between minimum of $1.51 and maximum of $1.51MM:
        1. Leak cost between minimum of $0.12 and maximum of $0.12MM
        2. Leak spill volume between a minimum of 1768.16 and maximum of 1768.95 gallons
        3. Rupture cost between minimum of $3.23 and maximum of $3.23MM
        4. Rupture spill volume is between a minimum of 47421.74 and maximum of 47421.74 gallons
        5. Puncture cost between minimum of $3.96 and maximum of $3.96MM
        6. Puncture spill volume is between a minimum of 58097.86 and maximum of 58123.6 gallons
        7. Land use distributed as
           1. Commercial/Industrial: 29.98
283. "NPS4 Eckville Lateral From 06-18-039-03W5 to 04-33-039-03W5
     1. Total Cumulative Length (m): 29.96
     2. Likelihood of failure distributed between minimum of 4.386e-01 and maximum of 4.386e-01.
        1. ILI Date of 2016-01-28
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 41.0
        4. Depth fraction between 0.11 and 0.48
        5. Length between 4.0 mm and 94.0
     3. Consequence of failure distributed between minimum of $10.35 and maximum of $10.36MM
     4. Total length driven by Environmental: 29.96 meters.
     5. Environmental Cost distributed between minimum of $10.03 and maximum of $10.04MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1706.75 and maximum of 1708.59 gallons
        3. Rupture cost between minimum of $23.63 and maximum of $23.66MM
        4. Rupture spill volume is between a minimum of 222977.56 and maximum of 223218.44 gallons
        5. Puncture cost between minimum of $5.94 and maximum of $5.95MM
        6. Puncture spill volume is between a minimum of 56079.77 and maximum of 56140.35 gallons
        7. Land use distributed as
           1. Agricultural: 29.96
284. "HARMATTAN TO SUNDRE NPS 6 FROM 4-35-31-4W5 TO 14-3-32-4W5
     1. Total Cumulative Length (m): 21.61
     2. Likelihood of failure distributed between minimum of 1.920e-02 and maximum of 1.920e-02.
        1. ILI Date of 2019-03-21
        2. ILI tool of AFD
        3. Anomalies identified 31.0
        4. Depth fraction between 0.1 and 0.31
        5. Length between 14.0 mm and 188.0
     3. Consequence of failure distributed between minimum of $21.14 and maximum of $21.18MM
     4. Total length driven by Environmental: 21.61 meters.
     5. Environmental Cost distributed between minimum of $20.66 and maximum of $20.69MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1973.38 and maximum of 1976.93 gallons
        3. Rupture cost between minimum of $59.23 and maximum of $59.33MM
        4. Rupture spill volume is between a minimum of 558791.97 and maximum of 559797.57 gallons
        5. Puncture cost between minimum of $6.87 and maximum of $6.88MM
        6. Puncture spill volume is between a minimum of 64840.82 and maximum of 64957.51 gallons
        7. Land use distributed as
           1. Agricultural: 21.61
285. "SS-10 NPS 8
     1. Total Cumulative Length (m): 10.95
     2. Likelihood of failure distributed between minimum of 1.140e-02 and maximum of 1.140e-02.
        1. ILI Date of 2017-08-25
        2. ILI tool of MFL/Geometry
        3. Anomalies identified 249.0
        4. Depth fraction between 0.11 and 0.28
        5. Length between 8.0 mm and 166.0
     3. Consequence of failure distributed between minimum of $29.63 and maximum of $29.63MM
     4. Total length driven by Environmental: 10.95 meters.
     5. Environmental Cost distributed between minimum of $29.11 and maximum of $29.11MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1855.82 and maximum of 1855.82 gallons
        3. Rupture cost between minimum of $94.40 and maximum of $94.40MM
        4. Rupture spill volume is between a minimum of 890679.19 and maximum of 890679.19 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
        6. Puncture spill volume is between a minimum of 60978.0 and maximum of 60978.0 gallons
        7. Land use distributed as
           1. Agricultural: 10.95
     6. Internal Corrosion Reportable Pipeline Segments
        1. IC Method 1
286. "Empress 8 inch Water
     1. Total Cumulative Length (m): 10119.82
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        2. Wall thickness between minimum of 3.96 and maximum of 3.96
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.20 and maximum of $0.22MM
        1. Total length driven by Economic Loss: 10119.82 meters.
     4. Economic Loss Cost distributed between minimum of $0.20 and maximum of $0.22MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Fresh Water.
        4. Leak cost between minimum of $0.21 and maximum of $0.22MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
        7. Rupture cost between minimum of $0.21 and maximum of $0.22MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
        10. Puncture cost between minimum of $0.21 and maximum of $0.22MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
287. "Empress 10 inch Water
     1. Total Cumulative Length (m): 10102.58
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28MM
        1. Total length driven by Economic Loss: 10102.58 meters.
     4. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.28MM:
        1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Fresh Water.
        4. Leak cost between minimum of $0.22 and maximum of $0.28MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
        7. Rupture cost between minimum of $0.22 and maximum of $0.28MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
        10. Puncture cost between minimum of $0.22 and maximum of $0.28MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
288. "Sarnia 8 inch Fresh Water
     1. Total Cumulative Length (m): 7977.89
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.25MM
        1. Total length driven by Economic Loss: 7977.89 meters.
     4. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.25MM:
        1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Fresh Water.
        4. Leak cost between minimum of $0.21 and maximum of $0.25MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
        7. Rupture cost between minimum of $0.21 and maximum of $0.25MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
        10. Puncture cost between minimum of $0.21 and maximum of $0.25MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
289. "EMPRESS WATER LINE NPS 10
     1. Total Cumulative Length (m): 6987.6
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2000-01-01 and maximum of 2001-01-01
        2. Wall thickness between minimum of 6.4 and maximum of 6.4
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28MM
        1. Total length driven by Economic Loss: 6987.6 meters.
     4. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.28MM:
        1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Fresh Water.
        4. Leak cost between minimum of $0.22 and maximum of $0.28MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
        7. Rupture cost between minimum of $0.22 and maximum of $0.28MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
        10. Puncture cost between minimum of $0.22 and maximum of $0.28MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
290. "EMPRESS WASTE WATER DISCHARGE NPS 10
     1. Total Cumulative Length (m): 6957.2
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.58 and maximum of $1.01MM
     4. Total length driven by Environmental: 6957.2 meters.
     5. Environmental Cost distributed between minimum of $0.36 and maximum of $0.74MM:
        1. Leak cost between minimum of $0.02 and maximum of $0.05MM
        2. Leak spill volume between a minimum of 475.94 and maximum of 752.51 gallons
        3. Rupture cost between minimum of $17.46 and maximum of $35.70MM
        4. Rupture spill volume is between a minimum of 354842.05 and maximum of 561046.79 gallons
        5. Puncture cost between minimum of $0.77 and maximum of $1.57MM
        6. Puncture spill volume is between a minimum of 15638.25 and maximum of 24725.91 gallons
        7. Land use distributed as
           1. Agricultural: 6,944.12
           2. Water Course: 13.08
291. "SS-15 NPS 6
     1. Total Cumulative Length (m): 5229.36
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
        2. Wall thickness between minimum of 5.16 and maximum of 7.11
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $1.63 and maximum of $1.83MM
     4. Total length driven by Environmental: 5229.36 meters.
     5. Environmental Cost distributed between minimum of $1.39 and maximum of $1.59MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1962.4 gallons
        3. Rupture cost between minimum of $55.64 and maximum of $58.90MM
        4. Rupture spill volume is between a minimum of 524962.0 and maximum of 555682.93 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.83MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 64480.05 gallons
        7. Land use distributed as
           1. Agricultural: 5,229.36
292. "C3 FROM ESSO NPS 6
     1. Total Cumulative Length (m): 4075.15
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        2. Wall thickness between minimum of 4.8 and maximum of 7.1
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.28 and maximum of $15.29MM
     4. Total length driven by Safety: 463.09 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $14.71MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 15.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 9.02 and maximum of 9.02 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $398.23MM
        5. Rupture scenario yielded 18.0 intersections with structures, with minimum of 0.0 and maximum of 41.48 of population impacted
        6. Rupture hazard radius distributed between minimum of 91.99 and maximum of 91.99 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 28.89 and maximum of 28.89 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 3612.06 meters.
     7. Economic Loss Cost distributed between minimum of $0.28 and maximum of $0.58MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.24 and maximum of $0.50MM
        5. Leak scenario yielded 15.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $24,336.15 and maximum of $24,336.15
        7. Rupture cost between minimum of $7.10 and maximum of $11.97MM
        8. Rupture scenario yielded 18.0 intersections with structures, with minimum of $25,000.00 and maximum of $4,871,372.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $6,891,140.89 and maximum of $6,891,140.89
        10. Puncture cost between minimum of $1.01 and maximum of $1.28MM
        11. Puncture scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $799,630.73 and maximum of $799,630.73"
293. "RICHARDSON GAS LINE NPS 3
     1. Total Cumulative Length (m): 3703.21
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1965-01-01 and maximum of 1965-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 3.18
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.24MM
        1. Total length driven by Economic Loss: 3703.21 meters.
     4. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.24MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.21 and maximum of $0.23MM
        5. Leak scenario yielded 1.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $3,382.92 and maximum of $3,382.92
        7. Rupture cost between minimum of $0.47 and maximum of $0.51MM
        8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $267,358.90 and maximum of $267,358.90
        10. Puncture cost between minimum of $0.32 and maximum of $0.34MM
        11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $111,154.91 and maximum of $111,154.91"
294. "Sarnia 6 inch tied into 6 inch E/P line
     1. Total Cumulative Length (m): 2501.78
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.35 and maximum of $12.64MM
     4. Total length driven by Safety: 469.08 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $12.04MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 40.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $24.21MM
        5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.52 of population impacted
        6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 47.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 2032.7 meters.
     7. Economic Loss Cost distributed between minimum of $0.33 and maximum of $0.65MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.26 and maximum of $0.58MM
        5. Leak scenario yielded 40.0 intersections with structures, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $44,363.99 and maximum of $44,363.99
        7. Rupture cost between minimum of $12.80 and maximum of $13.31MM
        8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $25,000.00 and maximum of $537,650.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $12,562,319.03 and maximum of $12,562,319.03
        10. Puncture cost between minimum of $1.67 and maximum of $1.99MM
        11. Puncture scenario yielded 47.0 intersections with structures, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,457,700.03 and maximum of $1,457,700.03"
295. "Kerrbert 4 inch Water
     1. Total Cumulative Length (m): 2341.68
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.23MM
        1. Total length driven by Economic Loss: 2341.68 meters.
     4. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.23MM:
        1. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Fresh Water.
        4. Leak cost between minimum of $0.21 and maximum of $0.23MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
        7. Rupture cost between minimum of $0.21 and maximum of $0.23MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
        10. Puncture cost between minimum of $0.21 and maximum of $0.23MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
296. "10-36 LACT TO CROOKED LAKE NPS 6
     1. Total Cumulative Length (m): 2315.46
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2017-11-20 and maximum of 2017-11-20
        2. Wall thickness between minimum of 4.78 and maximum of 7.11
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.59 and maximum of $0.63MM
     4. Total length driven by Environmental: 2315.46 meters.
     5. Environmental Cost distributed between minimum of $0.38 and maximum of $0.41MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1691.91 and maximum of 1738.53 gallons
        3. Rupture cost between minimum of $50.78 and maximum of $52.18MM
        4. Rupture spill volume is between a minimum of 479089.95 and maximum of 492289.71 gallons
        5. Puncture cost between minimum of $5.89 and maximum of $6.05MM
        6. Puncture spill volume is between a minimum of 55592.4 and maximum of 57124.07 gallons
        7. Land use distributed as
           1. Agricultural: 2,315.46
297. "COED BV 203 TO EST NPS 8
     1. Total Cumulative Length (m): 2259.9
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $5.08 and maximum of $158.72MM
     4. Total length driven by Safety: 1694.93 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $150.03MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $513.60MM
        5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 53.5 of population impacted
        6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $392.54MM
        8. Puncture scenario yielded 46.0 intersections with structures, with minimum of 0.0 and maximum of 40.89 of population impacted
        9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
        10. Product type is Condensate.
        11. Class area location is/are 2.0.
     6. Total length driven by Environmental: 564.97 meters.
     7. Environmental Cost distributed between minimum of $4.66 and maximum of $13.35MM:
        1. Leak cost between minimum of $0.13 and maximum of $0.35MM
        2. Leak spill volume between a minimum of 1973.38 and maximum of 2019.77 gallons
        3. Rupture cost between minimum of $64.53 and maximum of $169.76MM
        4. Rupture spill volume is between a minimum of 947101.66 and maximum of 969363.57 gallons
        5. Puncture cost between minimum of $4.42 and maximum of $11.62MM
        6. Puncture spill volume is between a minimum of 64840.82 and maximum of 66364.92 gallons
        7. Land use distributed as
           1. Commercial/Industrial: 2,256.78
           2. Water Course: 3.12
298. "SPEED CORNER TO FORT SASKATCHEWAN INLET (KEYSPAN) NPS 16
     1. Total Cumulative Length (m): 1771.15
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1995-01-01 and maximum of 1995-01-01
        2. Wall thickness between minimum of 5.56 and maximum of 10.31
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $1.36 and maximum of $1.59MM
        1. Total length driven by Economic Loss: 1771.15 meters.
     4. Economic Loss Cost distributed between minimum of $1.36 and maximum of $1.59MM:
        1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $1.02 and maximum of $1.10MM
        5. Leak scenario yielded 15.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $35,177.42 and maximum of $35,177.42
        7. Rupture cost between minimum of $59.11 and maximum of $59.26MM
        8. Rupture scenario yielded 8.0 intersections with structures, with minimum of $25,000.00 and maximum of $175,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $58,099,358.13 and maximum of $58,099,358.13
        10. Puncture cost between minimum of $2.14 and maximum of $2.27MM
        11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $25,000.00 and maximum of $125,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,155,850.00 and maximum of $1,155,850.00"
299. "BUCK CREEK TO STATION 1 NPS 3
     1. Total Cumulative Length (m): 1684.92
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 3.18
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.30 and maximum of $122.64MM
     4. Total length driven by Safety: 306.82 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $119.66MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 5.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.7 and maximum of 11.7 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
        5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 57.3 and maximum of 57.3 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 8.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 42.7 and maximum of 42.7 meters.
        10. Product type is Ethane.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 1378.1 meters.
     7. Economic Loss Cost distributed between minimum of $0.30 and maximum of $2.98MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Ethane.
        4. Leak cost between minimum of $0.28 and maximum of $2.97MM
        5. Leak scenario yielded 5.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $74,968.65 and maximum of $74,968.65
        7. Rupture cost between minimum of $6.13 and maximum of $8.82MM
        8. Rupture scenario yielded 7.0 intersections with structures, with minimum of $269,868.00 and maximum of $2,688,250.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $5,924,929.50 and maximum of $5,924,929.50
        10. Puncture cost between minimum of $2.67 and maximum of $5.36MM
        11. Puncture scenario yielded 8.0 intersections with structures, with minimum of $269,868.00 and maximum of $2,688,250.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $2,463,299.44 and maximum of $2,463,299.44"
300. "NPS4 SS-35 From 5-34-11-19-W3 To 5-35-11-19-W3
     1. Total Cumulative Length (m): 1532.63
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1968-01-01 and maximum of 1968-01-01
        2. Wall thickness between minimum of 3.17 and maximum of 3.17
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $1.17 and maximum of $1.22MM
     4. Total length driven by Environmental: 1532.63 meters.
     5. Environmental Cost distributed between minimum of $0.96 and maximum of $0.98MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.17MM
        2. Leak spill volume between a minimum of 1545.39 and maximum of 1577.19 gallons
        3. Rupture cost between minimum of $21.40 and maximum of $21.84MM
        4. Rupture spill volume is between a minimum of 201897.55 and maximum of 206051.63 gallons
        5. Puncture cost between minimum of $5.38 and maximum of $5.49MM
        6. Puncture spill volume is between a minimum of 50778.06 and maximum of 51822.83 gallons
        7. Land use distributed as
           1. Agricultural: 1,532.63
301. "BATCH TRANSFER LINE NPS 24
     1. Total Cumulative Length (m): 1344.07
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
        2. Wall thickness between minimum of 6.35 and maximum of 6.35
        3. iFilms growth rate between minimum of 0.05 and maximum of 0.05 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $15.34 and maximum of $155.74MM
     4. Total length driven by Safety: 1021.53 meters.
     5. Safety Cost distributed between minimum of $4.31 and maximum of $124.72MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 32.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 2.91 and maximum of 2.91 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $968.45MM
        5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 100.88 of population impacted
        6. Rupture hazard radius distributed between minimum of 99.14 and maximum of 99.14 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 34.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 11.53 and maximum of 11.53 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 322.55 meters.
     7. Environmental Cost distributed between minimum of $7.72 and maximum of $10.77MM:
        1. Leak cost between minimum of $0.06 and maximum of $0.06MM
        2. Leak spill volume between a minimum of 850.32 and maximum of 883.99 gallons
        3. Rupture cost between minimum of $215.31 and maximum of $223.83MM
        4. Rupture spill volume is between a minimum of 3159898.85 and maximum of 3285013.13 gallons
        5. Puncture cost between minimum of $1.90 and maximum of $1.98MM
        6. Puncture spill volume is between a minimum of 27939.64 and maximum of 29045.89 gallons
        7. Land use distributed as
           1. Commercial/Industrial: 1,344.07
302. "KALKASKA SARNIA TO PUMP STATION NPS 8
     1. Total Cumulative Length (m): 1330.88
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1974-01-01 and maximum of 1974-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.30 and maximum of $0.69MM
     4. Total length driven by Safety: 408.51 meters.
     5. Safety Cost distributed between minimum of $0.02 and maximum of $0.37MM:
        1. Leak cost between minimum of $0.02 and maximum of $0.38MM
        2. Leak scenario yielded 0.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
        3. Leak hazard radius distributed between minimum of 11.01 and maximum of 11.01 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
        5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 140.37 and maximum of 140.37 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 1.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 51.35 and maximum of 51.35 meters.
        10. Product type is NGL.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 922.37 meters.
     7. Economic Loss Cost distributed between minimum of $0.28 and maximum of $0.31MM:
        1. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.26 and maximum of $0.26MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $44,314.96 and maximum of $44,314.96
        7. Rupture cost between minimum of $21.48 and maximum of $21.75MM
        8. Rupture scenario yielded 2.0 intersections with structures, with minimum of $50,000.00 and maximum of $268,825.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $21,268,460.05 and maximum of $21,268,460.05
        10. Puncture cost between minimum of $1.67 and maximum of $1.94MM
        11. Puncture scenario yielded 1.0 intersections with structures, with minimum of $268,825.00 and maximum of $268,825.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,456,089.09 and maximum of $1,456,089.09"
303. "EDS OPERATIVE NPS 12
     1. Total Cumulative Length (m): 1330.76
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1974-01-01 and maximum of 1974-01-01
        2. Wall thickness between minimum of 6.22 and maximum of 6.22
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.94 and maximum of $1.40MM
        1. Total length driven by Economic Loss: 1330.76 meters.
     4. Economic Loss Cost distributed between minimum of $0.92 and maximum of $0.99MM:
        1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.89 and maximum of $0.89MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $44,566.23 and maximum of $44,566.23
        7. Rupture cost between minimum of $47.58 and maximum of $48.15MM
        8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $268,825.00 and maximum of $562,650.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $46,740,539.02 and maximum of $46,740,539.02
        10. Puncture cost between minimum of $2.31 and maximum of $2.58MM
        11. Puncture scenario yielded 1.0 intersections with structures, with minimum of $268,825.00 and maximum of $268,825.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,464,345.16 and maximum of $1,464,345.16"
304. "CARROT CREEK LATERAL NPS 2
     1. Total Cumulative Length (m): 1263.04
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1988-01-01 and maximum of 1988-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 3.18
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.30 and maximum of $0.31MM
        1. Total length driven by Economic Loss: 1263.04 meters.
     4. Economic Loss Cost distributed between minimum of $0.27 and maximum of $0.28MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.27 and maximum of $0.27MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $2.42 and maximum of $2.42MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $2,214,603.35 and maximum of $2,214,603.35
        10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
305. "FOOTHILLS EMPRESS 4 TO EMPRESS 6 NPS 36
     1. Total Cumulative Length (m): 1144.55
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1998-01-01 and maximum of 1998-01-01
        2. Wall thickness between minimum of 14.27 and maximum of 14.27
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $4.32 and maximum of $126.58MM
     4. Total length driven by Safety: 156.53 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $119.59MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 117.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 9.71 and maximum of 9.71 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $765.13MM
        5. Rupture scenario yielded 3.0 intersections with structures, with minimum of 0.0 and maximum of 79.7 of population impacted
        6. Rupture hazard radius distributed between minimum of 355.87 and maximum of 355.87 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 25.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 44.58 and maximum of 44.58 meters.
        10. Product type is NGL.
        11. Class area location is/are nan.
     6. Total length driven by Economic Loss: 988.02 meters.
     7. Economic Loss Cost distributed between minimum of $4.32 and maximum of $6.99MM:
        1. Repair costs between minimum of $100,500.00 and maximum of $100,500.00.
        2. Outage losses between minimum of $4,200,000.00 and maximum of $4,200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $4.33 and maximum of $7.04MM
        5. Leak scenario yielded 117.0 intersections with structures, with minimum of $0.00 and maximum of $2,713,250.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $30,397.21 and maximum of $30,397.21
        7. Rupture cost between minimum of $258.48 and maximum of $265.88MM
        8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $7,418,325.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $254,159,387.22 and maximum of $254,159,387.22
        10. Puncture cost between minimum of $5.30 and maximum of $8.01MM
        11. Puncture scenario yielded 25.0 intersections with structures, with minimum of $0.00 and maximum of $2,713,250.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $998,783.28 and maximum of $998,783.28"
306. "NIPISI FUEL GAS NPS 3
     1. Total Cumulative Length (m): 1135.8
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2012-05-01 and maximum of 2012-05-01
        2. Wall thickness between minimum of 3.99 and maximum of 3.99
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.26MM
        1. Total length driven by Economic Loss: 1135.8 meters.
     4. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.26MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is FG.
        4. Leak cost between minimum of $0.22 and maximum of $0.27MM
        5. Leak scenario yielded 48.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $9,264.52 and maximum of $9,264.52
        7. Rupture cost between minimum of $0.94 and maximum of $0.99MM
        8. Rupture scenario yielded 37.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $732,194.60 and maximum of $732,194.60
        10. Puncture cost between minimum of $0.51 and maximum of $0.56MM
        11. Puncture scenario yielded 49.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $304,411.14 and maximum of $304,411.14"
307. "NPS20 ENBRIDGE CONDENSATE TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
     1. Total Cumulative Length (m): 1131.77
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        2. Wall thickness between minimum of 5.56 and maximum of 5.56
        3. iFilms growth rate between minimum of 0.06 and maximum of 0.06 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $7.91 and maximum of $10.06MM
     4. Total length driven by Environmental: 1131.77 meters.
     5. Environmental Cost distributed between minimum of $6.86 and maximum of $8.02MM:
        1. Leak cost between minimum of $0.06 and maximum of $0.06MM
        2. Leak spill volume between a minimum of 529.42 and maximum of 541.3 gallons
        3. Rupture cost between minimum of $144.81 and maximum of $148.06MM
        4. Rupture spill volume is between a minimum of 1366242.13 and maximum of 1396891.33 gallons
        5. Puncture cost between minimum of $1.84 and maximum of $1.89MM
        6. Puncture spill volume is between a minimum of 17395.54 and maximum of 17785.77 gallons
        7. Land use distributed as
           1. Agricultural: 467.25
           2. Remote: 664.53
308. "KERROBERT TO SASK ENERGY FUEL GAS NPS 2
     1. Total Cumulative Length (m): 1021.76
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.33 and maximum of $22.28MM
     4. Total length driven by Safety: 117.91 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $21.65MM:
        1. Leak cost between minimum of $0.00 and maximum of $21.89MM
        2. Leak scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
        3. Leak hazard radius distributed between minimum of 10.69 and maximum of 10.69 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
        5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 39.77 and maximum of 39.77 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
        8. Puncture scenario yielded 22.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
        9. Puncture hazard radius distributed between minimum of 38.44 and maximum of 38.44 meters.
        10. Product type is FG.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 903.85 meters.
     7. Economic Loss Cost distributed between minimum of $0.33 and maximum of $0.64MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is FG.
        4. Leak cost between minimum of $0.31 and maximum of $0.61MM
        5. Leak scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $106,972.91 and maximum of $106,972.91
        7. Rupture cost between minimum of $4.10 and maximum of $4.39MM
        8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $3,892,857.05 and maximum of $3,892,857.05
        10. Puncture cost between minimum of $3.72 and maximum of $4.02MM
        11. Puncture scenario yielded 22.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $3,514,886.76 and maximum of $3,514,886.76"
309. "NPS4 ENBRIDGE TRANSFER from 2-34-33-22W3 to 10-34-33-22W3
     1. Total Cumulative Length (m): 907.79
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        2. Wall thickness between minimum of 3.2 and maximum of 3.2
        3. iFilms growth rate between minimum of 0.06 and maximum of 0.06 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.80 and maximum of $1.37MM
     4. Total length driven by Environmental: 907.79 meters.
     5. Environmental Cost distributed between minimum of $0.59 and maximum of $1.12MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1925.94 and maximum of 1935.35 gallons
        3. Rupture cost between minimum of $26.67 and maximum of $26.80MM
        4. Rupture spill volume is between a minimum of 251613.85 and maximum of 252844.1 gallons
        5. Puncture cost between minimum of $6.71 and maximum of $6.74MM
        6. Puncture spill volume is between a minimum of 63281.92 and maximum of 63591.33 gallons
        7. Land use distributed as
           1. Agricultural: 380.94
           2. Remote: 526.85
310. "NPS20 ENBRIDGE BLEND TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
     1. Total Cumulative Length (m): 896.89
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        2. Wall thickness between minimum of 5.56 and maximum of 5.56
        3. iFilms growth rate between minimum of 0.06 and maximum of 0.07 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $4.34 and maximum of $7.77MM
     4. Total length driven by Environmental: 896.89 meters.
     5. Environmental Cost distributed between minimum of $3.14 and maximum of $6.82MM:
        1. Leak cost between minimum of $0.03 and maximum of $0.05MM
        2. Leak spill volume between a minimum of 501.53 and maximum of 510.83 gallons
        3. Rupture cost between minimum of $89.82 and maximum of $139.73MM
        4. Rupture spill volume is between a minimum of 1294263.27 and maximum of 1318272.77 gallons
        5. Puncture cost between minimum of $1.14 and maximum of $1.78MM
        6. Puncture spill volume is between a minimum of 16479.07 and maximum of 16784.77 gallons
        7. Land use distributed as
           1. Agricultural: 430.45
           2. Commercial/Industrial: 97.02
           3. Remote: 369.42
311. "ESSO ETHANE NPS 6
     1. Total Cumulative Length (m): 885.6
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.41 and maximum of $15.39MM
     4. Total length driven by Safety: 632.57 meters.
     5. Safety Cost distributed between minimum of $0.07 and maximum of $14.76MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 10.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
        4. Rupture cost between minimum of $12.11 and maximum of $456.43MM
        5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 1.26 and maximum of 47.54 of population impacted
        6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $221.29MM
        8. Puncture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 23.05 of population impacted
        9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 253.03 meters.
     7. Economic Loss Cost distributed between minimum of $0.33 and maximum of $0.63MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.26 and maximum of $0.52MM
        5. Leak scenario yielded 10.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $44,363.99 and maximum of $44,363.99
        7. Rupture cost between minimum of $13.04 and maximum of $18.77MM
        8. Rupture scenario yielded 7.0 intersections with structures, with minimum of $268,825.00 and maximum of $5,997,715.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $12,562,319.03 and maximum of $12,562,319.03
        10. Puncture cost between minimum of $1.67 and maximum of $4.90MM
        11. Puncture scenario yielded 16.0 intersections with structures, with minimum of $25,000.00 and maximum of $3,226,943.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,457,700.03 and maximum of $1,457,700.03"
312. "KERROBERT TO ENBRIDGE SALES GAS NPS 10
     1. Total Cumulative Length (m): 852.41
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
        2. Wall thickness between minimum of 9.27 and maximum of 9.27
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.30 and maximum of $0.45MM
        1. Total length driven by Economic Loss: 852.41 meters.
     4. Economic Loss Cost distributed between minimum of $0.30 and maximum of $0.33MM:
        1. Repair costs between minimum of $17,000.00 and maximum of $17,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.25 and maximum of $0.27MM
        5. Leak scenario yielded 14.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $30,427.85 and maximum of $30,427.85
        7. Rupture cost between minimum of $22.93 and maximum of $23.57MM
        8. Rupture scenario yielded 5.0 intersections with structures, with minimum of $25,000.00 and maximum of $664,736.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $22,685,881.44 and maximum of $22,685,881.44
        10. Puncture cost between minimum of $1.22 and maximum of $1.24MM
        11. Puncture scenario yielded 16.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $999,790.12 and maximum of $999,790.12"
313. "NPS2 Yoyo line (Alliance flare line) From 8-14-55-22W4 To 9-14-55-22W4
     1. Total Cumulative Length (m): 799.43
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2004-11-01 and maximum of 2004-11-01
        2. Wall thickness between minimum of 3.2 and maximum of 3.2
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.24 and maximum of $0.32MM
        1. Total length driven by Economic Loss: 799.43 meters.
     4. Economic Loss Cost distributed between minimum of $0.24 and maximum of $0.32MM:
        1. Repair costs between minimum of $21,000.00 and maximum of $21,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is C3/C4.
        4. Leak cost between minimum of $0.23 and maximum of $0.31MM
        5. Leak scenario yielded 28.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $12,073.09 and maximum of $12,073.09
        7. Rupture cost between minimum of $0.66 and maximum of $0.74MM
        8. Rupture scenario yielded 28.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $439,352.33 and maximum of $439,352.33
        10. Puncture cost between minimum of $0.62 and maximum of $0.69MM
        11. Puncture scenario yielded 29.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $396,694.17 and maximum of $396,694.17"
314. "16-19-037-03W5 TO 10-19-037-03W5 NPS 4
     1. Total Cumulative Length (m): 775.79
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1991-01-01 and maximum of 1991-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 6.02
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.62 and maximum of $1.66MM
     4. Total length driven by Environmental: 775.79 meters.
     5. Environmental Cost distributed between minimum of $0.40 and maximum of $1.43MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1869.97 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.89MM
        4. Rupture spill volume is between a minimum of 242204.33 and maximum of 244301.7 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.51MM
        6. Puncture spill volume is between a minimum of 60915.38 and maximum of 61442.88 gallons
        7. Land use distributed as
           1. Agricultural: 775.79
315. "NPS4 SS-57 From 10-27-10-19-W3 To 12-27-10-19-W3
     1. Total Cumulative Length (m): 763.86
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $1.03 and maximum of $1.62MM
     4. Total length driven by Environmental: 763.86 meters.
     5. Environmental Cost distributed between minimum of $0.81 and maximum of $1.39MM:
        1. Leak cost between minimum of $0.17 and maximum of $0.29MM
        2. Leak spill volume between a minimum of 1632.86 and maximum of 1648.37 gallons
        3. Rupture cost between minimum of $22.61 and maximum of $38.31MM
        4. Rupture spill volume is between a minimum of 213324.43 and maximum of 215351.24 gallons
        5. Puncture cost between minimum of $5.69 and maximum of $9.64MM
        6. Puncture spill volume is between a minimum of 53651.97 and maximum of 54161.72 gallons
        7. Land use distributed as
           1. Agricultural: 561.08
           2. Remote: 199.75
           3. Water Course: 3.02
316. "16 EST to Enbridge 7-5-53-23W4 to 2-5-53-23W4
     1. Total Cumulative Length (m): 482.65
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1979-01-01 and maximum of 1979-01-01
        2. Wall thickness between minimum of 5.6 and maximum of 5.6
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $125.09 and maximum of $125.43MM
     4. Total length driven by Safety: 482.65 meters.
     5. Safety Cost distributed between minimum of $120.27 and maximum of $120.61MM:
        1. Leak cost between minimum of $121.06 and maximum of $121.06MM
        2. Leak scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 9.03 and maximum of 9.03 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $133.16MM
        5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 12.61 and maximum of 13.87 of population impacted
        6. Rupture hazard radius distributed between minimum of 178.36 and maximum of 178.36 meters.
        7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
        8. Puncture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 28.91 and maximum of 28.91 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
317. "Access C5 Line 36
     1. Total Cumulative Length (m): 404.28
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
        2. Wall thickness between minimum of 7.09 and maximum of 7.09
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $1.47 and maximum of $1.60MM
     4. Total length driven by Environmental: 404.28 meters.
     5. Environmental Cost distributed between minimum of $1.21 and maximum of $1.24MM:
        1. Leak cost between minimum of $0.13 and maximum of $0.14MM
        2. Leak spill volume between a minimum of 1973.44 and maximum of 1981.77 gallons
        3. Rupture cost between minimum of $38.08 and maximum of $38.24MM
        4. Rupture spill volume is between a minimum of 558809.69 and maximum of 561166.98 gallons
        5. Puncture cost between minimum of $4.42 and maximum of $4.44MM
        6. Puncture spill volume is between a minimum of 64842.88 and maximum of 65116.41 gallons
        7. Land use distributed as
           1. Commercial/Industrial: 404.28
318. "Access C5 Line 37
     1. Total Cumulative Length (m): 404.14
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
        2. Wall thickness between minimum of 7.09 and maximum of 7.09
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $1.47 and maximum of $1.60MM
     4. Total length driven by Environmental: 404.14 meters.
     5. Environmental Cost distributed between minimum of $1.21 and maximum of $1.24MM:
        1. Leak cost between minimum of $0.13 and maximum of $0.14MM
        2. Leak spill volume between a minimum of 1973.44 and maximum of 1981.77 gallons
        3. Rupture cost between minimum of $38.08 and maximum of $38.24MM
        4. Rupture spill volume is between a minimum of 558809.69 and maximum of 561166.19 gallons
        5. Puncture cost between minimum of $4.42 and maximum of $4.44MM
        6. Puncture spill volume is between a minimum of 64842.88 and maximum of 65116.32 gallons
        7. Land use distributed as
           1. Commercial/Industrial: 404.14
319. "SS-27 NPS 4
     1. Total Cumulative Length (m): 384.36
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1956-01-01 and maximum of 1956-01-01
        2. Wall thickness between minimum of 6.02 and maximum of 6.02
        3. iFilms growth rate between minimum of 0.08 and maximum of 0.1 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.51 and maximum of $2.23MM
     4. Total length driven by Environmental: 384.36 meters.
     5. Environmental Cost distributed between minimum of $0.30 and maximum of $2.00MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1861.88 and maximum of 1861.88 gallons
        3. Rupture cost between minimum of $25.78 and maximum of $25.78MM
        4. Rupture spill volume is between a minimum of 243245.68 and maximum of 243245.68 gallons
        5. Puncture cost between minimum of $6.48 and maximum of $6.48MM
        6. Puncture spill volume is between a minimum of 61177.29 and maximum of 61177.29 gallons
        7. Land use distributed as
           1. Agricultural: 384.36
320. "NPS8 Petro Vera to Lone Rock From 13-11-47-27-W3 To 16-10-47-27-W3
     1. Total Cumulative Length (m): 359.45
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        2. Wall thickness between minimum of 5.6 and maximum of 5.6
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.99 and maximum of $13.32MM
     4. Total length driven by Safety: 46.08 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $12.03MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 5.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 2.28 and maximum of 2.28 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
        5. Rupture scenario yielded 3.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 30.46 and maximum of 30.46 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 6.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 8.99 and maximum of 8.99 meters.
        10. Product type is Blend.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 313.38 meters.
     7. Environmental Cost distributed between minimum of $0.77 and maximum of $0.80MM:
        1. Leak cost between minimum of $0.05 and maximum of $0.05MM
        2. Leak spill volume between a minimum of 492.22 and maximum of 499.14 gallons
        3. Rupture cost between minimum of $25.04 and maximum of $25.39MM
        4. Rupture spill volume is between a minimum of 236237.43 and maximum of 239558.37 gallons
        5. Puncture cost between minimum of $1.71 and maximum of $1.74MM
        6. Puncture spill volume is between a minimum of 16173.37 and maximum of 16400.73 gallons
        7. Land use distributed as
           1. Agricultural: 295.97
           2. Remote: 63.49
321. "NIPISI 11-02 TO 14-02 NPS 16
     1. Total Cumulative Length (m): 339.6
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1996-08-01 and maximum of 1996-08-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $1.28 and maximum of $1.67MM
        1. Total length driven by Economic Loss: 339.6 meters.
     4. Economic Loss Cost distributed between minimum of $0.86 and maximum of $0.87MM:
        1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.87 and maximum of $0.87MM
        5. Leak scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $903.67 and maximum of $907.58
        7. Rupture cost between minimum of $2.39 and maximum of $2.44MM
        8. Rupture scenario yielded 5.0 intersections with structures, with minimum of $50,000.00 and maximum of $100,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $1,492,510.39 and maximum of $1,498,965.83
        10. Puncture cost between minimum of $0.90 and maximum of $0.92MM
        11. Puncture scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $29,692.55 and maximum of $29,820.98"
322. "CONDOR FROM 14-12-38-5W5 TO 5-20-38-4W5 NPS4
     1. Total Cumulative Length (m): 328.68
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2017-11-01 and maximum of 2017-11-01
        2. Wall thickness between minimum of 3.2 and maximum of 3.2
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.55 and maximum of $0.55MM
     4. Total length driven by Environmental: 328.68 meters.
     5. Environmental Cost distributed between minimum of $0.34 and maximum of $0.34MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1692.22 and maximum of 1698.89 gallons
        3. Rupture cost between minimum of $23.43 and maximum of $23.52MM
        4. Rupture spill volume is between a minimum of 221080.17 and maximum of 221950.69 gallons
        5. Puncture cost between minimum of $5.89 and maximum of $5.92MM
        6. Puncture spill volume is between a minimum of 55602.57 and maximum of 55821.51 gallons
        7. Land use distributed as
           1. Agricultural: 328.68
323. "14-02 to 12-02 NPS 24
     1. Total Cumulative Length (m): 317.4
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1998-01-01 and maximum of 1998-01-01
        2. Wall thickness between minimum of 6.35 and maximum of 6.35
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $11.88 and maximum of $11.95MM
     4. Total length driven by Environmental: 317.4 meters.
     5. Environmental Cost distributed between minimum of $9.30 and maximum of $9.37MM:
        1. Leak cost between minimum of $0.09 and maximum of $0.09MM
        2. Leak spill volume between a minimum of 825.78 and maximum of 832.0 gallons
        3. Rupture cost between minimum of $325.26 and maximum of $327.70MM
        4. Rupture spill volume is between a minimum of 3068711.06 and maximum of 3091803.54 gallons
        5. Puncture cost between minimum of $2.88 and maximum of $2.90MM
        6. Puncture spill volume is between a minimum of 27133.36 and maximum of 27337.55 gallons
        7. Land use distributed as
           1. Agricultural: 317.40
324. "ENBRIDGE TRANSFER LINE NPS 30
     1. Total Cumulative Length (m): 298.94
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 2010-01-01 and maximum of 2010-01-01
        2. Wall thickness between minimum of 9.5 and maximum of 9.5
        3. iFilms growth rate between minimum of 0.1 and maximum of 0.11 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $76.74 and maximum of $181.82MM
     4. Total length driven by Safety: 298.94 meters.
     5. Safety Cost distributed between minimum of $66.66 and maximum of $163.80MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 17.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 2.87 and maximum of 2.87 meters.
        4. Rupture cost between minimum of $4,320.00 and maximum of $4,320.00MM
        5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 450.0 and maximum of 450.0 of population impacted
        6. Rupture hazard radius distributed between minimum of 119.78 and maximum of 119.78 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
        8. Puncture scenario yielded 17.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
        9. Puncture hazard radius distributed between minimum of 11.37 and maximum of 11.37 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0.
325. "GRANADA LATERAL NPS 3
     1. Total Cumulative Length (m): 293.97
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1982-01-01 and maximum of 1982-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.27 and maximum of $122.97MM
     4. Total length driven by Safety: 176.38 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $120.04MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $286.46MM
        5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 29.84 and maximum of 29.84 of population impacted
        6. Rupture hazard radius distributed between minimum of 80.38 and maximum of 80.38 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $286.46MM
        8. Puncture scenario yielded 3.0 intersections with structures, with minimum of 29.84 and maximum of 29.84 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is NGL.
        11. Class area location is/are nan.
     6. Total length driven by Economic Loss: 117.59 meters.
     7. Economic Loss Cost distributed between minimum of $0.27 and maximum of $2.93MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.27 and maximum of $2.96MM
        5. Leak scenario yielded 1.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $5.02 and maximum of $8.27MM
        8. Rupture scenario yielded 2.0 intersections with structures, with minimum of $3,254,250.00 and maximum of $3,254,250.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
        10. Puncture cost between minimum of $2.21 and maximum of $5.46MM
        11. Puncture scenario yielded 3.0 intersections with structures, with minimum of $3,254,250.00 and maximum of $3,254,250.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
326. "SOUTH GARRINGTON 1-27 LATERAL NPS 4
     1. Total Cumulative Length (m): 281.0
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1989-01-01 and maximum of 1989-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 3.18
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.61 and maximum of $0.70MM
     4. Total length driven by Environmental: 281.0 meters.
     5. Environmental Cost distributed between minimum of $0.35 and maximum of $0.37MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1692.25 and maximum of 1697.22 gallons
        3. Rupture cost between minimum of $23.43 and maximum of $23.50MM
        4. Rupture spill volume is between a minimum of 221083.38 and maximum of 221733.52 gallons
        5. Puncture cost between minimum of $5.89 and maximum of $5.91MM
        6. Puncture spill volume is between a minimum of 55603.38 and maximum of 55766.89 gallons
        7. Land use distributed as
           1. Agricultural: 281.00
327. "SS-28 NPS 4
     1. Total Cumulative Length (m): 274.79
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 9.000e-01.
        1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
        2. Wall thickness between minimum of 6.02 and maximum of 6.02
        3. iFilms growth rate between minimum of 0.08 and maximum of 0.09 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.51 and maximum of $3.37MM
     4. Total length driven by Environmental: 274.79 meters.
     5. Environmental Cost distributed between minimum of $0.30 and maximum of $3.11MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1859.61 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.75MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242948.7 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.48MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61102.6 gallons
        7. Land use distributed as
           1. Agricultural: 274.79
328. "NIPISI 14-02 TO 11-02 NPS24
     1. Total Cumulative Length (m): 264.71
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1996-08-01 and maximum of 1996-08-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $2.79 and maximum of $3.43MM
        1. Total length driven by Economic Loss: 264.71 meters.
     4. Economic Loss Cost distributed between minimum of $2.47 and maximum of $2.48MM:
        1. Repair costs between minimum of $73,000.00 and maximum of $73,000.00.
        2. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $2.50 and maximum of $2.50MM
        5. Leak scenario yielded 23.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $902.81 and maximum of $905.85
        7. Rupture cost between minimum of $5.91 and maximum of $5.94MM
        8. Rupture scenario yielded 2.0 intersections with structures, with minimum of $75,000.00 and maximum of $100,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $3,354,945.27 and maximum of $3,366,266.89
        10. Puncture cost between minimum of $2.53 and maximum of $2.55MM
        11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $29,664.23 and maximum of $29,764.33"
329. "PETRO VERA TO LONE ROCK NPS 8
     1. Total Cumulative Length (m): 248.54
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        2. Wall thickness between minimum of 5.56 and maximum of 5.56
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.99 and maximum of $13.33MM
     4. Total length driven by Safety: 101.26 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $12.03MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 2.28 and maximum of 2.28 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
        5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 30.46 and maximum of 30.46 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 8.99 and maximum of 8.99 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 147.28 meters.
     7. Environmental Cost distributed between minimum of $0.77 and maximum of $0.81MM:
        1. Leak cost between minimum of $0.05 and maximum of $0.05MM
        2. Leak spill volume between a minimum of 492.74 and maximum of 497.38 gallons
        3. Rupture cost between minimum of $25.07 and maximum of $25.30MM
        4. Rupture spill volume is between a minimum of 236487.22 and maximum of 238712.16 gallons
        5. Puncture cost between minimum of $1.72 and maximum of $1.73MM
        6. Puncture spill volume is between a minimum of 16190.47 and maximum of 16342.8 gallons
        7. Land use distributed as
           1. Agricultural: 248.54
330. "SS-20 NPS 4
     1. Total Cumulative Length (m): 219.8
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1966-01-01 and maximum of 1966-01-01
        2. Wall thickness between minimum of 3.17 and maximum of 3.17
        3. iFilms growth rate between minimum of 0.07 and maximum of 0.08 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.44 and maximum of $0.47MM
     4. Total length driven by Environmental: 109.9 meters.
     5. Environmental Cost distributed between minimum of $0.23 and maximum of $0.25MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.16MM
        2. Leak spill volume between a minimum of 1545.39 and maximum of 1549.95 gallons
        3. Rupture cost between minimum of $21.40 and maximum of $21.46MM
        4. Rupture spill volume is between a minimum of 201897.55 and maximum of 202493.29 gallons
        5. Puncture cost between minimum of $5.38 and maximum of $5.40MM
        6. Puncture spill volume is between a minimum of 50778.06 and maximum of 50927.9 gallons
        7. Land use distributed as
           1. Remote: 219.80
     6. Total length driven by Economic Loss: 109.9 meters.
     7. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.23MM:
        1. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.21 and maximum of $0.24MM
        5. Leak scenario yielded 7.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $1,714.65 and maximum of $1,719.71
        7. Rupture cost between minimum of $0.43 and maximum of $0.48MM
        8. Rupture scenario yielded 6.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $224,010.14 and maximum of $224,671.13
        10. Puncture cost between minimum of $0.27 and maximum of $0.29MM
        11. Puncture scenario yielded 9.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $56,339.47 and maximum of $56,505.71"
331. "SS- FMU10 From 01-10-017-18W3 To 01-10-017-18W3
     1. Total Cumulative Length (m): 192.72
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 2010-01-01 and maximum of 2010-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of C
        5. iFilms SME override comment of Outcome of 2018/12/20 meeting
     3. Consequence of failure distributed between minimum of $2.25 and maximum of $2.25MM
     4. Total length driven by Environmental: 192.72 meters.
     5. Environmental Cost distributed between minimum of $2.00 and maximum of $2.00MM:
        1. Leak cost between minimum of $0.15 and maximum of $0.15MM
        2. Leak spill volume between a minimum of 1383.73 and maximum of 1383.73 gallons
        3. Rupture cost between minimum of $19.16 and maximum of $19.16MM
        4. Rupture spill volume is between a minimum of 180777.58 and maximum of 180777.58 gallons
        5. Puncture cost between minimum of $4.82 and maximum of $4.82MM
        6. Puncture spill volume is between a minimum of 45466.3 and maximum of 45466.3 gallons
        7. Land use distributed as
           1. Agricultural: 192.72
332. "03 Tie in to Radial Lake From 06-20-39-07W5 To 07-20-39-07W5
     1. Total Cumulative Length (m): 191.6
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 3.18
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.44 and maximum of $0.79MM
        1. Total length driven by Economic Loss: 191.6 meters.
     4. Economic Loss Cost distributed between minimum of $0.41 and maximum of $0.42MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.27 and maximum of $0.27MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $5.02 and maximum of $5.28MM
        8. Rupture scenario yielded 1.0 intersections with structures, with minimum of $268,825.00 and maximum of $268,825.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
        10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
333. "FORT WHYTE INLET PIPING NPS 6
     1. Total Cumulative Length (m): 181.78
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1900-01-01 and maximum of 1900-01-01
        2. Wall thickness between minimum of 7.11 and maximum of 7.11
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.75 and maximum of $0.75MM
        1. Total length driven by Economic Loss: 181.78 meters.
     4. Economic Loss Cost distributed between minimum of $0.66 and maximum of $0.66MM:
        1. Repair costs between minimum of $40,000.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.30 and maximum of $0.30MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $17.48 and maximum of $17.48MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $17,232,190.63 and maximum of $17,232,190.63
        10. Puncture cost between minimum of $2.24 and maximum of $2.24MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
334. "EV-102 NPS 4
     1. Total Cumulative Length (m): 181.66
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1983-01-01 and maximum of 1983-01-01
        2. Wall thickness between minimum of 7.14 and maximum of 7.14
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.43 and maximum of $0.55MM
     4. Total length driven by Environmental: 106.31 meters.
     5. Environmental Cost distributed between minimum of $0.22 and maximum of $0.31MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1857.68 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.72MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242696.28 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.47MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61039.11 gallons
        7. Land use distributed as
           1. Agricultural: 181.66
     6. Total length driven by Economic Loss: 75.35 meters.
     7. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.23MM:
        1. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.21 and maximum of $0.24MM
        5. Leak scenario yielded 7.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $2,056.96 and maximum of $2,061.14
        7. Rupture cost between minimum of $0.50 and maximum of $0.53MM
        8. Rupture scenario yielded 5.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $268,730.99 and maximum of $269,277.30
        10. Puncture cost between minimum of $0.28 and maximum of $0.30MM
        11. Puncture scenario yielded 10.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $67,586.95 and maximum of $67,724.35"
335. "NIPISI CONDENSATE NPS 6
     1. Total Cumulative Length (m): 171.51
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1990-01-01 and maximum of 1990-01-01
        2. Wall thickness between minimum of 7.11 and maximum of 7.11
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.87 and maximum of $0.88MM
     4. Total length driven by Environmental: 171.51 meters.
     5. Environmental Cost distributed between minimum of $0.62 and maximum of $0.62MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1973.39 and maximum of 1976.77 gallons
        3. Rupture cost between minimum of $59.23 and maximum of $59.33MM
        4. Rupture spill volume is between a minimum of 558793.14 and maximum of 559751.58 gallons
        5. Puncture cost between minimum of $6.87 and maximum of $6.88MM
        6. Puncture spill volume is between a minimum of 64840.96 and maximum of 64952.17 gallons
        7. Land use distributed as
           1. Agricultural: 171.51
336. "COLEVILLE TRANSGAS TIE IN
     1. Total Cumulative Length (m): 167.0
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.27 and maximum of $0.35MM
        1. Total length driven by Economic Loss: 167.0 meters.
     4. Economic Loss Cost distributed between minimum of $0.27 and maximum of $0.35MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.26 and maximum of $0.28MM
        5. Leak scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $50,253.45 and maximum of $50,253.45
        7. Rupture cost between minimum of $4.20 and maximum of $4.20MM
        8. Rupture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $3,971,635.81 and maximum of $3,971,635.81
        10. Puncture cost between minimum of $1.88 and maximum of $1.88MM
        11. Puncture scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,651,214.29 and maximum of $1,651,214.29"
337. "NPS4 Sundre Lateral From 7-4-34-5-W5 To 10-4-34-5-W5
     1. Total Cumulative Length (m): 154.15
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1996-01-01 and maximum of 1996-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.42 and maximum of $0.61MM
     4. Total length driven by Environmental: 41.86 meters.
     5. Environmental Cost distributed between minimum of $0.21 and maximum of $0.40MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1691.87 and maximum of 1693.66 gallons
        3. Rupture cost between minimum of $23.43 and maximum of $23.45MM
        4. Rupture spill volume is between a minimum of 221034.09 and maximum of 221268.07 gallons
        5. Puncture cost between minimum of $5.89 and maximum of $5.90MM
        6. Puncture spill volume is between a minimum of 55590.98 and maximum of 55649.83 gallons
        7. Land use distributed as
           1. Agricultural: 154.15
     6. Total length driven by Economic Loss: 112.29 meters.
     7. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.23MM:
        1. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.21 and maximum of $0.24MM
        5. Leak scenario yielded 7.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $1,877.17 and maximum of $1,879.16
        7. Rupture cost between minimum of $0.48 and maximum of $0.48MM
        8. Rupture scenario yielded 5.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $245,242.59 and maximum of $245,502.19
        10. Puncture cost between minimum of $0.27 and maximum of $0.30MM
        11. Puncture scenario yielded 8.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $61,679.52 and maximum of $61,744.81"
338. "SS-66 NPS 4
     1. Total Cumulative Length (m): 131.24
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-01.
        1. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
        2. Wall thickness between minimum of 3.96 and maximum of 3.96
        3. iFilms growth rate between minimum of 0.11 and maximum of 0.12 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.97 and maximum of $2.62MM
     4. Total length driven by Environmental: 131.24 meters.
     5. Environmental Cost distributed between minimum of $0.73 and maximum of $2.36MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1856.63 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.71MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242559.62 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.47MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61004.74 gallons
        7. Land use distributed as
           1. Agricultural: 131.24
339. "VERMILLION TIE IN NPS 4
     1. Total Cumulative Length (m): 112.13
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1976-01-01 and maximum of 1976-01-01
        2. Wall thickness between minimum of 3.96 and maximum of 3.96
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.47 and maximum of $0.75MM
     4. Total length driven by Environmental: 112.13 meters.
     5. Environmental Cost distributed between minimum of $0.23 and maximum of $0.52MM:
        1. Leak cost between minimum of $0.19 and maximum of $0.19MM
        2. Leak spill volume between a minimum of 1835.15 and maximum of 1836.96 gallons
        3. Rupture cost between minimum of $25.41 and maximum of $25.44MM
        4. Rupture spill volume is between a minimum of 239752.38 and maximum of 239989.69 gallons
        5. Puncture cost between minimum of $6.39 and maximum of $6.40MM
        6. Puncture spill volume is between a minimum of 60298.71 and maximum of 60358.39 gallons
        7. Land use distributed as
           1. Agricultural: 112.13
340. "PENN WEST 10-29 LATERAL NPS 4
     1. Total Cumulative Length (m): 96.5
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
        2. Wall thickness between minimum of 3.96 and maximum of 3.96
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.43 and maximum of $0.64MM
     4. Total length driven by Environmental: 55.38 meters.
     5. Environmental Cost distributed between minimum of $0.22 and maximum of $0.40MM:
        1. Leak cost between minimum of $0.18 and maximum of $0.18MM
        2. Leak spill volume between a minimum of 1691.87 and maximum of 1693.87 gallons
        3. Rupture cost between minimum of $23.43 and maximum of $23.46MM
        4. Rupture spill volume is between a minimum of 221034.09 and maximum of 221295.65 gallons
        5. Puncture cost between minimum of $5.89 and maximum of $5.90MM
        6. Puncture spill volume is between a minimum of 55590.98 and maximum of 55656.76 gallons
        7. Land use distributed as
           1. Agricultural: 96.50
     6. Total length driven by Economic Loss: 41.12 meters.
     7. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.24MM:
        1. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.21 and maximum of $0.24MM
        5. Leak scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $1,877.17 and maximum of $1,879.39
        7. Rupture cost between minimum of $0.48 and maximum of $0.48MM
        8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $245,242.59 and maximum of $245,532.79
        10. Puncture cost between minimum of $0.27 and maximum of $0.30MM
        11. Puncture scenario yielded 4.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $61,679.52 and maximum of $61,752.51"
341. "STRATHCONA AOSPL CONNECTION NPS 12
     1. Total Cumulative Length (m): 78.6
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2010-01-01 and maximum of 2010-01-01
        2. Wall thickness between minimum of 9.52 and maximum of 9.52
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $1.34 and maximum of $1.60MM
        1. Total length driven by Economic Loss: 78.6 meters.
     4. Economic Loss Cost distributed between minimum of $0.98 and maximum of $1.01MM:
        1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.99 and maximum of $1.01MM
        5. Leak scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $2,057.56 and maximum of $2,058.77
        7. Rupture cost between minimum of $3.17 and maximum of $3.17MM
        8. Rupture scenario yielded 1.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $2,157,946.29 and maximum of $2,159,210.24
        10. Puncture cost between minimum of $1.05 and maximum of $1.08MM
        11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $67,606.80 and maximum of $67,646.40"
342. "SS-71 NPS 4
     1. Total Cumulative Length (m): 66.85
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 2004-01-01 and maximum of 2004-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 3.18
        3. iFilms growth rate between minimum of 0.06 and maximum of 0.07 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $8.81 and maximum of $9.25MM
     4. Total length driven by Environmental: 66.85 meters.
     5. Environmental Cost distributed between minimum of $8.48 and maximum of $8.92MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1855.3 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.69MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242385.09 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 60960.85 gallons
        7. Land use distributed as
           1. Agricultural: 66.85
343. "STRATHCONA INTERPIPE CONNECTION NPS 12
     1. Total Cumulative Length (m): 64.93
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2006-01-01 and maximum of 2006-01-01
        2. Wall thickness between minimum of 6.35 and maximum of 6.35
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $1.66 and maximum of $2.48MM
        1. Total length driven by Economic Loss: 64.93 meters.
     4. Economic Loss Cost distributed between minimum of $1.03 and maximum of $1.10MM:
        1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.99 and maximum of $1.01MM
        5. Leak scenario yielded 1.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $1,855.48 and maximum of $1,856.97
        7. Rupture cost between minimum of $23.31 and maximum of $23.31MM
        8. Rupture scenario yielded 1.0 intersections with structures, with minimum of $20,374,375.00 and maximum of $20,374,375.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $1,946,005.91 and maximum of $1,947,573.44
        10. Puncture cost between minimum of $1.05 and maximum of $1.07MM
        11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $60,966.87 and maximum of $61,015.98"
344. "SS-02 NPS 4
     1. Total Cumulative Length (m): 62.96
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1965-01-01 and maximum of 1965-01-01
        2. Wall thickness between minimum of 6.35 and maximum of 6.35
        3. iFilms growth rate between minimum of 0.07 and maximum of 0.08 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $1.82 and maximum of $2.66MM
     4. Total length driven by Environmental: 62.96 meters.
     5. Environmental Cost distributed between minimum of $1.57 and maximum of $2.42MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1855.22 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.69MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242374.55 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 60958.19 gallons
        7. Land use distributed as
           1. Agricultural: 62.96
345. "TIE-IN TO SSPL NPS 8
     1. Total Cumulative Length (m): 57.27
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 2012-01-01 and maximum of 2012-01-01
        2. Wall thickness between minimum of 7.9 and maximum of 7.9
        3. iFilms growth rate between minimum of 0.09 and maximum of 0.1 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $4.69 and maximum of $5.19MM
     4. Total length driven by Environmental: 57.27 meters.
     5. Environmental Cost distributed between minimum of $4.43 and maximum of $4.90MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1854.5 and maximum of 1855.1 gallons
        3. Rupture cost between minimum of $94.34 and maximum of $94.37MM
        4. Rupture spill volume is between a minimum of 890048.06 and maximum of 890333.18 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
        6. Puncture spill volume is between a minimum of 60934.8 and maximum of 60954.32 gallons
        7. Land use distributed as
           1. Agricultural: 57.27
346. "SS-01A NPS 8
     1. Total Cumulative Length (m): 44.1
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 2000-01-01 and maximum of 2000-01-01
        2. Wall thickness between minimum of 6.35 and maximum of 6.35
        3. iFilms growth rate between minimum of 0.07 and maximum of 0.08 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $2.82 and maximum of $4.93MM
     4. Total length driven by Environmental: 44.1 meters.
     5. Environmental Cost distributed between minimum of $2.56 and maximum of $4.64MM:
        1. Leak cost between minimum of $0.15 and maximum of $0.15MM
        2. Leak spill volume between a minimum of 1382.2 and maximum of 1382.65 gallons
        3. Rupture cost between minimum of $70.31 and maximum of $70.33MM
        4. Rupture spill volume is between a minimum of 663369.61 and maximum of 663589.15 gallons
        5. Puncture cost between minimum of $4.81 and maximum of $4.82MM
        6. Puncture spill volume is between a minimum of 45415.85 and maximum of 45430.88 gallons
        7. Land use distributed as
           1. Agricultural: 44.10
347. "SL-104 NPS 4
     1. Total Cumulative Length (m): 44.02
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1982-01-01 and maximum of 1982-01-01
        2. Wall thickness between minimum of 7.14 and maximum of 7.14
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.39 and maximum of $0.41MM
        1. Total length driven by Economic Loss: 44.02 meters.
     4. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.21MM:
        1. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.21 and maximum of $0.21MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $1,757.60 and maximum of $1,758.61
        7. Rupture cost between minimum of $0.44 and maximum of $0.44MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $229,621.28 and maximum of $229,753.66
        10. Puncture cost between minimum of $0.27 and maximum of $0.27MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $57,750.70 and maximum of $57,783.99"
348. "UL-93 NPS 6
     1. Total Cumulative Length (m): 41.05
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1992-01-01 and maximum of 1992-01-01
        2. Wall thickness between minimum of 7.11 and maximum of 7.11
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.51 and maximum of $0.62MM
     4. Total length driven by Environmental: 41.05 meters.
     5. Environmental Cost distributed between minimum of $0.27 and maximum of $0.38MM:
        1. Leak cost between minimum of $0.17 and maximum of $0.17MM
        2. Leak spill volume between a minimum of 1584.1 and maximum of 1584.95 gallons
        3. Rupture cost between minimum of $47.54 and maximum of $47.57MM
        4. Rupture spill volume is between a minimum of 448561.76 and maximum of 448802.92 gallons
        5. Puncture cost between minimum of $5.52 and maximum of $5.52MM
        6. Puncture spill volume is between a minimum of 52049.98 and maximum of 52077.97 gallons
        7. Land use distributed as
           1. Agricultural: 41.05
349. "SS-18 NPS 4
     1. Total Cumulative Length (m): 40.19
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1956-01-01 and maximum of 1956-01-01
        2. Wall thickness between minimum of 3.17 and maximum of 3.17
        3. iFilms growth rate between minimum of 0.09 and maximum of 0.1 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $0.52 and maximum of $0.57MM
     4. Total length driven by Environmental: 40.19 meters.
     5. Environmental Cost distributed between minimum of $0.29 and maximum of $0.33MM:
        1. Leak cost between minimum of $0.14 and maximum of $0.14MM
        2. Leak spill volume between a minimum of 1364.6 and maximum of 1365.43 gallons
        3. Rupture cost between minimum of $18.90 and maximum of $18.91MM
        4. Rupture spill volume is between a minimum of 178277.95 and maximum of 178386.89 gallons
        5. Puncture cost between minimum of $4.75 and maximum of $4.76MM
        6. Puncture spill volume is between a minimum of 44837.64 and maximum of 44865.03 gallons
        7. Land use distributed as
           1. Agricultural: 40.19
350. "NPS8 Condensate to Enbridge From 03-05-053-23W4 To 02-05-053-23W4
     1. Total Cumulative Length (m): 32.7
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1976-01-01 and maximum of 1976-01-01
        2. Wall thickness between minimum of 5.56 and maximum of 5.56
        3. iFilms growth rate between minimum of 0.06 and maximum of 0.07 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $127.13 and maximum of $127.56MM
     4. Total length driven by Safety: 32.7 meters.
     5. Safety Cost distributed between minimum of $121.39 and maximum of $121.59MM:
        1. Leak cost between minimum of $121.06 and maximum of $121.06MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.13 and maximum of 11.13 meters.
        4. Rupture cost between minimum of $133.16 and maximum of $133.16MM
        5. Rupture scenario yielded 1.0 intersections with structures, with minimum of 13.87 and maximum of 13.87 of population impacted
        6. Rupture hazard radius distributed between minimum of 129.12 and maximum of 129.12 meters.
        7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
        8. Puncture scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 45.37 and maximum of 45.37 meters.
        10. Product type is Condensate.
        11. Class area location is/are 1.0.
351. "CROMER DELIVERY LATERAL NPS 8
     1. Total Cumulative Length (m): 27.36
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1900-01-01 and maximum of 1900-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78
        3. iFilms growth rate between minimum of nan and maximum of nan mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $12.64 and maximum of $12.66MM
     4. Total length driven by Environmental: 27.36 meters.
     5. Environmental Cost distributed between minimum of $12.33 and maximum of $12.34MM:
        1. Leak cost between minimum of $0.33 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1856.18 and maximum of 1858.45 gallons
        3. Rupture cost between minimum of $158.50 and maximum of $158.69MM
        4. Rupture spill volume is between a minimum of 890852.69 and maximum of 891942.44 gallons
        5. Puncture cost between minimum of $10.85 and maximum of $10.86MM
        6. Puncture spill volume is between a minimum of 60989.88 and maximum of 61064.49 gallons
        7. Land use distributed as
           1. Bush/Creek: 27.36
352. "NPS4 SS-12 From 15-15-16-17-W3 To 15-15-16-17W3
     1. Total Cumulative Length (m): 26.48
     2. Likelihood of failure distributed between minimum of 1.000e-02 and maximum of 1.000e-02.
        1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
        2. Wall thickness between minimum of 6.02 and maximum of 6.02
        3. iFilms growth rate between minimum of 0.06 and maximum of 0.08 mm/yr
        4. iFilms SME override of nan
        5. iFilms SME override comment of nan
     3. Consequence of failure distributed between minimum of $2.59 and maximum of $4.72MM
     4. Total length driven by Environmental: 26.48 meters.
     5. Environmental Cost distributed between minimum of $2.33 and maximum of $4.44MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1854.46 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.68MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242275.67 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 60933.33 gallons
        7. Land use distributed as
           1. Agricultural: 26.48
     6. External Corrosion Reportable Pipeline Segments
        1. EC Method 1
353. "Empress 8 inch Water
     1. Total Cumulative Length (m): 10119.82
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        2. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        3. Mainline coating type of Yellow Jacket
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.20 and maximum of $0.22MM
     4. Total length driven by Economic Loss: 10119.82 meters.
     5. Economic Loss Cost distributed between minimum of $0.20 and maximum of $0.22MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Fresh Water.
        4. Leak cost between minimum of $0.21 and maximum of $0.22MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
        7. Rupture cost between minimum of $0.21 and maximum of $0.22MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
        10. Puncture cost between minimum of $0.21 and maximum of $0.22MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
354. "Empress 10 inch Water
     1. Total Cumulative Length (m): 10102.58
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Yellow Jacket
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28MM
     4. Total length driven by Economic Loss: 10102.58 meters.
     5. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.28MM:
        1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Fresh Water.
        4. Leak cost between minimum of $0.22 and maximum of $0.28MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
        7. Rupture cost between minimum of $0.22 and maximum of $0.28MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
        10. Puncture cost between minimum of $0.22 and maximum of $0.28MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
355. "Sarnia 8 inch Fresh Water
     1. Total Cumulative Length (m): 7977.89
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Yellow Jacket
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.25MM
     4. Total length driven by Economic Loss: 7977.89 meters.
     5. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.25MM:
        1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Fresh Water.
        4. Leak cost between minimum of $0.21 and maximum of $0.25MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
        7. Rupture cost between minimum of $0.21 and maximum of $0.25MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
        10. Puncture cost between minimum of $0.21 and maximum of $0.25MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
356. "EMPRESS WATER LINE NPS 10
     1. Total Cumulative Length (m): 6987.6
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2000-01-01 and maximum of 2001-01-01
        2. Wall thickness between minimum of 6.4 and maximum of 6.4 mm
        3. Mainline coating type of Yellow Jacket
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28MM
     4. Total length driven by Economic Loss: 6987.6 meters.
     5. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.28MM:
        1. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Fresh Water.
        4. Leak cost between minimum of $0.22 and maximum of $0.28MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
        7. Rupture cost between minimum of $0.22 and maximum of $0.28MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
        10. Puncture cost between minimum of $0.22 and maximum of $0.28MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
357. "EMPRESS WASTE WATER DISCHARGE NPS 10
     1. Total Cumulative Length (m): 6957.2
     2. Likelihood of failure distributed between minimum of 4.500e-01 and maximum of 4.500e-01.
        1. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Extruded Polyethylene
        4. Joint coating type of Data not available
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.58 and maximum of $1.01MM
     4. Total length driven by Environmental: 6957.2 meters.
     5. Environmental Cost distributed between minimum of $0.36 and maximum of $0.74MM:
        1. Leak cost between minimum of $0.02 and maximum of $0.05MM
        2. Leak spill volume between a minimum of 475.94 and maximum of 752.51 gallons
        3. Rupture cost between minimum of $17.46 and maximum of $35.70MM
        4. Rupture spill volume is between a minimum of 354842.05 and maximum of 561046.79 gallons
        5. Puncture cost between minimum of $0.77 and maximum of $1.57MM
        6. Puncture spill volume is between a minimum of 15638.25 and maximum of 24725.91 gallons
        7. Land use distributed as
           1. Agricultural: 6,944.12
           2. Water Course: 13.08
358. "SS-15 NPS 6
     1. Total Cumulative Length (m): 5229.36
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
        2. Wall thickness between minimum of 5.16 and maximum of 7.11 mm
        3. Mainline coating type of Coal Tar
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $1.63 and maximum of $1.83MM
     4. Total length driven by Environmental: 5229.36 meters.
     5. Environmental Cost distributed between minimum of $1.39 and maximum of $1.59MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1962.4 gallons
        3. Rupture cost between minimum of $55.64 and maximum of $58.90MM
        4. Rupture spill volume is between a minimum of 524962.0 and maximum of 555682.93 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.83MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 64480.05 gallons
        7. Land use distributed as
           1. Agricultural: 5,229.36
359. "C3 FROM ESSO NPS 6
     1. Total Cumulative Length (m): 4075.15
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        2. Wall thickness between minimum of 4.8 and maximum of 7.1 mm
        3. Mainline coating type of Single-wrap Tape, Yellow Jacket, Liquid Epoxy
        4. Joint coating type of Heat Applied Tape
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.28 and maximum of $15.29MM
     4. Total length driven by Safety: 463.09 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $14.71MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 15.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 9.02 and maximum of 9.02 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $398.23MM
        5. Rupture scenario yielded 18.0 intersections with structures, with minimum of 0.0 and maximum of 41.48 of population impacted
        6. Rupture hazard radius distributed between minimum of 91.99 and maximum of 91.99 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 28.89 and maximum of 28.89 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 3612.06 meters.
     7. Economic Loss Cost distributed between minimum of $0.28 and maximum of $0.58MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.24 and maximum of $0.50MM
        5. Leak scenario yielded 15.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $24,336.15 and maximum of $24,336.15
        7. Rupture cost between minimum of $7.10 and maximum of $11.97MM
        8. Rupture scenario yielded 18.0 intersections with structures, with minimum of $25,000.00 and maximum of $4,871,372.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $6,891,140.89 and maximum of $6,891,140.89
        10. Puncture cost between minimum of $1.01 and maximum of $1.28MM
        11. Puncture scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $799,630.73 and maximum of $799,630.73"
360. "RICHARDSON GAS LINE NPS 3
     1. Total Cumulative Length (m): 3703.21
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1965-01-01 and maximum of 1965-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        3. Mainline coating type of Yellow Jacket
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.24MM
     4. Total length driven by Economic Loss: 3703.21 meters.
     5. Economic Loss Cost distributed between minimum of $0.22 and maximum of $0.24MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.21 and maximum of $0.23MM
        5. Leak scenario yielded 1.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $3,382.92 and maximum of $3,382.92
        7. Rupture cost between minimum of $0.47 and maximum of $0.51MM
        8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $267,358.90 and maximum of $267,358.90
        10. Puncture cost between minimum of $0.32 and maximum of $0.34MM
        11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $111,154.91 and maximum of $111,154.91"
361. "Sarnia 6 inch tied into 6 inch E/P line
     1. Total Cumulative Length (m): 2501.78
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Yellow Jacket
        4. Joint coating type of Heat Applied Tape
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.35 and maximum of $12.64MM
     4. Total length driven by Safety: 469.08 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $12.04MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 40.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $24.21MM
        5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.52 of population impacted
        6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 47.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 2032.7 meters.
     7. Economic Loss Cost distributed between minimum of $0.33 and maximum of $0.65MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.26 and maximum of $0.58MM
        5. Leak scenario yielded 40.0 intersections with structures, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $44,363.99 and maximum of $44,363.99
        7. Rupture cost between minimum of $12.80 and maximum of $13.31MM
        8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $25,000.00 and maximum of $537,650.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $12,562,319.03 and maximum of $12,562,319.03
        10. Puncture cost between minimum of $1.67 and maximum of $1.99MM
        11. Puncture scenario yielded 47.0 intersections with structures, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,457,700.03 and maximum of $1,457,700.03"
362. "Kerrbert 4 inch Water
     1. Total Cumulative Length (m): 2341.68
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Single-wrap Tape
        4. Joint coating type of Shrink Sleeves
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.23MM
     4. Total length driven by Economic Loss: 2341.68 meters.
     5. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.23MM:
        1. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Fresh Water.
        4. Leak cost between minimum of $0.21 and maximum of $0.23MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
        7. Rupture cost between minimum of $0.21 and maximum of $0.23MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
        10. Puncture cost between minimum of $0.21 and maximum of $0.23MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
363. "COED BV 203 TO EST NPS 8
     1. Total Cumulative Length (m): 2259.9
     2. Likelihood of failure distributed between minimum of 3.490e-02 and maximum of 6.118e-01.
        1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Tape
        4. Joint coating type of Shrink Sleeves
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2017-01-01
        7. CIS On only potential between minimum of 977.0 and maximum of 2057.0 -mV
        8. CIS On-Off potential between minimum of 850.0 and maximum of 1638.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 37.34
        10. ACVG potential between minimum of 0.0 and maximum of 0.37 mV
     3. Consequence of failure distributed between minimum of $5.08 and maximum of $158.72MM
     4. Total length driven by Safety: 1694.93 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $150.03MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $513.60MM
        5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 53.5 of population impacted
        6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $392.54MM
        8. Puncture scenario yielded 46.0 intersections with structures, with minimum of 0.0 and maximum of 40.89 of population impacted
        9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
        10. Product type is Condensate.
        11. Class area location is/are 2.0.
     6. Total length driven by Environmental: 564.97 meters.
     7. Environmental Cost distributed between minimum of $4.66 and maximum of $13.35MM:
        1. Leak cost between minimum of $0.13 and maximum of $0.35MM
        2. Leak spill volume between a minimum of 1973.38 and maximum of 2019.77 gallons
        3. Rupture cost between minimum of $64.53 and maximum of $169.76MM
        4. Rupture spill volume is between a minimum of 947101.66 and maximum of 969363.57 gallons
        5. Puncture cost between minimum of $4.42 and maximum of $11.62MM
        6. Puncture spill volume is between a minimum of 64840.82 and maximum of 66364.92 gallons
        7. Land use distributed as
           1. Commercial/Industrial: 2,256.78
           2. Water Course: 3.12
364. "SPEED CORNER TO FORT SASKATCHEWAN INLET (KEYSPAN) NPS 16
     1. Total Cumulative Length (m): 1771.15
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1995-01-01 and maximum of 1995-01-01
        2. Wall thickness between minimum of 5.56 and maximum of 10.31 mm
        3. Mainline coating type of Extruded Polyethylene
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $1.36 and maximum of $1.59MM
     4. Total length driven by Economic Loss: 1771.15 meters.
     5. Economic Loss Cost distributed between minimum of $1.36 and maximum of $1.59MM:
        1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $1.02 and maximum of $1.10MM
        5. Leak scenario yielded 15.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $35,177.42 and maximum of $35,177.42
        7. Rupture cost between minimum of $59.11 and maximum of $59.26MM
        8. Rupture scenario yielded 8.0 intersections with structures, with minimum of $25,000.00 and maximum of $175,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $58,099,358.13 and maximum of $58,099,358.13
        10. Puncture cost between minimum of $2.14 and maximum of $2.27MM
        11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $25,000.00 and maximum of $125,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,155,850.00 and maximum of $1,155,850.00"
365. "BATCH TRANSFER LINE NPS 24
     1. Total Cumulative Length (m): 1622.82
     2. Likelihood of failure distributed between minimum of 2.752e-03 and maximum of 4.101e-03.
        1. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
        2. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
        3. Mainline coating type of Extruded Polyethylene
        4. Joint coating type of Canusa Sleeve
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2016-11-11
        7. CIS On only potential between minimum of 903.0 and maximum of 2535.0 -mV
        8. CIS On-Off potential between minimum of 773.0 and maximum of 1506.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 0.0
        10. ACVG potential between minimum of 0.01 and maximum of 0.55 mV
     3. Consequence of failure distributed between minimum of $15.34 and maximum of $164.89MM
     4. Total length driven by Safety: 1217.12 meters.
     5. Safety Cost distributed between minimum of $4.31 and maximum of $128.31MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 32.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 2.91 and maximum of 2.91 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $968.45MM
        5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 100.88 of population impacted
        6. Rupture hazard radius distributed between minimum of 99.14 and maximum of 99.14 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 34.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 11.53 and maximum of 11.53 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Environmental: 405.7 meters.
     7. Environmental Cost distributed between minimum of $7.72 and maximum of $13.50MM:
        1. Leak cost between minimum of $0.06 and maximum of $0.06MM
        2. Leak spill volume between a minimum of 850.32 and maximum of 883.99 gallons
        3. Rupture cost between minimum of $215.31 and maximum of $223.83MM
        4. Rupture spill volume is between a minimum of 3159898.85 and maximum of 3285013.13 gallons
        5. Puncture cost between minimum of $1.90 and maximum of $1.98MM
        6. Puncture spill volume is between a minimum of 27939.64 and maximum of 29045.89 gallons
        7. Land use distributed as
           1. Commercial/Industrial: 1,622.82
366. "NPS4 SS-35 From 5-34-11-19-W3 To 5-35-11-19-W3
     1. Total Cumulative Length (m): 1532.63
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1968-01-01 and maximum of 1968-01-01
        2. Wall thickness between minimum of 3.17 and maximum of 3.17 mm
        3. Mainline coating type of Extruded Polyethylene
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $1.17 and maximum of $1.22MM
     4. Total length driven by Environmental: 1532.63 meters.
     5. Environmental Cost distributed between minimum of $0.96 and maximum of $0.98MM:
        1. Leak cost between minimum of $0.16 and maximum of $0.17MM
        2. Leak spill volume between a minimum of 1545.39 and maximum of 1577.19 gallons
        3. Rupture cost between minimum of $21.40 and maximum of $21.84MM
        4. Rupture spill volume is between a minimum of 201897.55 and maximum of 206051.63 gallons
        5. Puncture cost between minimum of $5.38 and maximum of $5.49MM
        6. Puncture spill volume is between a minimum of 50778.06 and maximum of 51822.83 gallons
        7. Land use distributed as
           1. Agricultural: 1,532.63
367. "NPS20 ENBRIDGE CONDENSATE TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
     1. Total Cumulative Length (m): 1144.92
     2. Likelihood of failure distributed between minimum of 1.503e-02 and maximum of 5.681e-02.
        1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        2. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
        3. Mainline coating type of Tape
        4. Joint coating type of Data not available
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2017-01-01
        7. CIS On only potential between minimum of 1321.0 and maximum of 1943.0 -mV
        8. CIS On-Off potential between minimum of 1016.0 and maximum of 1365.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 65.7
        10. ACVG potential between minimum of 0.0 and maximum of 0.1 mV
     3. Consequence of failure distributed between minimum of $7.91 and maximum of $12.14MM
     4. Total length driven by Environmental: 1144.92 meters.
     5. Environmental Cost distributed between minimum of $6.86 and maximum of $8.60MM:
        1. Leak cost between minimum of $0.06 and maximum of $0.06MM
        2. Leak spill volume between a minimum of 529.42 and maximum of 541.3 gallons
        3. Rupture cost between minimum of $144.81 and maximum of $148.06MM
        4. Rupture spill volume is between a minimum of 1366242.13 and maximum of 1396891.33 gallons
        5. Puncture cost between minimum of $1.84 and maximum of $1.89MM
        6. Puncture spill volume is between a minimum of 17395.54 and maximum of 17785.77 gallons
        7. Land use distributed as
           1. Agricultural: 474.19
           2. Remote: 670.73
368. "ESSO ETHANE NPS 6
     1. Total Cumulative Length (m): 885.6
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Extruded Polyethylene
        4. Joint coating type of Heat Applied Tape
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.41 and maximum of $15.39MM
     4. Total length driven by Safety: 632.57 meters.
     5. Safety Cost distributed between minimum of $0.07 and maximum of $14.76MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 10.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
        4. Rupture cost between minimum of $12.11 and maximum of $456.43MM
        5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 1.26 and maximum of 47.54 of population impacted
        6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $221.29MM
        8. Puncture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 23.05 of population impacted
        9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0, 2.0.
     6. Total length driven by Economic Loss: 253.03 meters.
     7. Economic Loss Cost distributed between minimum of $0.33 and maximum of $0.63MM:
        1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.26 and maximum of $0.52MM
        5. Leak scenario yielded 10.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $44,363.99 and maximum of $44,363.99
        7. Rupture cost between minimum of $13.04 and maximum of $18.77MM
        8. Rupture scenario yielded 7.0 intersections with structures, with minimum of $268,825.00 and maximum of $5,997,715.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $12,562,319.03 and maximum of $12,562,319.03
        10. Puncture cost between minimum of $1.67 and maximum of $4.90MM
        11. Puncture scenario yielded 16.0 intersections with structures, with minimum of $25,000.00 and maximum of $3,226,943.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,457,700.03 and maximum of $1,457,700.03"
369. "NPS2 Yoyo line (Alliance flare line) From 8-14-55-22W4 To 9-14-55-22W4
     1. Total Cumulative Length (m): 799.43
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2004-11-01 and maximum of 2004-11-01
        2. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
        3. Mainline coating type of Yellow Jacket
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.24 and maximum of $0.32MM
     4. Total length driven by Economic Loss: 799.43 meters.
     5. Economic Loss Cost distributed between minimum of $0.24 and maximum of $0.32MM:
        1. Repair costs between minimum of $21,000.00 and maximum of $21,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is C3/C4.
        4. Leak cost between minimum of $0.23 and maximum of $0.31MM
        5. Leak scenario yielded 28.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $12,073.09 and maximum of $12,073.09
        7. Rupture cost between minimum of $0.66 and maximum of $0.74MM
        8. Rupture scenario yielded 28.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $439,352.33 and maximum of $439,352.33
        10. Puncture cost between minimum of $0.62 and maximum of $0.69MM
        11. Puncture scenario yielded 29.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $396,694.17 and maximum of $396,694.17"
370. "16-19-037-03W5 TO 10-19-037-03W5 NPS 4
     1. Total Cumulative Length (m): 775.79
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1991-01-01 and maximum of 1991-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 6.02 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.62 and maximum of $1.66MM
     4. Total length driven by Environmental: 775.79 meters.
     5. Environmental Cost distributed between minimum of $0.40 and maximum of $1.43MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1869.97 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.89MM
        4. Rupture spill volume is between a minimum of 242204.33 and maximum of 244301.7 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.51MM
        6. Puncture spill volume is between a minimum of 60915.38 and maximum of 61442.88 gallons
        7. Land use distributed as
           1. Agricultural: 775.79
371. "NPS4 SS-57 From 10-27-10-19-W3 To 12-27-10-19-W3
     1. Total Cumulative Length (m): 763.86
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Extruded Polyethylene
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $1.03 and maximum of $1.62MM
     4. Total length driven by Environmental: 763.86 meters.
     5. Environmental Cost distributed between minimum of $0.81 and maximum of $1.39MM:
        1. Leak cost between minimum of $0.17 and maximum of $0.29MM
        2. Leak spill volume between a minimum of 1632.86 and maximum of 1648.37 gallons
        3. Rupture cost between minimum of $22.61 and maximum of $38.31MM
        4. Rupture spill volume is between a minimum of 213324.43 and maximum of 215351.24 gallons
        5. Puncture cost between minimum of $5.69 and maximum of $9.64MM
        6. Puncture spill volume is between a minimum of 53651.97 and maximum of 54161.72 gallons
        7. Land use distributed as
           1. Agricultural: 561.08
           2. Remote: 199.75
           3. Water Course: 3.02
372. "16 EST to Enbridge 7-5-53-23W4 to 2-5-53-23W4
     1. Total Cumulative Length (m): 482.65
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1979-01-01 and maximum of 1979-01-01
        2. Wall thickness between minimum of 5.6 and maximum of 5.6 mm
        3. Mainline coating type of Yellow Jacket
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $125.09 and maximum of $125.43MM
     4. Total length driven by Safety: 482.65 meters.
     5. Safety Cost distributed between minimum of $120.27 and maximum of $120.61MM:
        1. Leak cost between minimum of $121.06 and maximum of $121.06MM
        2. Leak scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 9.03 and maximum of 9.03 meters.
        4. Rupture cost between minimum of $121.06 and maximum of $133.16MM
        5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 12.61 and maximum of 13.87 of population impacted
        6. Rupture hazard radius distributed between minimum of 178.36 and maximum of 178.36 meters.
        7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
        8. Puncture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 28.91 and maximum of 28.91 meters.
        10. Product type is HVP Product.
        11. Class area location is/are 1.0.
373. "BUCK CREEK TO STATION 1 NPS 3
     1. Total Cumulative Length (m): 443.02
     2. Likelihood of failure distributed between minimum of 3.502e-02 and maximum of 6.119e-01.
        1. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2016-12-01
        7. CIS On only potential between minimum of 1036.0 and maximum of 1447.0 -mV
        8. CIS On-Off potential between minimum of 916.0 and maximum of 1321.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 0.0
        10. ACVG potential between minimum of 0.02 and maximum of 0.26 mV
     3. Consequence of failure distributed between minimum of $0.42 and maximum of $122.64MM
     4. Total length driven by Safety: 275.53 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $119.66MM:
        1. Leak cost between minimum of $0.00 and maximum of $121.06MM
        2. Leak scenario yielded 5.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.7 and maximum of 11.7 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
        5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 2.28 and maximum of 12.61 of population impacted
        6. Rupture hazard radius distributed between minimum of 57.3 and maximum of 57.3 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
        8. Puncture scenario yielded 8.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 42.7 and maximum of 42.7 meters.
        10. Product type is Ethane.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 167.49 meters.
     7. Economic Loss Cost distributed between minimum of $0.33 and maximum of $2.98MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is Ethane.
        4. Leak cost between minimum of $0.28 and maximum of $2.97MM
        5. Leak scenario yielded 5.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $74,968.65 and maximum of $74,968.65
        7. Rupture cost between minimum of $6.13 and maximum of $8.82MM
        8. Rupture scenario yielded 7.0 intersections with structures, with minimum of $269,868.00 and maximum of $2,688,250.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $5,924,929.50 and maximum of $5,924,929.50
        10. Puncture cost between minimum of $2.67 and maximum of $5.36MM
        11. Puncture scenario yielded 8.0 intersections with structures, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $2,463,299.44 and maximum of $2,463,299.44"
374. "Access C5 Line 36
     1. Total Cumulative Length (m): 404.28
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
        2. Wall thickness between minimum of 7.09 and maximum of 7.09 mm
        3. Mainline coating type of Double Wrap Polyken
        4. Joint coating type of Double-wrap Tape
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $1.47 and maximum of $1.60MM
     4. Total length driven by Environmental: 404.28 meters.
     5. Environmental Cost distributed between minimum of $1.21 and maximum of $1.24MM:
        1. Leak cost between minimum of $0.13 and maximum of $0.14MM
        2. Leak spill volume between a minimum of 1973.44 and maximum of 1981.77 gallons
        3. Rupture cost between minimum of $38.08 and maximum of $38.24MM
        4. Rupture spill volume is between a minimum of 558809.69 and maximum of 561166.98 gallons
        5. Puncture cost between minimum of $4.42 and maximum of $4.44MM
        6. Puncture spill volume is between a minimum of 64842.88 and maximum of 65116.41 gallons
        7. Land use distributed as
           1. Commercial/Industrial: 404.28
375. "Access C5 Line 37
     1. Total Cumulative Length (m): 404.14
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
        2. Wall thickness between minimum of 7.09 and maximum of 7.09 mm
        3. Mainline coating type of Double Wrap Polyken
        4. Joint coating type of Double-wrap Tape
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $1.47 and maximum of $1.60MM
     4. Total length driven by Environmental: 404.14 meters.
     5. Environmental Cost distributed between minimum of $1.21 and maximum of $1.24MM:
        1. Leak cost between minimum of $0.13 and maximum of $0.14MM
        2. Leak spill volume between a minimum of 1973.44 and maximum of 1981.77 gallons
        3. Rupture cost between minimum of $38.08 and maximum of $38.24MM
        4. Rupture spill volume is between a minimum of 558809.69 and maximum of 561166.19 gallons
        5. Puncture cost between minimum of $4.42 and maximum of $4.44MM
        6. Puncture spill volume is between a minimum of 64842.88 and maximum of 65116.32 gallons
        7. Land use distributed as
           1. Commercial/Industrial: 404.14
376. "NPS8 Petro Vera to Lone Rock From 13-11-47-27-W3 To 16-10-47-27-W3
     1. Total Cumulative Length (m): 359.45
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        2. Wall thickness between minimum of 5.6 and maximum of 5.6 mm
        3. Mainline coating type of Tape
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.99 and maximum of $13.32MM
     4. Total length driven by Safety: 46.08 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $12.03MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 5.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 2.28 and maximum of 2.28 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
        5. Rupture scenario yielded 3.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 30.46 and maximum of 30.46 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 6.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 8.99 and maximum of 8.99 meters.
        10. Product type is Blend.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 313.38 meters.
     7. Environmental Cost distributed between minimum of $0.77 and maximum of $0.80MM:
        1. Leak cost between minimum of $0.05 and maximum of $0.05MM
        2. Leak spill volume between a minimum of 492.22 and maximum of 499.14 gallons
        3. Rupture cost between minimum of $25.04 and maximum of $25.39MM
        4. Rupture spill volume is between a minimum of 236237.43 and maximum of 239558.37 gallons
        5. Puncture cost between minimum of $1.71 and maximum of $1.74MM
        6. Puncture spill volume is between a minimum of 16173.37 and maximum of 16400.73 gallons
        7. Land use distributed as
           1. Agricultural: 295.97
           2. Remote: 63.49
377. "NIPISI 11-02 TO 14-02 NPS 16
     1. Total Cumulative Length (m): 339.6
     2. Likelihood of failure distributed between minimum of 1.853e-02 and maximum of 6.799e-02.
        1. Installation date between minimum of 1996-08-01 and maximum of 1996-08-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2016-01-01
        7. CIS On only potential between minimum of 1217.0 and maximum of 1779.0 -mV
        8. CIS On-Off potential between minimum of 1064.0 and maximum of 1223.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 62.28
        10. ACVG potential between minimum of 0.01 and maximum of 0.11 mV
     3. Consequence of failure distributed between minimum of $1.28 and maximum of $1.67MM
     4. Total length driven by Economic Loss: 339.6 meters.
     5. Economic Loss Cost distributed between minimum of $0.86 and maximum of $0.87MM:
        1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.87 and maximum of $0.87MM
        5. Leak scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $903.67 and maximum of $907.58
        7. Rupture cost between minimum of $2.39 and maximum of $2.44MM
        8. Rupture scenario yielded 5.0 intersections with structures, with minimum of $50,000.00 and maximum of $100,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $1,492,510.39 and maximum of $1,498,965.83
        10. Puncture cost between minimum of $0.90 and maximum of $0.92MM
        11. Puncture scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $29,692.55 and maximum of $29,820.98"
378. "14-02 to 12-02 NPS 24
     1. Total Cumulative Length (m): 317.4
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1998-01-01 and maximum of 1998-01-01
        2. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $11.88 and maximum of $11.95MM
     4. Total length driven by Environmental: 317.4 meters.
     5. Environmental Cost distributed between minimum of $9.30 and maximum of $9.37MM:
        1. Leak cost between minimum of $0.09 and maximum of $0.09MM
        2. Leak spill volume between a minimum of 825.78 and maximum of 832.0 gallons
        3. Rupture cost between minimum of $325.26 and maximum of $327.70MM
        4. Rupture spill volume is between a minimum of 3068711.06 and maximum of 3091803.54 gallons
        5. Puncture cost between minimum of $2.88 and maximum of $2.90MM
        6. Puncture spill volume is between a minimum of 27133.36 and maximum of 27337.55 gallons
        7. Land use distributed as
           1. Agricultural: 317.40
379. "ENBRIDGE TRANSFER LINE NPS 30
     1. Total Cumulative Length (m): 298.94
     2. Likelihood of failure distributed between minimum of 1.809e-03 and maximum of 1.735e-02.
        1. Installation date between minimum of 2010-01-01 and maximum of 2010-01-01
        2. Wall thickness between minimum of 9.5 and maximum of 9.5 mm
        3. Mainline coating type of Fusion Bonded Epoxy
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2017-01-01
        7. CIS On only potential between minimum of 1351.0 and maximum of 2064.0 -mV
        8. CIS On-Off potential between minimum of 1082.0 and maximum of 1141.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 40.8
        10. ACVG potential between minimum of 0.0 and maximum of 0.05 mV
     3. Consequence of failure distributed between minimum of $76.74 and maximum of $181.82MM
     4. Total length driven by Safety: 298.94 meters.
     5. Safety Cost distributed between minimum of $66.66 and maximum of $163.80MM:
        1. Leak cost between minimum of $0.00 and maximum of $0.00MM
        2. Leak scenario yielded 17.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
        3. Leak hazard radius distributed between minimum of 2.87 and maximum of 2.87 meters.
        4. Rupture cost between minimum of $4,320.00 and maximum of $4,320.00MM
        5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 450.0 and maximum of 450.0 of population impacted
        6. Rupture hazard radius distributed between minimum of 119.78 and maximum of 119.78 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
        8. Puncture scenario yielded 17.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
        9. Puncture hazard radius distributed between minimum of 11.37 and maximum of 11.37 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0.
380. "PETRO VERA TO LONE ROCK NPS 8
     1. Total Cumulative Length (m): 248.54
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        2. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
        3. Mainline coating type of Tape
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.99 and maximum of $13.33MM
     4. Total length driven by Safety: 101.26 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $12.03MM:
        1. Leak cost between minimum of $0.00 and maximum of $12.11MM
        2. Leak scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
        3. Leak hazard radius distributed between minimum of 2.28 and maximum of 2.28 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
        5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        6. Rupture hazard radius distributed between minimum of 30.46 and maximum of 30.46 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
        8. Puncture scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
        9. Puncture hazard radius distributed between minimum of 8.99 and maximum of 8.99 meters.
        10. Product type is Crude Oil.
        11. Class area location is/are 1.0.
     6. Total length driven by Environmental: 147.28 meters.
     7. Environmental Cost distributed between minimum of $0.77 and maximum of $0.81MM:
        1. Leak cost between minimum of $0.05 and maximum of $0.05MM
        2. Leak spill volume between a minimum of 492.74 and maximum of 497.38 gallons
        3. Rupture cost between minimum of $25.07 and maximum of $25.30MM
        4. Rupture spill volume is between a minimum of 236487.22 and maximum of 238712.16 gallons
        5. Puncture cost between minimum of $1.72 and maximum of $1.73MM
        6. Puncture spill volume is between a minimum of 16190.47 and maximum of 16342.8 gallons
        7. Land use distributed as
           1. Agricultural: 248.54
381. "03 Tie in to Radial Lake From 06-20-39-07W5 To 07-20-39-07W5
     1. Total Cumulative Length (m): 191.6
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        3. Mainline coating type of Yellow Jacket
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.44 and maximum of $0.79MM
     4. Total length driven by Economic Loss: 191.6 meters.
     5. Economic Loss Cost distributed between minimum of $0.41 and maximum of $0.42MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is HVP Product.
        4. Leak cost between minimum of $0.27 and maximum of $0.27MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $5.02 and maximum of $5.28MM
        8. Rupture scenario yielded 1.0 intersections with structures, with minimum of $268,825.00 and maximum of $268,825.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
        10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
382. "FORT WHYTE INLET PIPING NPS 6
     1. Total Cumulative Length (m): 181.78
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1900-01-01 and maximum of 1900-01-01
        2. Wall thickness between minimum of 7.11 and maximum of 7.11 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.75 and maximum of $0.75MM
     4. Total length driven by Economic Loss: 181.78 meters.
     5. Economic Loss Cost distributed between minimum of $0.66 and maximum of $0.66MM:
        1. Repair costs between minimum of $40,000.00 and maximum of $40,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.30 and maximum of $0.30MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $17.48 and maximum of $17.48MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $17,232,190.63 and maximum of $17,232,190.63
        10. Puncture cost between minimum of $2.24 and maximum of $2.24MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
383. "NIPISI CONDENSATE NPS 6
     1. Total Cumulative Length (m): 171.51
     2. Likelihood of failure distributed between minimum of 1.000e-01 and maximum of 1.000e-01.
        1. Installation date between minimum of 1990-01-01 and maximum of 1990-01-01
        2. Wall thickness between minimum of 7.11 and maximum of 7.11 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.87 and maximum of $0.88MM
     4. Total length driven by Environmental: 171.51 meters.
     5. Environmental Cost distributed between minimum of $0.62 and maximum of $0.62MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1973.39 and maximum of 1976.77 gallons
        3. Rupture cost between minimum of $59.23 and maximum of $59.33MM
        4. Rupture spill volume is between a minimum of 558793.14 and maximum of 559751.58 gallons
        5. Puncture cost between minimum of $6.87 and maximum of $6.88MM
        6. Puncture spill volume is between a minimum of 64840.96 and maximum of 64952.17 gallons
        7. Land use distributed as
           1. Agricultural: 171.51
384. "KERROBERT TO SASK ENERGY FUEL GAS NPS 2
     1. Total Cumulative Length (m): 124.15
     2. Likelihood of failure distributed between minimum of 3.490e-02 and maximum of 1.319e-01.
        1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Single-wrap Tape
        4. Joint coating type of Shrink Sleeves
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2017-01-01
        7. CIS On only potential between minimum of 1088.0 and maximum of 1395.0 -mV
        8. CIS On-Off potential between minimum of 1036.0 and maximum of 1342.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 64.59
        10. ACVG potential between minimum of -0.01 and maximum of 0.24 mV
     3. Consequence of failure distributed between minimum of $0.37 and maximum of $22.28MM
     4. Total length driven by Safety: 117.91 meters.
     5. Safety Cost distributed between minimum of $0.00 and maximum of $21.65MM:
        1. Leak cost between minimum of $0.00 and maximum of $21.89MM
        2. Leak scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted.
        3. Leak hazard radius distributed between minimum of 10.69 and maximum of 10.69 meters.
        4. Rupture cost between minimum of $0.00 and maximum of $21.89MM
        5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
        6. Rupture hazard radius distributed between minimum of 39.77 and maximum of 39.77 meters.
        7. Puncture cost between minimum of $0.00 and maximum of $21.89MM
        8. Puncture scenario yielded 22.0 intersections with structures, with minimum of 0.0 and maximum of 2.28 of population impacted
        9. Puncture hazard radius distributed between minimum of 38.44 and maximum of 38.44 meters.
        10. Product type is FG.
        11. Class area location is/are 1.0.
     6. Total length driven by Economic Loss: 6.24 meters.
     7. Economic Loss Cost distributed between minimum of $0.37 and maximum of $0.64MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is FG.
        4. Leak cost between minimum of $0.34 and maximum of $0.61MM
        5. Leak scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $106,972.91 and maximum of $106,972.91
        7. Rupture cost between minimum of $4.12 and maximum of $4.39MM
        8. Rupture scenario yielded 21.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $3,892,857.05 and maximum of $3,892,857.05
        10. Puncture cost between minimum of $3.75 and maximum of $4.02MM
        11. Puncture scenario yielded 22.0 intersections with structures, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $3,514,886.76 and maximum of $3,514,886.76"
385. "STRATHCONA AOSPL CONNECTION NPS 12
     1. Total Cumulative Length (m): 78.6
     2. Likelihood of failure distributed between minimum of 1.741e-02 and maximum of 1.741e-02.
        1. Installation date between minimum of 2010-01-01 and maximum of 2010-01-01
        2. Wall thickness between minimum of 9.52 and maximum of 9.52 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2016-11-29
        7. CIS On only potential between minimum of 1140.0 and maximum of 1260.0 -mV
        8. CIS On-Off potential between minimum of 979.0 and maximum of 1103.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 0.0
        10. ACVG potential between minimum of 0.01 and maximum of 0.3 mV
     3. Consequence of failure distributed between minimum of $1.34 and maximum of $1.60MM
     4. Total length driven by Economic Loss: 78.6 meters.
     5. Economic Loss Cost distributed between minimum of $0.98 and maximum of $1.01MM:
        1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.99 and maximum of $1.01MM
        5. Leak scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $2,057.56 and maximum of $2,058.77
        7. Rupture cost between minimum of $3.17 and maximum of $3.17MM
        8. Rupture scenario yielded 1.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $2,157,946.29 and maximum of $2,159,210.24
        10. Puncture cost between minimum of $1.05 and maximum of $1.08MM
        11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $67,606.80 and maximum of $67,646.40"
386. "STRATHCONA INTERPIPE CONNECTION NPS 12
     1. Total Cumulative Length (m): 64.93
     2. Likelihood of failure distributed between minimum of 1.741e-02 and maximum of 1.741e-02.
        1. Installation date between minimum of 2006-01-01 and maximum of 2006-01-01
        2. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2016-11-29
        7. CIS On only potential between minimum of 1107.0 and maximum of 1429.0 -mV
        8. CIS On-Off potential between minimum of 919.0 and maximum of 1096.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 0.0
        10. ACVG potential between minimum of 0.02 and maximum of 0.21 mV
     3. Consequence of failure distributed between minimum of $1.66 and maximum of $2.48MM
     4. Total length driven by Economic Loss: 64.93 meters.
     5. Economic Loss Cost distributed between minimum of $1.03 and maximum of $1.10MM:
        1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $0.99 and maximum of $1.01MM
        5. Leak scenario yielded 1.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $1,855.48 and maximum of $1,856.97
        7. Rupture cost between minimum of $23.31 and maximum of $23.31MM
        8. Rupture scenario yielded 1.0 intersections with structures, with minimum of $20,374,375.00 and maximum of $20,374,375.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $1,946,005.91 and maximum of $1,947,573.44
        10. Puncture cost between minimum of $1.05 and maximum of $1.07MM
        11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $60,966.87 and maximum of $61,015.98"
387. "GRANADA LATERAL NPS 3
     1. Total Cumulative Length (m): 58.79
     2. Likelihood of failure distributed between minimum of 3.136e-03 and maximum of 3.136e-03.
        1. Installation date between minimum of 1982-01-01 and maximum of 1982-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Extruded Polyethylene
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2017-01-01
        7. CIS On only potential between minimum of 1249.0 and maximum of 1293.0 -mV
        8. CIS On-Off potential between minimum of 1209.0 and maximum of 1245.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 0.0
        10. ACVG potential between minimum of 0.01 and maximum of 0.06 mV
     3. Consequence of failure distributed between minimum of $122.63 and maximum of $122.97MM
     4. Total length driven by Safety: 58.79 meters.
     5. Safety Cost distributed between minimum of $119.71 and maximum of $120.04MM:
        1. Leak cost between minimum of $121.06 and maximum of $121.06MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
        4. Rupture cost between minimum of $286.46 and maximum of $286.46MM
        5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 29.84 and maximum of 29.84 of population impacted
        6. Rupture hazard radius distributed between minimum of 80.38 and maximum of 80.38 meters.
        7. Puncture cost between minimum of $286.46 and maximum of $286.46MM
        8. Puncture scenario yielded 3.0 intersections with structures, with minimum of 29.84 and maximum of 29.84 of population impacted
        9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
        10. Product type is NGL.
        11. Class area location is/are nan.
388. "TIE-IN TO SSPL NPS 8
     1. Total Cumulative Length (m): 57.27
     2. Likelihood of failure distributed between minimum of 1.741e-02 and maximum of 1.741e-02.
        1. Installation date between minimum of 2012-01-01 and maximum of 2012-01-01
        2. Wall thickness between minimum of 7.9 and maximum of 7.9 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2016-11-30
        7. CIS On only potential between minimum of 1855.0 and maximum of 2255.0 -mV
        8. CIS On-Off potential between minimum of 961.0 and maximum of 1220.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 0.0
        10. ACVG potential between minimum of 0.01 and maximum of 0.27 mV
     3. Consequence of failure distributed between minimum of $4.69 and maximum of $5.19MM
     4. Total length driven by Environmental: 57.27 meters.
     5. Environmental Cost distributed between minimum of $4.43 and maximum of $4.90MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1854.5 and maximum of 1855.1 gallons
        3. Rupture cost between minimum of $94.34 and maximum of $94.37MM
        4. Rupture spill volume is between a minimum of 890048.06 and maximum of 890333.18 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
        6. Puncture spill volume is between a minimum of 60934.8 and maximum of 60954.32 gallons
        7. Land use distributed as
           1. Agricultural: 57.27
389. "SS-66 NPS 4
     1. Total Cumulative Length (m): 51.85
     2. Likelihood of failure distributed between minimum of 2.288e-02 and maximum of 2.288e-02.
        1. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
        2. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
        3. Mainline coating type of Single-wrap Tape
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2016-11-26
        7. CIS On only potential between minimum of 1406.0 and maximum of 1439.0 -mV
        8. CIS On-Off potential between minimum of 1160.0 and maximum of 1178.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 0.0
        10. ACVG potential between minimum of 0.02 and maximum of 0.23 mV
     3. Consequence of failure distributed between minimum of $1.01 and maximum of $2.62MM
     4. Total length driven by Environmental: 51.85 meters.
     5. Environmental Cost distributed between minimum of $0.77 and maximum of $2.36MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1856.63 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.71MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242559.62 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.47MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61004.74 gallons
        7. Land use distributed as
           1. Agricultural: 51.85
390. "NPS8 Condensate to Enbridge From 03-05-053-23W4 To 02-05-053-23W4
     1. Total Cumulative Length (m): 38.22
     2. Likelihood of failure distributed between minimum of 3.006e-02 and maximum of 1.136e-01.
        1. Installation date between minimum of 1976-01-01 and maximum of 1976-01-01
        2. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2017-01-01
        7. CIS On only potential between minimum of 1138.0 and maximum of 1152.0 -mV
        8. CIS On-Off potential between minimum of 1086.0 and maximum of 1098.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 0.0
        10. ACVG potential between minimum of 0.01 and maximum of 0.04 mV
     3. Consequence of failure distributed between minimum of $127.13 and maximum of $127.92MM
     4. Total length driven by Safety: 38.22 meters.
     5. Safety Cost distributed between minimum of $121.39 and maximum of $121.74MM:
        1. Leak cost between minimum of $121.06 and maximum of $121.06MM
        2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
        3. Leak hazard radius distributed between minimum of 11.13 and maximum of 11.13 meters.
        4. Rupture cost between minimum of $133.16 and maximum of $133.16MM
        5. Rupture scenario yielded 1.0 intersections with structures, with minimum of 13.87 and maximum of 13.87 of population impacted
        6. Rupture hazard radius distributed between minimum of 129.12 and maximum of 129.12 meters.
        7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
        8. Puncture scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
        9. Puncture hazard radius distributed between minimum of 45.37 and maximum of 45.37 meters.
        10. Product type is Condensate.
        11. Class area location is/are 1.0.
391. "CROMER DELIVERY LATERAL NPS 8
     1. Total Cumulative Length (m): 27.36
     2. Likelihood of failure distributed between minimum of 9.000e-01 and maximum of 9.000e-01.
        1. Installation date between minimum of 1900-01-01 and maximum of 1900-01-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of NaT
        7. CIS On only potential between minimum of nan and maximum of nan -mV
        8. CIS On-Off potential between minimum of nan and maximum of nan -mV
        9. DCVG percent iR between minimum of nan and maximum of nan
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $12.64 and maximum of $12.66MM
     4. Total length driven by Environmental: 27.36 meters.
     5. Environmental Cost distributed between minimum of $12.33 and maximum of $12.34MM:
        1. Leak cost between minimum of $0.33 and maximum of $0.33MM
        2. Leak spill volume between a minimum of 1856.18 and maximum of 1858.45 gallons
        3. Rupture cost between minimum of $158.50 and maximum of $158.69MM
        4. Rupture spill volume is between a minimum of 890852.69 and maximum of 891942.44 gallons
        5. Puncture cost between minimum of $10.85 and maximum of $10.86MM
        6. Puncture spill volume is between a minimum of 60989.88 and maximum of 61064.49 gallons
        7. Land use distributed as
           1. Bush/Creek: 27.36
392. "SS-28 NPS 4
     1. Total Cumulative Length (m): 23.87
     2. Likelihood of failure distributed between minimum of 3.504e-02 and maximum of 5.203e-02.
        1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
        2. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
        3. Mainline coating type of Coal Tar
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2016-11-24
        7. CIS On only potential between minimum of 896.0 and maximum of 1346.0 -mV
        8. CIS On-Off potential between minimum of 831.0 and maximum of 1135.0 -mV
        9. DCVG percent iR between minimum of 35.52 and maximum of 94.17
        10. ACVG potential between minimum of 0.01 and maximum of 0.08 mV
     3. Consequence of failure distributed between minimum of $1.49 and maximum of $2.55MM
     4. Total length driven by Environmental: 23.87 meters.
     5. Environmental Cost distributed between minimum of $1.27 and maximum of $2.31MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1853.91 and maximum of 1859.61 gallons
        3. Rupture cost between minimum of $25.67 and maximum of $25.75MM
        4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242948.7 gallons
        5. Puncture cost between minimum of $6.46 and maximum of $6.48MM
        6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61102.6 gallons
        7. Land use distributed as
           1. Agricultural: 23.87
393. "NIPISI 14-02 TO 11-02 NPS24
     1. Total Cumulative Length (m): 23.55
     2. Likelihood of failure distributed between minimum of 1.853e-02 and maximum of 1.853e-02.
        1. Installation date between minimum of 1996-08-01 and maximum of 1996-08-01
        2. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
        3. Mainline coating type of Yellow Jacket
        4. Joint coating type of Shrink Sleeves
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2016-01-01
        7. CIS On only potential between minimum of 1165.0 and maximum of 1445.0 -mV
        8. CIS On-Off potential between minimum of 1046.0 and maximum of 1169.0 -mV
        9. DCVG percent iR between minimum of 35.32 and maximum of 79.71
        10. ACVG potential between minimum of 0.03 and maximum of 0.15 mV
     3. Consequence of failure distributed between minimum of $3.11 and maximum of $3.43MM
     4. Total length driven by Economic Loss: 23.55 meters.
     5. Economic Loss Cost distributed between minimum of $2.47 and maximum of $2.48MM:
        1. Repair costs between minimum of $73,000.00 and maximum of $73,000.00.
        2. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
        3. Product type is Crude Oil.
        4. Leak cost between minimum of $2.50 and maximum of $2.50MM
        5. Leak scenario yielded 23.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        6. Leak product loss costs between minimum of $902.81 and maximum of $905.85
        7. Rupture cost between minimum of $5.91 and maximum of $5.94MM
        8. Rupture scenario yielded 2.0 intersections with structures, with minimum of $75,000.00 and maximum of $100,000.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $3,354,945.27 and maximum of $3,366,266.89
        10. Puncture cost between minimum of $2.53 and maximum of $2.55MM
        11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $29,664.23 and maximum of $29,764.33"
394. "EDS OPERATIVE NPS 12
     1. Total Cumulative Length (m): 10.26
     2. Likelihood of failure distributed between minimum of 2.791e-02 and maximum of 2.791e-02.
        1. Installation date between minimum of 1974-01-01 and maximum of 1974-01-01
        2. Wall thickness between minimum of 6.22 and maximum of 6.22 mm
        3. Mainline coating type of Extruded Polyethylene
        4. Joint coating type of Heat Applied Tape
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2016-01-01
        7. CIS On only potential between minimum of 2113.0 and maximum of 2125.0 -mV
        8. CIS On-Off potential between minimum of 1467.0 and maximum of 1467.0 -mV
        9. DCVG percent iR between minimum of 36.79 and maximum of 45.57
        10. ACVG potential between minimum of 0.01 and maximum of 0.02 mV
     3. Consequence of failure distributed between minimum of $1.40 and maximum of $1.40MM
     4. Total length driven by Economic Loss: 10.26 meters.
     5. Economic Loss Cost distributed between minimum of $0.99 and maximum of $0.99MM:
        1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
        2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.89 and maximum of $0.89MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $44,566.23 and maximum of $44,566.23
        7. Rupture cost between minimum of $47.90 and maximum of $47.90MM
        8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $318,825.00 and maximum of $318,825.00 in cost of structures impacted
        9. Rupture product loss costs between minimum of $46,740,539.02 and maximum of $46,740,539.02
        10. Puncture cost between minimum of $2.31 and maximum of $2.31MM
        11. Puncture scenario yielded 1.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,464,345.16 and maximum of $1,464,345.16"
395. "SS-27 NPS 4
     1. Total Cumulative Length (m): 9.11
     2. Likelihood of failure distributed between minimum of 3.504e-02 and maximum of 3.504e-02.
        1. Installation date between minimum of 1956-01-01 and maximum of 1956-01-01
        2. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
        3. Mainline coating type of Coal Tar
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2016-11-25
        7. CIS On only potential between minimum of 1140.0 and maximum of 1233.0 -mV
        8. CIS On-Off potential between minimum of 1100.0 and maximum of 1197.0 -mV
        9. DCVG percent iR between minimum of 38.03 and maximum of 65.28
        10. ACVG potential between minimum of 0.04 and maximum of 0.18 mV
     3. Consequence of failure distributed between minimum of $1.27 and maximum of $1.27MM
     4. Total length driven by Environmental: 9.11 meters.
     5. Environmental Cost distributed between minimum of $1.05 and maximum of $1.05MM:
        1. Leak cost between minimum of $0.20 and maximum of $0.20MM
        2. Leak spill volume between a minimum of 1861.88 and maximum of 1861.88 gallons
        3. Rupture cost between minimum of $25.78 and maximum of $25.78MM
        4. Rupture spill volume is between a minimum of 243245.68 and maximum of 243245.68 gallons
        5. Puncture cost between minimum of $6.48 and maximum of $6.48MM
        6. Puncture spill volume is between a minimum of 61177.29 and maximum of 61177.29 gallons
        7. Land use distributed as
           1. Agricultural: 9.11
396. "NPS20 ENBRIDGE BLEND TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
     1. Total Cumulative Length (m): 5.34
     2. Likelihood of failure distributed between minimum of 1.503e-02 and maximum of 1.503e-02.
        1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        2. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
        3. Mainline coating type of Yellow Jacket
        4. Joint coating type of Data not available
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2017-01-01
        7. CIS On only potential between minimum of 1638.0 and maximum of 1814.0 -mV
        8. CIS On-Off potential between minimum of 1227.0 and maximum of 1388.0 -mV
        9. DCVG percent iR between minimum of 37.9 and maximum of 41.77
        10. ACVG potential between minimum of 0.02 and maximum of 0.03 mV
     3. Consequence of failure distributed between minimum of $6.91 and maximum of $6.93MM
     4. Total length driven by Environmental: 5.34 meters.
     5. Environmental Cost distributed between minimum of $5.99 and maximum of $5.99MM:
        1. Leak cost between minimum of $0.05 and maximum of $0.05MM
        2. Leak spill volume between a minimum of 510.83 and maximum of 510.83 gallons
        3. Rupture cost between minimum of $139.73 and maximum of $139.73MM
        4. Rupture spill volume is between a minimum of 1318272.77 and maximum of 1318272.77 gallons
        5. Puncture cost between minimum of $1.78 and maximum of $1.78MM
        6. Puncture spill volume is between a minimum of 16784.77 and maximum of 16784.77 gallons
        7. Land use distributed as
           1. Remote: 5.34
397. "NPS4 ENBRIDGE TRANSFER from 2-34-33-22W3 to 10-34-33-22W3
     1. Total Cumulative Length (m): 4.52
     2. Likelihood of failure distributed between minimum of 2.056e-02 and maximum of 2.056e-02.
        1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
        2. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
        3. Mainline coating type of Extruded Polyethylene
        4. Joint coating type of Data not available
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2017-01-01
        7. CIS On only potential between minimum of 1016.0 and maximum of 1016.0 -mV
        8. CIS On-Off potential between minimum of 1086.0 and maximum of 1086.0 -mV
        9. DCVG percent iR between minimum of 39.22 and maximum of 65.62
        10. ACVG potential between minimum of 0.0 and maximum of 0.0 mV
     3. Consequence of failure distributed between minimum of $1.00 and maximum of $1.00MM
     4. Total length driven by Environmental: 4.52 meters.
     5. Environmental Cost distributed between minimum of $0.76 and maximum of $0.76MM:
        1. Leak cost between minimum of $0.21 and maximum of $0.21MM
        2. Leak spill volume between a minimum of 1935.35 and maximum of 1935.35 gallons
        3. Rupture cost between minimum of $26.80 and maximum of $26.80MM
        4. Rupture spill volume is between a minimum of 252844.1 and maximum of 252844.1 gallons
        5. Puncture cost between minimum of $6.74 and maximum of $6.74MM
        6. Puncture spill volume is between a minimum of 63591.33 and maximum of 63591.33 gallons
        7. Land use distributed as
           1. Agricultural: 4.52
398. "CARROT CREEK LATERAL NPS 2
     1. Total Cumulative Length (m): 0.88
     2. Likelihood of failure distributed between minimum of 1.319e-01 and maximum of 1.319e-01.
        1. Installation date between minimum of 1988-01-01 and maximum of 1988-01-01
        2. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
        3. Mainline coating type of Unknown
        4. Joint coating type of Unknown
        5. Coating installation date between minimum of NaT and maximum of NaT
        6. Date of last CIS survey of 2017-01-01
        7. CIS On only potential between minimum of 1093.0 and maximum of 1093.0 -mV
        8. CIS On-Off potential between minimum of 1085.0 and maximum of 1085.0 -mV
        9. DCVG percent iR between minimum of 0.0 and maximum of 0.0
        10. ACVG potential between minimum of nan and maximum of nan mV
     3. Consequence of failure distributed between minimum of $0.31 and maximum of $0.31MM
     4. Total length driven by Economic Loss: 0.88 meters.
     5. Economic Loss Cost distributed between minimum of $0.28 and maximum of $0.28MM:
        1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
        2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
        3. Product type is NGL.
        4. Leak cost between minimum of $0.27 and maximum of $0.27MM
        5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
        6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
        7. Rupture cost between minimum of $2.42 and maximum of $2.42MM
        8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        9. Rupture product loss costs between minimum of $2,214,603.35 and maximum of $2,214,603.35
        10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
        11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
        12. Puncture Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
        13. EC Method 2

MFLA

1. "UTILITY NPS 8
   1. Total Cumulative Length (m): 1555.99
   2. Likelihood of failure distributed between minimum of 9.998e-04 and maximum of 2.509e-02.
      1. ILI Date of 2011-08-12
      2. ILI tool of MFL
      3. Features identified 342.0
      4. Depth fraction between 0.02 and 0.32
      5. Length between 9.0 mm and 119.0 mm
   3. Consequence of failure distributed between minimum of $3.08 and maximum of $97.42MM
   4. Total length driven by Safety: 1466.04 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $93.63MM:
      1. Leak cost between minimum of $0.00 and maximum of $12.11MM
      2. Leak scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 10.66 and maximum of 10.66 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $568.51MM
      5. Rupture scenario yielded 40.0 intersections with structures, with minimum of 1.26 and maximum of 59.22 of population impacted
      6. Rupture hazard radius distributed between minimum of 135.26 and maximum of 135.26 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $320.46MM
      8. Puncture scenario yielded 45.0 intersections with structures, with minimum of 0.0 and maximum of 33.38 of population impacted
      9. Puncture hazard radius distributed between minimum of 49.48 and maximum of 49.48 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Economic Loss: 89.95 meters.
   7. Economic Loss Cost distributed between minimum of $3.08 and maximum of $4.66MM:
      1. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is HVP Product.
      4. Leak cost between minimum of $0.25 and maximum of $0.52MM
      5. Leak scenario yielded 16.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $40,141.48 and maximum of $40,141.48
      7. Rupture cost between minimum of $19.48 and maximum of $25.75MM
      8. Rupture scenario yielded 40.0 intersections with structures, with minimum of $268,825.00 and maximum of $6,266,540.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $19,265,442.30 and maximum of $19,265,442.30
      10. Puncture cost between minimum of $1.53 and maximum of $5.33MM
      11. Puncture scenario yielded 45.0 intersections with structures, with minimum of $25,000.00 and maximum of $3,792,943.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $1,318,957.76 and maximum of $1,318,957.76"
2. "SECT 6 GRENFELL TO MANSON NPS 6
   1. Total Cumulative Length (m): 1135.66
   2. Likelihood of failure distributed between minimum of 1.001e-02 and maximum of 4.740e-02.
      1. ILI Date of 2011-03-16
      2. ILI tool of MFL
      3. Features identified 136.0
      4. Depth fraction between 0.1 and 0.35
      5. Length between 7.165 mm and 89.76 mm
   3. Consequence of failure distributed between minimum of $1.01 and maximum of $4.46MM
   4. Total length driven by Safety: 30.0 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $3.03MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 10.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
      3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $121.06MM
      5. Rupture scenario yielded 67.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $0.00MM
      8. Puncture scenario yielded 43.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted
      9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
      10. Product type is NGL.
      11. Class area location is/are 1.0.
   6. Total length driven by Economic Loss: 1105.66 meters.
   7. Economic Loss Cost distributed between minimum of $0.89 and maximum of $3.64MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $0.30MM
      5. Leak scenario yielded 10.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $20.58MM
      8. Rupture scenario yielded 67.0 intersections with structures, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $2.29MM
      11. Puncture scenario yielded 43.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
3. "SECT 5 RICHARDSON TO GRENFELL NPS 6
   1. Total Cumulative Length (m): 1109.93
   2. Likelihood of failure distributed between minimum of 1.035e-02 and maximum of 1.188e-01.
      1. ILI Date of 2012-03-06
      2. ILI tool of MFL
      3. Features identified 164.0
      4. Depth fraction between 0.12 and 0.51
      5. Length between 8.381 mm and 145.911 mm
   3. Consequence of failure distributed between minimum of $0.72 and maximum of $4.85MM
   4. Total length driven by Economic Loss: 1109.93 meters.
   5. Economic Loss Cost distributed between minimum of $0.72 and maximum of $4.85MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $0.30MM
      5. Leak scenario yielded 18.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $17.89MM
      8. Rupture scenario yielded 59.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $2.29MM
      11. Puncture scenario yielded 53.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
4. "UTIKUMA TO EDMONTON NPS 24
   1. Total Cumulative Length (m): 899.94
   2. Likelihood of failure distributed between minimum of 1.487e-03 and maximum of 3.105e-01.
      1. ILI Date of 2017-03-09
      2. ILI tool of MFL/Geometry
      3. Features identified 1672.0
      4. Depth fraction between 0.02 and 0.72
      5. Length between 12.0 mm and 5968.0 mm
   3. Consequence of failure distributed between minimum of $2.68 and maximum of $88.65MM
   4. Total length driven by Safety: 89.99 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $82.26MM:
      1. Leak cost between minimum of $0.00 and maximum of $28.51MM
      2. Leak scenario yielded 644.0 intersections with structures, with minimum of 2.97 and maximum of 2.97 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.59 and maximum of 3.59 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $190.19MM
      5. Rupture scenario yielded 346.0 intersections with structures, with minimum of 0.0 and maximum of 19.81 of population impacted
      6. Rupture hazard radius distributed between minimum of 122.95 and maximum of 122.95 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $28.51MM
      8. Puncture scenario yielded 730.0 intersections with structures, with minimum of 2.97 and maximum of 2.97 of population impacted
      9. Puncture hazard radius distributed between minimum of 14.3 and maximum of 14.3 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 659.96 meters.
   7. Environmental Cost distributed between minimum of $0.11 and maximum of $73.71MM:
      1. Leak cost between minimum of $0.09 and maximum of $21.32MM
      2. Leak spill volume between a minimum of 1390.19 and maximum of 201117.71 gallons
      3. Rupture cost between minimum of $5.01 and maximum of $78.71MM
      4. Rupture spill volume is between a minimum of 73563.52 and maximum of 742620.95 gallons
      5. Puncture cost between minimum of $3.11 and maximum of $21.32MM
      6. Puncture spill volume is between a minimum of 45678.62 and maximum of 201117.71 gallons
      7. Land use distributed as
         1. Agricultural: 417.24
         2. Commercial/Industrial: 60.00
         3. Forested: 87.09
         4. High Density Residential: 60.00
         5. Remote: 269.98
         6. Water Course: 5.64
   8. Total length driven by Economic Loss: 149.99 meters.
   9. Economic Loss Cost distributed between minimum of $2.48 and maximum of $4.16MM:
      1. Repair costs between minimum of $73,000.00 and maximum of $404,000.00.
      2. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $2.47 and maximum of $2.82MM
      5. Leak scenario yielded 644.0 intersections with structures, with minimum of $18,600.00 and maximum of $18,600.00 in cost of structures impacted.
      6. Leak product loss costs between minimum of $1,542.45 and maximum of $223,144.89
      7. Rupture cost between minimum of $2.61 and maximum of $5.93MM
      8. Rupture scenario yielded 346.0 intersections with structures, with minimum of $25,000.00 and maximum of $3,044,275.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $81,620.47 and maximum of $823,955.63
      10. Puncture cost between minimum of $2.53 and maximum of $2.87MM
      11. Puncture scenario yielded 730.0 intersections with structures, with minimum of $18,600.00 and maximum of $18,600.00 in cost of structures impacted
      12. Puncture product Loss costs between minimum of $50,681.51 and maximum of $223,144.89"
5. "NORTH FERRIER 08-20 TO 09-27 NPS 8
   1. Total Cumulative Length (m): 479.89
   2. Likelihood of failure distributed between minimum of 1.963e-03 and maximum of 9.253e-02.
      1. ILI Date of 2013-09-17
      2. ILI tool of MFL
      3. Features identified 1203.0
      4. Depth fraction between 0.11 and 0.44
      5. Length between 4.0 mm and 148.0 mm
   3. Consequence of failure distributed between minimum of $1.00 and maximum of $125.01MM
   4. Total length driven by Safety: 119.97 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $121.06MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 43.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 3.99 and maximum of 4.11 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $262.68MM
      5. Rupture scenario yielded 85.0 intersections with structures, with minimum of 2.28 and maximum of 27.36 of population impacted
      6. Rupture hazard radius distributed between minimum of 53.97 and maximum of 55.69 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
      8. Puncture scenario yielded 67.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 15.93 and maximum of 16.44 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 3.0.
   6. Total length driven by Environmental: 359.92 meters.
   7. Environmental Cost distributed between minimum of $0.61 and maximum of $2.73MM:
      1. Leak cost between minimum of $0.18 and maximum of $0.22MM
      2. Leak spill volume between a minimum of 1734.36 and maximum of 2085.62 gallons
      3. Rupture cost between minimum of $1.33 and maximum of $4.25MM
      4. Rupture spill volume is between a minimum of 12511.34 and maximum of 40103.54 gallons
      5. Puncture cost between minimum of $6.04 and maximum of $7.26MM
      6. Puncture spill volume is between a minimum of 56987.26 and maximum of 68528.77 gallons
      7. Land use distributed as
         1. Agricultural: 359.92
         2. Forested: 119.97
6. "SECT 8 RAPID CITY TO PORTAGE NPS 6
   1. Total Cumulative Length (m): 329.95
   2. Likelihood of failure distributed between minimum of 1.149e-02 and maximum of 3.797e-01.
      1. ILI Date of 2014-07-16
      2. ILI tool of MFL
      3. Features identified 50.0
      4. Depth fraction between 0.11 and 0.67
      5. Length between 10.57 mm and 147.87 mm
   3. Consequence of failure distributed between minimum of $0.66 and maximum of $4.97MM
   4. Total length driven by Economic Loss: 329.95 meters.
   5. Economic Loss Cost distributed between minimum of $0.66 and maximum of $4.97MM:
      1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
      2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
      3. Product type is NGL.
      4. Leak cost between minimum of $0.27 and maximum of $0.30MM
      5. Leak scenario yielded 22.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
      7. Rupture cost between minimum of $17.84 and maximum of $17.87MM
      8. Rupture scenario yielded 75.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
      10. Puncture cost between minimum of $2.26 and maximum of $2.29MM
      11. Puncture scenario yielded 45.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
7. "CADOTTE LAKE TO UTIKUMA STATION NPS 20
   1. Total Cumulative Length (m): 299.94
   2. Likelihood of failure distributed between minimum of 1.055e-03 and maximum of 2.723e-02.
      1. ILI Date of 2016-02-17
      2. ILI tool of MFL/Geometry
      3. Features identified 255.0
      4. Depth fraction between 0.07 and 0.59
      5. Length between 12.0 mm and 201.0 mm
   3. Consequence of failure distributed between minimum of $1.31 and maximum of $37.26MM
   4. Total length driven by Environmental: 179.97 meters.
   5. Environmental Cost distributed between minimum of $0.45 and maximum of $36.03MM:
      1. Leak cost between minimum of $0.22 and maximum of $0.38MM
      2. Leak spill volume between a minimum of 2047.24 and maximum of 2930.33 gallons
      3. Rupture cost between minimum of $12.28 and maximum of $53.36MM
      4. Rupture spill volume is between a minimum of 115895.24 and maximum of 503423.68 gallons
      5. Puncture cost between minimum of $7.13 and maximum of $12.63MM
      6. Puncture spill volume is between a minimum of 67267.62 and maximum of 96284.12 gallons
      7. Land use distributed as
         1. Agricultural: 89.98
         2. Forested: 209.96
   6. Total length driven by Economic Loss: 119.98 meters.
   7. Economic Loss Cost distributed between minimum of $0.86 and maximum of $1.23MM:
      1. Repair costs between minimum of $57,000.00 and maximum of $57,000.00.
      2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
      3. Product type is Crude Oil.
      4. Leak cost between minimum of $0.86 and maximum of $0.86MM
      5. Leak scenario yielded 37.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
      6. Leak product loss costs between minimum of $2,271.46 and maximum of $3,251.28
      7. Rupture cost between minimum of $0.99 and maximum of $1.42MM
      8. Rupture scenario yielded 50.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
      9. Rupture product loss costs between minimum of $128,588.53 and maximum of $558,560.56
      10. Puncture cost between minimum of $0.93 and maximum of $0.96MM
      11. Puncture scenario yielded 48.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
      12. Puncture product Loss costs between minimum of $74,635.03 and maximum of $106,829.52"
8. "BRETON TO EDMONTON NPS 8
   1. Total Cumulative Length (m): 239.93
   2. Likelihood of failure distributed between minimum of 1.045e-03 and maximum of 8.858e-02.
      1. ILI Date of 2014-11-12
      2. ILI tool of MFL
      3. Features identified 559.0
      4. Depth fraction between 0.10 and 0.49
      5. Length between 6.0 mm and 201.0 mm
   3. Consequence of failure distributed between minimum of $5.18 and maximum of $197.82MM
   4. Total length driven by Safety: 239.93 meters.
   5. Safety Cost distributed between minimum of $4.69 and maximum of $194.24MM:
      1. Leak cost between minimum of $0.00 and maximum of $0.00MM
      2. Leak scenario yielded 117.0 intersections with structures, with minimum of 0.0 and maximum of 0.0 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.13 and maximum of 12.03 meters.
      4. Rupture cost between minimum of $121.06 and maximum of $5,539.97MM
      5. Rupture scenario yielded 236.0 intersections with structures, with minimum of 12.61 and maximum of 577.08 of population impacted
      6. Rupture hazard radius distributed between minimum of 129.12 and maximum of 138.23 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $306.43MM
      8. Puncture scenario yielded 355.0 intersections with structures, with minimum of 1.26 and maximum of 31.92 of population impacted
      9. Puncture hazard radius distributed between minimum of 45.37 and maximum of 48.58 meters.
      10. Product type is Condensate.
      11. Class area location is/are 1.0, 2.0.
9. "UNITY TO LONE ROCK NPS 4
   1. Total Cumulative Length (m): 149.97
   2. Likelihood of failure distributed between minimum of 2.010e-03 and maximum of 5.187e-03.
      1. ILI Date of 2017-04-25
      2. ILI tool of MFL/Geometry
      3. Features identified 145.0
      4. Depth fraction between 0.11 and 0.49
      5. Length between 4.0 mm and 128.0 mm
   3. Consequence of failure distributed between minimum of $10.01 and maximum of $14.13MM
   4. Total length driven by Environmental: 149.97 meters.
   5. Environmental Cost distributed between minimum of $9.70 and maximum of $13.77MM:
      1. Leak cost between minimum of $0.21 and maximum of $0.26MM
      2. Leak spill volume between a minimum of 1972.39 and maximum of 2415.69 gallons
      3. Rupture cost between minimum of $27.31 and maximum of $33.45MM
      4. Rupture spill volume is between a minimum of 257682.32 and maximum of 315598.07 gallons
      5. Puncture cost between minimum of $6.87 and maximum of $8.41MM
      6. Puncture spill volume is between a minimum of 64808.16 and maximum of 79374.21 gallons
      7. Land use distributed as
         1. Agricultural: 119.97
         2. Remote: 29.99
10. "SS-03 NPS 6
    1. Total Cumulative Length (m): 149.94
    2. Likelihood of failure distributed between minimum of 2.057e-02 and maximum of 4.316e-02.
       1. ILI Date of 2016-02-02
       2. ILI tool of MFL/Geometry
       3. Features identified 271.0
       4. Depth fraction between 0.1 and 0.43
       5. Length between 4.0 mm and 74.0 mm
    3. Consequence of failure distributed between minimum of $4.65 and maximum of $24.45MM
    4. Total length driven by Environmental: 149.94 meters.
    5. Environmental Cost distributed between minimum of $4.37 and maximum of $23.96MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1815.99 and maximum of 1815.99 gallons
       3. Rupture cost between minimum of $54.50 and maximum of $54.50MM
       4. Rupture spill volume is between a minimum of 514224.45 and maximum of 514224.45 gallons
       5. Puncture cost between minimum of $6.32 and maximum of $6.32MM
       6. Puncture spill volume is between a minimum of 59669.32 and maximum of 59669.32 gallons
       7. Land use distributed as
          1. Agricultural: 149.94
11. "NPS6 Brookfield to Joffre From 15-20-38-25W4 To 15-17-39-26W4
    1. Total Cumulative Length (m): 110.49
    2. Likelihood of failure distributed between minimum of 1.135e-03 and maximum of 9.315e-03.
       1. ILI Date of 2016-04-21
       2. ILI tool of MFL/Geometry
       3. Features identified 95.0
       4. Depth fraction between 0.11 and 0.44
       5. Length between 6.0 mm and 72.0 mm
    3. Consequence of failure distributed between minimum of $11.13 and maximum of $26.77MM
    4. Total length driven by Environmental: 110.49 meters.
    5. Environmental Cost distributed between minimum of $10.80 and maximum of $26.28MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.22MM
       2. Leak spill volume between a minimum of 1919.14 and maximum of 2046.96 gallons
       3. Rupture cost between minimum of $57.60 and maximum of $61.44MM
       4. Rupture spill volume is between a minimum of 543432.51 and maximum of 579628.2 gallons
       5. Puncture cost between minimum of $6.68 and maximum of $7.13MM
       6. Puncture spill volume is between a minimum of 63058.55 and maximum of 67258.6 gallons
       7. Land use distributed as
          1. Agricultural: 110.49
12. "RADIAL LAKE TO LOCHEARN PUMP STATION NPS 3
    1. Total Cumulative Length (m): 89.97
    2. Likelihood of failure distributed between minimum of 2.919e-02 and maximum of 1.403e-01.
       1. ILI Date of 2012-08-29
       2. ILI tool of MFL
       3. Features identified 15.0
       4. Depth fraction between 0.15 and 0.27
       5. Length between 10.0 mm and 36.0 mm
    3. Consequence of failure distributed between minimum of $0.72 and maximum of $1.09MM
    4. Total length driven by Economic Loss: 89.97 meters.
    5. Economic Loss Cost distributed between minimum of $0.72 and maximum of $1.09MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.27 and maximum of $0.27MM
       5. Leak scenario yielded 6.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $5.02 and maximum of $5.02MM
       8. Rupture scenario yielded 22.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
       10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
       11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
13. "SECT 3 HERBERT TO CARON NPS 6
    1. Total Cumulative Length (m): 67.37
    2. Likelihood of failure distributed between minimum of 1.821e-03 and maximum of 2.070e-02.
       1. ILI Date of 2013-03-06
       2. ILI tool of MFL
       3. Features identified 9.0
       4. Depth fraction between 0.14 and 0.4
       5. Length between 13.629 mm and 60.756 mm
    3. Consequence of failure distributed between minimum of $1.43 and maximum of $13.10MM
    4. Total length driven by Safety: 7.38 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $10.18MM:
       1. Leak cost between minimum of $0.00 and maximum of $0.00MM
       2. Leak scenario yielded 9.0 intersections with structures, with minimum of nan and maximum of nan of population impacted.
       3. Leak hazard radius distributed between minimum of 12.34 and maximum of 12.34 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $12.11MM
       5. Rupture scenario yielded 45.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 130.83 and maximum of 130.83 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 41.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 58.33 and maximum of 58.33 meters.
       10. Product type is NGL.
       11. Class area location is/are 1.0.
    6. Total length driven by Economic Loss: 59.99 meters.
    7. Economic Loss Cost distributed between minimum of $1.43 and maximum of $2.92MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $0.27MM
       5. Leak scenario yielded 9.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $62,251.66 and maximum of $62,251.66
       7. Rupture cost between minimum of $17.84 and maximum of $18.13MM
       8. Rupture scenario yielded 45.0 intersections with structures, with minimum of $293,825.00 and maximum of $293,825.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
       10. Puncture cost between minimum of $2.26 and maximum of $2.55MM
       11. Puncture scenario yielded 41.0 intersections with structures, with minimum of $293,825.00 and maximum of $293,825.00 in cost of structures impacted
       12. Puncture product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13"
14. "CRIMSON LAKE TO 10-33 NPS 4
    1. Total Cumulative Length (m): 63.64
    2. Likelihood of failure distributed between minimum of 3.171e-03 and maximum of 1.506e-02.
       1. ILI Date of 2016-02-23
       2. ILI tool of MFL/Geometry
       3. Features identified 39.0
       4. Depth fraction between 0.12 and 0.45
       5. Length between 4.0 mm and 76.0 mm
    3. Consequence of failure distributed between minimum of $5.84 and maximum of $11.96MM
    4. Total length driven by Environmental: 63.64 meters.
    5. Environmental Cost distributed between minimum of $5.57 and maximum of $11.61MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.32MM
       2. Leak spill volume between a minimum of 1705.83 and maximum of 1909.12 gallons
       3. Rupture cost between minimum of $23.62 and maximum of $41.39MM
       4. Rupture spill volume is between a minimum of 222858.4 and maximum of 249416.5 gallons
       5. Puncture cost between minimum of $5.94 and maximum of $10.41MM
       6. Puncture spill volume is between a minimum of 56049.8 and maximum of 62729.27 gallons
       7. Land use distributed as
          1. Forested: 60.03
          2. Water Course: 3.61
15. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
    1. Total Cumulative Length (m): 59.99
    2. Likelihood of failure distributed between minimum of 1.486e-03 and maximum of 2.011e-03.
       1. ILI Date of 2016-03-08
       2. ILI tool of MFL/Geometry
       3. Features identified 271.0
       4. Depth fraction between 0.1 and 0.47
       5. Length between 4.0 mm and 154.0 mm
    3. Consequence of failure distributed between minimum of $11.72 and maximum of $13.00MM
    4. Total length driven by Economic Loss: 59.99 meters.
    5. Economic Loss Cost distributed between minimum of $11.72 and maximum of $13.00MM:
       1. Repair costs between minimum of $17,000.00 and maximum of $17,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.28 and maximum of $0.28MM
       5. Leak scenario yielded 16.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $59,691.29 and maximum of $59,691.29
       7. Rupture cost between minimum of $44.72 and maximum of $44.72MM
       8. Rupture scenario yielded 105.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $44,503,622.40 and maximum of $44,503,622.40
       10. Puncture cost between minimum of $2.18 and maximum of $2.18MM
       11. Puncture scenario yielded 60.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,961,320.39 and maximum of $1,961,320.39"
16. "WEST SENLAC TO UNITY NPS 6
    1. Total Cumulative Length (m): 59.99
    2. Likelihood of failure distributed between minimum of 1.099e-02 and maximum of 1.102e-01.
       1. ILI Date of 2016-06-13
       2. ILI tool of MFL/Geometry
       3. Features identified 17.0
       4. Depth fraction between 0.11 and 0.6
       5. Length between 4.0 mm and 36.0 mm
    3. Consequence of failure distributed between minimum of $1.75 and maximum of $4.69MM
    4. Total length driven by Environmental: 59.99 meters.
    5. Environmental Cost distributed between minimum of $1.52 and maximum of $4.43MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.22MM
       2. Leak spill volume between a minimum of 1878.04 and maximum of 2034.92 gallons
       3. Rupture cost between minimum of $56.37 and maximum of $61.07MM
       4. Rupture spill volume is between a minimum of 531793.88 and maximum of 576218.57 gallons
       5. Puncture cost between minimum of $6.54 and maximum of $7.09MM
       6. Puncture spill volume is between a minimum of 61708.03 and maximum of 66862.96 gallons
       7. Land use distributed as
          1. Agricultural: 59.99
17. "10-33 VALVE SITE TO MAIN LINE TIE-IN 2-6 NPS 3
    1. Total Cumulative Length (m): 59.98
    2. Likelihood of failure distributed between minimum of 1.132e-01 and maximum of 1.626e-01.
       1. ILI Date of 2017-07-20
       2. ILI tool of MFL/Geometry
       3. Features identified 61.0
       4. Depth fraction between 0.13 and 0.62
       5. Length between 4.0 mm and 50.0 mm
    3. Consequence of failure distributed between minimum of $0.32 and maximum of $0.49MM
    4. Total length driven by Economic Loss: 59.98 meters.
    5. Economic Loss Cost distributed between minimum of $0.32 and maximum of $0.49MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.26 and maximum of $0.26MM
       5. Leak scenario yielded 8.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $50,866.30 and maximum of $50,866.30
       7. Rupture cost between minimum of $4.23 and maximum of $4.23MM
       8. Rupture scenario yielded 36.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,020,070.39 and maximum of $4,020,070.39
       10. Puncture cost between minimum of $1.88 and maximum of $1.88MM
       11. Puncture scenario yielded 34.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,671,351.05 and maximum of $1,671,351.05"
18. "NPS8 RL-1 From 9-10-109-8W6 To 4-11-109-8W6
    1. Total Cumulative Length (m): 58.72
    2. Likelihood of failure distributed between minimum of 1.156e-03 and maximum of 1.292e-02.
       1. ILI Date of 2016-01-19
       2. ILI tool of MFL/Geometry
       3. Features identified 98.0
       4. Depth fraction between 0.11 and 0.41
       5. Length between 8.0 mm and 664.0 mm
    3. Consequence of failure distributed between minimum of $2.60 and maximum of $10.93MM
    4. Total length driven by Environmental: 58.72 meters.
    5. Environmental Cost distributed between minimum of $2.37 and maximum of $10.60MM:
       1. Leak cost between minimum of $0.15 and maximum of $0.15MM
       2. Leak spill volume between a minimum of 1398.42 and maximum of 1419.13 gallons
       3. Rupture cost between minimum of $71.14 and maximum of $72.19MM
       4. Rupture spill volume is between a minimum of 671156.67 and maximum of 681095.43 gallons
       5. Puncture cost between minimum of $4.87 and maximum of $4.94MM
       6. Puncture spill volume is between a minimum of 45948.97 and maximum of 46629.4 gallons
       7. Land use distributed as
          1. Forested: 24.79
          2. Remote: 33.92
19. "NI-95 NPS 8
    1. Total Cumulative Length (m): 58.71
    2. Likelihood of failure distributed between minimum of 1.270e-03 and maximum of 2.048e-03.
       1. ILI Date of 2018-03-01
       2. ILI tool of MFL/Geometry
       3. Features identified 160.0
       4. Depth fraction between 0.1 and 0.49
       5. Length between 4.0 mm and 81.0 mm
    3. Consequence of failure distributed between minimum of $23.55 and maximum of $41.35MM
    4. Total length driven by Environmental: 58.71 meters.
    5. Environmental Cost distributed between minimum of $23.06 and maximum of $40.69MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1809.17 and maximum of 1810.77 gallons
       3. Rupture cost between minimum of $92.03 and maximum of $92.11MM
       4. Rupture spill volume is between a minimum of 868292.36 and maximum of 869059.11 gallons
       5. Puncture cost between minimum of $6.30 and maximum of $6.31MM
       6. Puncture spill volume is between a minimum of 59445.35 and maximum of 59497.84 gallons
       7. Land use distributed as
          1. Agricultural: 58.71
20. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5
    1. Total Cumulative Length (m): 30.0
    2. Likelihood of failure distributed between minimum of 1.712e-01 and maximum of 1.712e-01.
       1. ILI Date of 2015-07-27
       2. ILI tool of MFL/Geometry
       3. Features identified 10.0
       4. Depth fraction between 0.1 and 0.58
       5. Length between 15.0 mm and 243.0 mm
    3. Consequence of failure distributed between minimum of $49.56 and maximum of $49.62MM
    4. Total length driven by Environmental: 30.0 meters.
    5. Environmental Cost distributed between minimum of $48.84 and maximum of $48.89MM:
       1. Leak cost between minimum of $0.22 and maximum of $0.22MM
       2. Leak spill volume between a minimum of 2045.08 and maximum of 2047.2 gallons
       3. Rupture cost between minimum of $104.03 and maximum of $104.14MM
       4. Rupture spill volume is between a minimum of 981512.08 and maximum of 982532.16 gallons
       5. Puncture cost between minimum of $7.12 and maximum of $7.13MM
       6. Puncture spill volume is between a minimum of 67196.64 and maximum of 67266.48 gallons
       7. Land use distributed as
          1. Remote: 30.00
21. "COCHRANE TO ROCKY MOUNTAIN HOUSE NPS 8
    1. Total Cumulative Length (m): 30.0
    2. Likelihood of failure distributed between minimum of 8.425e-03 and maximum of 8.425e-03.
       1. ILI Date of 2019-05-02
       2. ILI tool of MFL/Geometry
       3. Features identified 310.0
       4. Depth fraction between 0.1 and 0.47
       5. Length between 4.0 mm and 349.0 mm
    3. Consequence of failure distributed between minimum of $17.37 and maximum of $17.37MM
    4. Total length driven by Economic Loss: 30.0 meters.
    5. Economic Loss Cost distributed between minimum of $17.37 and maximum of $17.37MM:
       1. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.28 and maximum of $0.28MM
       5. Leak scenario yielded 52.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $29.42 and maximum of $29.42MM
       8. Rupture scenario yielded 225.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $29,206,998.79 and maximum of $29,206,998.79
       10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
       11. Puncture scenario yielded 133.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
22. "WEST PEMBINA TO BRAZEAU NPS 3
    1. Total Cumulative Length (m): 30.0
    2. Likelihood of failure distributed between minimum of 8.281e-01 and maximum of 8.281e-01.
       1. ILI Date of 2009-12-01
       2. ILI tool of MFL
       3. Features identified 1.0
       4. Depth fraction between 0.72 and 0.72
       5. Length between 21.0 mm and 21.0 mm
    3. Consequence of failure distributed between minimum of $1.03 and maximum of $1.03MM
    4. Total length driven by Economic Loss: 30.0 meters.
    5. Economic Loss Cost distributed between minimum of $1.03 and maximum of $1.03MM:
       1. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.27 and maximum of $0.27MM
       5. Leak scenario yielded 24.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $60,855.70 and maximum of $60,855.70
       7. Rupture cost between minimum of $5.02 and maximum of $5.02MM
       8. Rupture scenario yielded 53.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
       10. Puncture cost between minimum of $2.21 and maximum of $2.21MM
       11. Puncture scenario yielded 50.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23"
23. "SUNDRE TO HARTELL NPS 12
    1. Total Cumulative Length (m): 30.0
    2. Likelihood of failure distributed between minimum of 1.383e-02 and maximum of 1.383e-02.
       1. ILI Date of 2015-11-16
       2. ILI tool of MFL/Geometry
       3. Features identified 7.0
       4. Depth fraction between 0.1 and 0.32
       5. Length between 12.0 mm and 4162.0 mm
    3. Consequence of failure distributed between minimum of $7.85 and maximum of $7.85MM
    4. Total length driven by Environmental: 30.0 meters.
    5. Environmental Cost distributed between minimum of $6.94 and maximum of $6.94MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1791.54 and maximum of 1791.54 gallons
       3. Rupture cost between minimum of $7.16 and maximum of $7.16MM
       4. Rupture spill volume is between a minimum of 67576.42 and maximum of 67576.42 gallons
       5. Puncture cost between minimum of $6.24 and maximum of $6.24MM
       6. Puncture spill volume is between a minimum of 58865.82 and maximum of 58865.82 gallons
       7. Land use distributed as
          1. Agricultural: 30.00
24. "NPS8 Red Earth to Rainbow P/L tie-in From 9-18-87-8-W5 To 15-29-81-9-W
    1. Total Cumulative Length (m): 29.99
    2. Likelihood of failure distributed between minimum of 3.922e-02 and maximum of 3.922e-02.
       1. ILI Date of 2016-02-09
       2. ILI tool of MFL/Geometry
       3. Features identified 12.0
       4. Depth fraction between 0.13 and 0.57
       5. Length between 8.0 mm and 64.0 mm
    3. Consequence of failure distributed between minimum of $33.77 and maximum of $33.77MM
    4. Total length driven by Environmental: 29.99 meters.
    5. Environmental Cost distributed between minimum of $33.21 and maximum of $33.21MM:
       1. Leak cost between minimum of $0.19 and maximum of $0.19MM
       2. Leak spill volume between a minimum of 1816.46 and maximum of 1816.54 gallons
       3. Rupture cost between minimum of $92.40 and maximum of $92.41MM
       4. Rupture spill volume is between a minimum of 871790.09 and maximum of 871826.89 gallons
       5. Puncture cost between minimum of $6.33 and maximum of $6.33MM
       6. Puncture spill volume is between a minimum of 59684.81 and maximum of 59687.33 gallons
       7. Land use distributed as
          1. Forested: 29.99
25. "SS-11 NPS 6
    1. Total Cumulative Length (m): 29.99
    2. Likelihood of failure distributed between minimum of 1.428e-03 and maximum of 1.428e-03.
       1. ILI Date of 2017-05-24
       2. ILI tool of MFL/Geometry
       3. Features identified 39.0
       4. Depth fraction between 0.1 and 0.48
       5. Length between 4.0 mm and 96.0 mm
    3. Consequence of failure distributed between minimum of $26.14 and maximum of $26.14MM
    4. Total length driven by Environmental: 29.99 meters.
    5. Environmental Cost distributed between minimum of $25.66 and maximum of $25.66MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1958.94 and maximum of 1958.94 gallons
       3. Rupture cost between minimum of $58.79 and maximum of $58.79MM
       4. Rupture spill volume is between a minimum of 554702.8 and maximum of 554702.8 gallons
       5. Puncture cost between minimum of $6.82 and maximum of $6.82MM
       6. Puncture spill volume is between a minimum of 64366.32 and maximum of 64366.32 gallons
       7. Land use distributed as
          1. Remote: 29.99
26. "GIFT LATERAL NPS 8
    1. Total Cumulative Length (m): 29.96
    2. Likelihood of failure distributed between minimum of 1.323e-02 and maximum of 1.323e-02.
       1. ILI Date of 2017-02-01
       2. ILI tool of MFL/Geometry
       3. Features identified 19.0
       4. Depth fraction between 0.12 and 0.52
       5. Length between 10.0 mm and 150.0 mm
    3. Consequence of failure distributed between minimum of $1.73 and maximum of $1.73MM
    4. Total length driven by Environmental: 29.96 meters.
    5. Environmental Cost distributed between minimum of $1.50 and maximum of $1.50MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.18MM
       2. Leak spill volume between a minimum of 1727.55 and maximum of 1727.77 gallons
       3. Rupture cost between minimum of $1.23 and maximum of $1.23MM
       4. Rupture spill volume is between a minimum of 11636.73 and maximum of 11636.73 gallons
       5. Puncture cost between minimum of $6.02 and maximum of $6.02MM
       6. Puncture spill volume is between a minimum of 56763.24 and maximum of 56770.5 gallons
       7. Land use distributed as
          1. Forested: 29.96
27. "NPS4 Eckville Lateral From 06-18-039-03W5 to 04-33-039-03W5
    1. Total Cumulative Length (m): 29.96
    2. Likelihood of failure distributed between minimum of 4.884e-02 and maximum of 4.884e-02.
       1. ILI Date of 2016-01-28
       2. ILI tool of MFL/Geometry
       3. Features identified 41.0
       4. Depth fraction between 0.11 and 0.48
       5. Length between 4.0 mm and 94.0 mm
    3. Consequence of failure distributed between minimum of $10.35 and maximum of $10.36MM
    4. Total length driven by Environmental: 29.96 meters.
    5. Environmental Cost distributed between minimum of $10.03 and maximum of $10.04MM:
       1. Leak cost between minimum of $0.18 and maximum of $0.18MM
       2. Leak spill volume between a minimum of 1706.75 and maximum of 1708.59 gallons
       3. Rupture cost between minimum of $23.63 and maximum of $23.66MM
       4. Rupture spill volume is between a minimum of 222977.56 and maximum of 223218.44 gallons
       5. Puncture cost between minimum of $5.94 and maximum of $5.95MM
       6. Puncture spill volume is between a minimum of 56079.77 and maximum of 56140.35 gallons
       7. Land use distributed as
          1. Agricultural: 29.96

MFLC

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* 1. Circumferential Stress Corrosion Cracking Reportable Pipeline Segments
     1. CSCC Method 1a

1. "SS-15 NPS 6
   1. Total Cumulative Length (m): 5229.36
   2. Likelihood of failure distributed between minimum of 2.002e-02 and maximum of 8.503e-02.
      1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
      2. Mainline coating type of Coal Tar
      3. Wall thickness between minimum of 5.16 and maximum of 7.11 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 4.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $1.63 and maximum of $1.83MM
   4. Total length driven by Environmental: 5229.36 meters.
   5. Environmental Cost distributed between minimum of $1.39 and maximum of $1.59MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.21MM
      2. Leak spill volume between a minimum of 1853.91 and maximum of 1962.4 gallons
      3. Rupture cost between minimum of $55.64 and maximum of $58.90MM
      4. Rupture spill volume is between a minimum of 524962.0 and maximum of 555682.93 gallons
      5. Puncture cost between minimum of $6.46 and maximum of $6.83MM
      6. Puncture spill volume is between a minimum of 60915.28 and maximum of 64480.05 gallons
      7. Land use distributed as
         1. Agricultural: 5,229.36
2. "COED BV 203 TO EST NPS 8
   1. Total Cumulative Length (m): 2259.9
   2. Likelihood of failure distributed between minimum of 3.090e-02 and maximum of 1.312e-01.
      1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
      2. Mainline coating type of Tape
      3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 2.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $5.08 and maximum of $158.72MM
   4. Total length driven by Safety: 1694.93 meters.
   5. Safety Cost distributed between minimum of $0.00 and maximum of $150.03MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 44.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 12.03 and maximum of 12.03 meters.
      4. Rupture cost between minimum of $0.00 and maximum of $513.60MM
      5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 53.5 of population impacted
      6. Rupture hazard radius distributed between minimum of 138.23 and maximum of 138.23 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $392.54MM
      8. Puncture scenario yielded 46.0 intersections with structures, with minimum of 0.0 and maximum of 40.89 of population impacted
      9. Puncture hazard radius distributed between minimum of 48.58 and maximum of 48.58 meters.
      10. Product type is Condensate.
      11. Class area location is/are 2.0.
   6. Total length driven by Environmental: 564.97 meters.
   7. Environmental Cost distributed between minimum of $4.66 and maximum of $13.35MM:
      1. Leak cost between minimum of $0.13 and maximum of $0.35MM
      2. Leak spill volume between a minimum of 1973.38 and maximum of 2019.77 gallons
      3. Rupture cost between minimum of $64.53 and maximum of $169.76MM
      4. Rupture spill volume is between a minimum of 947101.66 and maximum of 969363.57 gallons
      5. Puncture cost between minimum of $4.42 and maximum of $11.62MM
      6. Puncture spill volume is between a minimum of 64840.82 and maximum of 66364.92 gallons
      7. Land use distributed as
         1. Commercial/Industrial: 2,256.78
         2. Water Course: 3.12
3. "BATCH TRANSFER LINE NPS 24
   1. Total Cumulative Length (m): 1622.82
   2. Likelihood of failure distributed between minimum of 1.123e-02 and maximum of 4.768e-02.
      1. Installation date between minimum of 1972-01-01 and maximum of 1972-01-01
      2. Mainline coating type of Extruded Polyethylene
      3. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 3.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $15.34 and maximum of $164.89MM
   4. Total length driven by Safety: 1217.12 meters.
   5. Safety Cost distributed between minimum of $4.31 and maximum of $128.31MM:
      1. Leak cost between minimum of $0.00 and maximum of $121.06MM
      2. Leak scenario yielded 32.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 2.91 and maximum of 2.91 meters.
      4. Rupture cost between minimum of $121.06 and maximum of $968.45MM
      5. Rupture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 100.88 of population impacted
      6. Rupture hazard radius distributed between minimum of 99.14 and maximum of 99.14 meters.
      7. Puncture cost between minimum of $0.00 and maximum of $121.06MM
      8. Puncture scenario yielded 34.0 intersections with structures, with minimum of 0.0 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 11.53 and maximum of 11.53 meters.
      10. Product type is Crude Oil.
      11. Class area location is/are 1.0, 2.0.
   6. Total length driven by Environmental: 405.7 meters.
   7. Environmental Cost distributed between minimum of $7.72 and maximum of $13.50MM:
      1. Leak cost between minimum of $0.06 and maximum of $0.06MM
      2. Leak spill volume between a minimum of 850.32 and maximum of 883.99 gallons
      3. Rupture cost between minimum of $215.31 and maximum of $223.83MM
      4. Rupture spill volume is between a minimum of 3159898.85 and maximum of 3285013.13 gallons
      5. Puncture cost between minimum of $1.90 and maximum of $1.98MM
      6. Puncture spill volume is between a minimum of 27939.64 and maximum of 29045.89 gallons
      7. Land use distributed as
         1. Commercial/Industrial: 1,622.82
4. "NPS4 SS-35 From 5-34-11-19-W3 To 5-35-11-19-W3
   1. Total Cumulative Length (m): 1532.63
   2. Likelihood of failure distributed between minimum of 1.297e-02 and maximum of 5.510e-02.
      1. Installation date between minimum of 1968-01-01 and maximum of 1968-01-01
      2. Mainline coating type of Extruded Polyethylene
      3. Wall thickness between minimum of 3.17 and maximum of 3.17 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 2.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $1.17 and maximum of $1.22MM
   4. Total length driven by Environmental: 1532.63 meters.
   5. Environmental Cost distributed between minimum of $0.96 and maximum of $0.98MM:
      1. Leak cost between minimum of $0.16 and maximum of $0.17MM
      2. Leak spill volume between a minimum of 1545.39 and maximum of 1577.19 gallons
      3. Rupture cost between minimum of $21.40 and maximum of $21.84MM
      4. Rupture spill volume is between a minimum of 201897.55 and maximum of 206051.63 gallons
      5. Puncture cost between minimum of $5.38 and maximum of $5.49MM
      6. Puncture spill volume is between a minimum of 50778.06 and maximum of 51822.83 gallons
      7. Land use distributed as
         1. Agricultural: 1,532.63
5. "NPS20 ENBRIDGE CONDENSATE TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
   1. Total Cumulative Length (m): 1144.92
   2. Likelihood of failure distributed between minimum of 2.674e-02 and maximum of 1.136e-01.
      1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
      2. Mainline coating type of Tape
      3. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 1.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $7.91 and maximum of $12.14MM
   4. Total length driven by Environmental: 1144.92 meters.
   5. Environmental Cost distributed between minimum of $6.86 and maximum of $8.60MM:
      1. Leak cost between minimum of $0.06 and maximum of $0.06MM
      2. Leak spill volume between a minimum of 529.42 and maximum of 541.3 gallons
      3. Rupture cost between minimum of $144.81 and maximum of $148.06MM
      4. Rupture spill volume is between a minimum of 1366242.13 and maximum of 1396891.33 gallons
      5. Puncture cost between minimum of $1.84 and maximum of $1.89MM
      6. Puncture spill volume is between a minimum of 17395.54 and maximum of 17785.77 gallons
      7. Land use distributed as
         1. Agricultural: 474.19
         2. Remote: 670.73
6. "NPS20 ENBRIDGE BLEND TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
   1. Total Cumulative Length (m): 896.89
   2. Likelihood of failure distributed between minimum of 1.123e-02 and maximum of 4.768e-02.
      1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
      2. Mainline coating type of Yellow Jacket
      3. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 1.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $4.34 and maximum of $7.77MM
   4. Total length driven by Environmental: 896.89 meters.
   5. Environmental Cost distributed between minimum of $3.14 and maximum of $6.82MM:
      1. Leak cost between minimum of $0.03 and maximum of $0.05MM
      2. Leak spill volume between a minimum of 501.53 and maximum of 510.83 gallons
      3. Rupture cost between minimum of $89.82 and maximum of $139.73MM
      4. Rupture spill volume is between a minimum of 1294263.27 and maximum of 1318272.77 gallons
      5. Puncture cost between minimum of $1.14 and maximum of $1.78MM
      6. Puncture spill volume is between a minimum of 16479.07 and maximum of 16784.77 gallons
      7. Land use distributed as
         1. Agricultural: 430.45
         2. Commercial/Industrial: 97.02
         3. Remote: 369.42
7. "16-19-037-03W5 TO 10-19-037-03W5 NPS 4
   1. Total Cumulative Length (m): 761.03
   2. Likelihood of failure distributed between minimum of 1.733e-02 and maximum of 1.733e-02.
      1. Installation date between minimum of 1991-01-01 and maximum of 1991-01-01
      2. Mainline coating type of Unknown
      3. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 0.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $1.65 and maximum of $1.66MM
   4. Total length driven by Environmental: 761.03 meters.
   5. Environmental Cost distributed between minimum of $1.41 and maximum of $1.43MM:
      1. Leak cost between minimum of $0.20 and maximum of $0.20MM
      2. Leak spill volume between a minimum of 1854.82 and maximum of 1869.87 gallons
      3. Rupture cost between minimum of $25.68 and maximum of $25.89MM
      4. Rupture spill volume is between a minimum of 242322.23 and maximum of 244289.53 gallons
      5. Puncture cost between minimum of $6.46 and maximum of $6.51MM
      6. Puncture spill volume is between a minimum of 60945.04 and maximum of 61439.82 gallons
      7. Land use distributed as
         1. Agricultural: 761.03
8. "16 EST to Enbridge 7-5-53-23W4 to 2-5-53-23W4
   1. Total Cumulative Length (m): 482.65
   2. Likelihood of failure distributed between minimum of 9.715e-03 and maximum of 9.715e-03.
      1. Installation date between minimum of 1979-01-01 and maximum of 1979-01-01
      2. Mainline coating type of Yellow Jacket
      3. Wall thickness between minimum of 5.6 and maximum of 5.6 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 0.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $125.09 and maximum of $125.43MM
   4. Total length driven by Safety: 482.65 meters.
   5. Safety Cost distributed between minimum of $120.27 and maximum of $120.61MM:
      1. Leak cost between minimum of $121.06 and maximum of $121.06MM
      2. Leak scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
      3. Leak hazard radius distributed between minimum of 9.03 and maximum of 9.03 meters.
      4. Rupture cost between minimum of $121.06 and maximum of $133.16MM
      5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 12.61 and maximum of 13.87 of population impacted
      6. Rupture hazard radius distributed between minimum of 178.36 and maximum of 178.36 meters.
      7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
      8. Puncture scenario yielded 16.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
      9. Puncture hazard radius distributed between minimum of 28.91 and maximum of 28.91 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0.
9. "Sarnia 6 inch tied into 6 inch E/P line
   1. Total Cumulative Length (m): 469.08
   2. Likelihood of failure distributed between minimum of 7.275e-03 and maximum of 3.090e-02.
      1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
      2. Mainline coating type of Yellow Jacket
      3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
      4. Geotechnical hazard POF between minimum of nan and maximum of nan
      5. Field bends encountered: nan
      6. Count of road crossings is 2.0
      7. Count of water crossings is 0.0
   3. Consequence of failure distributed between minimum of $12.56 and maximum of $12.64MM
   4. Total length driven by Safety: 469.08 meters.
   5. Safety Cost distributed between minimum of $11.97 and maximum of $12.04MM:
      1. Leak cost between minimum of $12.11 and maximum of $12.11MM
      2. Leak scenario yielded 40.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
      3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
      4. Rupture cost between minimum of $12.11 and maximum of $24.21MM
      5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 1.26 and maximum of 2.52 of population impacted
      6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
      7. Puncture cost between minimum of $12.11 and maximum of $12.11MM
      8. Puncture scenario yielded 47.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
      9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
      10. Product type is HVP Product.
      11. Class area location is/are 1.0.
10. "C3 FROM ESSO NPS 6
    1. Total Cumulative Length (m): 433.94
    2. Likelihood of failure distributed between minimum of 7.821e-03 and maximum of 1.221e-01.
       1. Installation date between minimum of 1969-01-01 and maximum of 1969-01-01
       2. Mainline coating type of Single-wrap Tape, Yellow Jacket, Liquid Epoxy
       3. Wall thickness between minimum of 4.8 and maximum of 7.1 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 5.0
       7. Count of water crossings is 2.0
    3. Consequence of failure distributed between minimum of $0.31 and maximum of $15.29MM
    4. Total length driven by Safety: 401.69 meters.
    5. Safety Cost distributed between minimum of $0.00 and maximum of $14.71MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 15.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 9.02 and maximum of 9.02 meters.
       4. Rupture cost between minimum of $0.00 and maximum of $398.23MM
       5. Rupture scenario yielded 18.0 intersections with structures, with minimum of 0.0 and maximum of 41.48 of population impacted
       6. Rupture hazard radius distributed between minimum of 91.99 and maximum of 91.99 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 20.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 28.89 and maximum of 28.89 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 1.0, 2.0.
    6. Total length driven by Economic Loss: 32.26 meters.
    7. Economic Loss Cost distributed between minimum of $0.29 and maximum of $0.58MM:
       1. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $0.24 and maximum of $0.50MM
       5. Leak scenario yielded 15.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $24,336.15 and maximum of $24,336.15
       7. Rupture cost between minimum of $7.13 and maximum of $11.97MM
       8. Rupture scenario yielded 18.0 intersections with structures, with minimum of $25,000.00 and maximum of $4,871,372.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $6,891,140.89 and maximum of $6,891,140.89
       10. Puncture cost between minimum of $1.01 and maximum of $1.28MM
       11. Puncture scenario yielded 20.0 intersections with structures, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $799,630.73 and maximum of $799,630.73"
11. "EDS OPERATIVE NPS 12
    1. Total Cumulative Length (m): 409.09
    2. Likelihood of failure distributed between minimum of 1.123e-02 and maximum of 1.123e-02.
       1. Installation date between minimum of 1974-01-01 and maximum of 1974-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 6.22 and maximum of 6.22 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.30 and maximum of $1.40MM
    4. Total length driven by Economic Loss: 409.09 meters.
    5. Economic Loss Cost distributed between minimum of $0.92 and maximum of $0.99MM:
       1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is NGL.
       4. Leak cost between minimum of $0.89 and maximum of $0.89MM
       5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $44,566.23 and maximum of $44,566.23
       7. Rupture cost between minimum of $47.58 and maximum of $48.15MM
       8. Rupture scenario yielded 3.0 intersections with structures, with minimum of $318,825.00 and maximum of $562,650.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $46,740,539.02 and maximum of $46,740,539.02
       10. Puncture cost between minimum of $2.31 and maximum of $2.31MM
       11. Puncture scenario yielded 1.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $1,464,345.16 and maximum of $1,464,345.16"
12. "Access C5 Line 36
    1. Total Cumulative Length (m): 404.28
    2. Likelihood of failure distributed between minimum of 1.612e-02 and maximum of 6.845e-02.
       1. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
       2. Mainline coating type of Double Wrap Polyken
       3. Wall thickness between minimum of 7.09 and maximum of 7.09 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.47 and maximum of $1.60MM
    4. Total length driven by Environmental: 404.28 meters.
    5. Environmental Cost distributed between minimum of $1.21 and maximum of $1.24MM:
       1. Leak cost between minimum of $0.13 and maximum of $0.14MM
       2. Leak spill volume between a minimum of 1973.44 and maximum of 1981.77 gallons
       3. Rupture cost between minimum of $38.08 and maximum of $38.24MM
       4. Rupture spill volume is between a minimum of 558809.69 and maximum of 561166.98 gallons
       5. Puncture cost between minimum of $4.42 and maximum of $4.44MM
       6. Puncture spill volume is between a minimum of 64842.88 and maximum of 65116.41 gallons
       7. Land use distributed as
          1. Commercial/Industrial: 404.28
13. "Access C5 Line 37
    1. Total Cumulative Length (m): 404.14
    2. Likelihood of failure distributed between minimum of 1.612e-02 and maximum of 6.845e-02.
       1. Installation date between minimum of 2008-01-01 and maximum of 2008-01-01
       2. Mainline coating type of Double Wrap Polyken
       3. Wall thickness between minimum of 7.09 and maximum of 7.09 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.47 and maximum of $1.60MM
    4. Total length driven by Environmental: 404.14 meters.
    5. Environmental Cost distributed between minimum of $1.21 and maximum of $1.24MM:
       1. Leak cost between minimum of $0.13 and maximum of $0.14MM
       2. Leak spill volume between a minimum of 1973.44 and maximum of 1981.77 gallons
       3. Rupture cost between minimum of $38.08 and maximum of $38.24MM
       4. Rupture spill volume is between a minimum of 558809.69 and maximum of 561166.19 gallons
       5. Puncture cost between minimum of $4.42 and maximum of $4.44MM
       6. Puncture spill volume is between a minimum of 64842.88 and maximum of 65116.32 gallons
       7. Land use distributed as
          1. Commercial/Industrial: 404.14
14. "ESSO ETHANE NPS 6
    1. Total Cumulative Length (m): 349.73
    2. Likelihood of failure distributed between minimum of 7.275e-03 and maximum of 3.090e-02.
       1. Installation date between minimum of 1981-01-01 and maximum of 1981-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 2.0
       7. Count of water crossings is 1.0
    3. Consequence of failure distributed between minimum of $1.42 and maximum of $15.39MM
    4. Total length driven by Safety: 349.73 meters.
    5. Safety Cost distributed between minimum of $1.05 and maximum of $14.76MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 10.0 intersections with structures, with minimum of 0.0 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.02 and maximum of 11.02 meters.
       4. Rupture cost between minimum of $145.27 and maximum of $456.43MM
       5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 15.13 and maximum of 47.54 of population impacted
       6. Rupture hazard radius distributed between minimum of 115.22 and maximum of 115.22 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $221.29MM
       8. Puncture scenario yielded 16.0 intersections with structures, with minimum of 0.0 and maximum of 23.05 of population impacted
       9. Puncture hazard radius distributed between minimum of 51.38 and maximum of 51.38 meters.
       10. Product type is HVP Product.
       11. Class area location is/are 2.0.
15. "NIPISI 11-02 TO 14-02 NPS 16
    1. Total Cumulative Length (m): 339.6
    2. Likelihood of failure distributed between minimum of 1.733e-02 and maximum of 1.733e-02.
       1. Installation date between minimum of 1996-08-01 and maximum of 1996-08-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.28 and maximum of $1.67MM
    4. Total length driven by Economic Loss: 339.6 meters.
    5. Economic Loss Cost distributed between minimum of $0.86 and maximum of $0.87MM:
       1. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is Crude Oil.
       4. Leak cost between minimum of $0.87 and maximum of $0.87MM
       5. Leak scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $903.67 and maximum of $907.58
       7. Rupture cost between minimum of $2.39 and maximum of $2.44MM
       8. Rupture scenario yielded 5.0 intersections with structures, with minimum of $50,000.00 and maximum of $100,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $1,492,510.39 and maximum of $1,498,965.83
       10. Puncture cost between minimum of $0.90 and maximum of $0.92MM
       11. Puncture scenario yielded 30.0 intersections with structures, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $29,692.55 and maximum of $29,820.98"
16. "14-02 to 12-02 NPS 24
    1. Total Cumulative Length (m): 317.4
    2. Likelihood of failure distributed between minimum of 1.733e-02 and maximum of 1.733e-02.
       1. Installation date between minimum of 1998-01-01 and maximum of 1998-01-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $11.88 and maximum of $11.95MM
    4. Total length driven by Environmental: 317.4 meters.
    5. Environmental Cost distributed between minimum of $9.30 and maximum of $9.37MM:
       1. Leak cost between minimum of $0.09 and maximum of $0.09MM
       2. Leak spill volume between a minimum of 825.78 and maximum of 832.0 gallons
       3. Rupture cost between minimum of $325.26 and maximum of $327.70MM
       4. Rupture spill volume is between a minimum of 3068711.06 and maximum of 3091803.54 gallons
       5. Puncture cost between minimum of $2.88 and maximum of $2.90MM
       6. Puncture spill volume is between a minimum of 27133.36 and maximum of 27337.55 gallons
       7. Land use distributed as
          1. Agricultural: 317.40
17. "BUCK CREEK TO STATION 1 NPS 3
    1. Total Cumulative Length (m): 259.22
    2. Likelihood of failure distributed between minimum of 1.733e-02 and maximum of 7.358e-02.
       1. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 3.18 and maximum of 3.18 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 2.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.21 and maximum of $122.64MM
    4. Total length driven by Safety: 259.22 meters.
    5. Safety Cost distributed between minimum of $0.88 and maximum of $119.66MM:
       1. Leak cost between minimum of $0.00 and maximum of $121.06MM
       2. Leak scenario yielded 5.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.7 and maximum of 11.7 meters.
       4. Rupture cost between minimum of $121.06 and maximum of $121.06MM
       5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       6. Rupture hazard radius distributed between minimum of 57.3 and maximum of 57.3 meters.
       7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
       8. Puncture scenario yielded 8.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 42.7 and maximum of 42.7 meters.
       10. Product type is Ethane.
       11. Class area location is/are 1.0.
18. "SS-27 NPS 4
    1. Total Cumulative Length (m): 201.64
    2. Likelihood of failure distributed between minimum of 2.314e-02 and maximum of 2.314e-02.
       1. Installation date between minimum of 1956-01-01 and maximum of 1956-01-01
       2. Mainline coating type of Coal Tar
       3. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.13 and maximum of $2.23MM
    4. Total length driven by Environmental: 201.64 meters.
    5. Environmental Cost distributed between minimum of $0.90 and maximum of $2.00MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1861.88 and maximum of 1861.88 gallons
       3. Rupture cost between minimum of $25.78 and maximum of $25.78MM
       4. Rupture spill volume is between a minimum of 243245.68 and maximum of 243245.68 gallons
       5. Puncture cost between minimum of $6.48 and maximum of $6.48MM
       6. Puncture spill volume is between a minimum of 61177.29 and maximum of 61177.29 gallons
       7. Land use distributed as
          1. Agricultural: 201.64
19. "PETRO VERA TO LONE ROCK NPS 8
    1. Total Cumulative Length (m): 198.84
    2. Likelihood of failure distributed between minimum of 2.674e-02 and maximum of 1.136e-01.
       1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       2. Mainline coating type of Tape
       3. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.34 and maximum of $13.31MM
    4. Total length driven by Safety: 82.62 meters.
    5. Safety Cost distributed between minimum of $0.34 and maximum of $12.03MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 2.28 and maximum of 2.28 meters.
       4. Rupture cost between minimum of $12.11 and maximum of $12.11MM
       5. Rupture scenario yielded 7.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 30.46 and maximum of 30.46 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 11.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 8.99 and maximum of 8.99 meters.
       10. Product type is Crude Oil.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 116.21 meters.
    7. Environmental Cost distributed between minimum of $0.77 and maximum of $0.81MM:
       1. Leak cost between minimum of $0.05 and maximum of $0.05MM
       2. Leak spill volume between a minimum of 492.74 and maximum of 497.38 gallons
       3. Rupture cost between minimum of $25.07 and maximum of $25.30MM
       4. Rupture spill volume is between a minimum of 236487.22 and maximum of 238712.16 gallons
       5. Puncture cost between minimum of $1.72 and maximum of $1.73MM
       6. Puncture spill volume is between a minimum of 16190.47 and maximum of 16342.8 gallons
       7. Land use distributed as
          1. Agricultural: 198.84
20. "NPS4 ENBRIDGE TRANSFER from 2-34-33-22W3 to 10-34-33-22W3
    1. Total Cumulative Length (m): 164.18
    2. Likelihood of failure distributed between minimum of 1.123e-02 and maximum of 4.768e-02.
       1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 3.2 and maximum of 3.2 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.00 and maximum of $1.37MM
    4. Total length driven by Environmental: 164.18 meters.
    5. Environmental Cost distributed between minimum of $0.76 and maximum of $1.12MM:
       1. Leak cost between minimum of $0.21 and maximum of $0.21MM
       2. Leak spill volume between a minimum of 1935.35 and maximum of 1935.35 gallons
       3. Rupture cost between minimum of $26.80 and maximum of $26.80MM
       4. Rupture spill volume is between a minimum of 252844.1 and maximum of 252844.1 gallons
       5. Puncture cost between minimum of $6.74 and maximum of $6.74MM
       6. Puncture spill volume is between a minimum of 63591.33 and maximum of 63591.33 gallons
       7. Land use distributed as
          1. Agricultural: 164.18
21. "SPEED CORNER TO FORT SASKATCHEWAN INLET (KEYSPAN) NPS 16
    1. Total Cumulative Length (m): 137.97
    2. Likelihood of failure distributed between minimum of 3.090e-02 and maximum of 6.367e-02.
       1. Installation date between minimum of 1995-01-01 and maximum of 1995-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 5.56 and maximum of 10.31 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: Y, nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.43 and maximum of $1.59MM
    4. Total length driven by Economic Loss: 137.97 meters.
    5. Economic Loss Cost distributed between minimum of $1.43 and maximum of $1.59MM:
       1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is HVP Product.
       4. Leak cost between minimum of $1.02 and maximum of $1.10MM
       5. Leak scenario yielded 15.0 intersections with structures, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $35,177.42 and maximum of $35,177.42
       7. Rupture cost between minimum of $59.11 and maximum of $59.26MM
       8. Rupture scenario yielded 8.0 intersections with structures, with minimum of $25,000.00 and maximum of $175,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $58,099,358.13 and maximum of $58,099,358.13
       10. Puncture cost between minimum of $2.14 and maximum of $2.27MM
       11. Puncture scenario yielded 23.0 intersections with structures, with minimum of $100,000.00 and maximum of $125,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $1,155,850.00 and maximum of $1,155,850.00"
22. "SS-28 NPS 4
    1. Total Cumulative Length (m): 128.4
    2. Likelihood of failure distributed between minimum of 2.314e-02 and maximum of 2.314e-02.
       1. Installation date between minimum of 1957-01-01 and maximum of 1957-01-01
       2. Mainline coating type of Coal Tar
       3. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.49 and maximum of $3.37MM
    4. Total length driven by Environmental: 128.4 meters.
    5. Environmental Cost distributed between minimum of $1.27 and maximum of $3.11MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 1859.61 gallons
       3. Rupture cost between minimum of $25.67 and maximum of $25.75MM
       4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242948.7 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.48MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61102.6 gallons
       7. Land use distributed as
          1. Agricultural: 128.40
23. "KERROBERT TO SASK ENERGY FUEL GAS NPS 2
    1. Total Cumulative Length (m): 117.91
    2. Likelihood of failure distributed between minimum of 3.090e-02 and maximum of 3.090e-02.
       1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
       2. Mainline coating type of Single-wrap Tape
       3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $22.24 and maximum of $22.28MM
    4. Total length driven by Safety: 117.91 meters.
    5. Safety Cost distributed between minimum of $21.62 and maximum of $21.65MM:
       1. Leak cost between minimum of $21.89 and maximum of $21.89MM
       2. Leak scenario yielded 20.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted.
       3. Leak hazard radius distributed between minimum of 10.69 and maximum of 10.69 meters.
       4. Rupture cost between minimum of $21.89 and maximum of $21.89MM
       5. Rupture scenario yielded 21.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
       6. Rupture hazard radius distributed between minimum of 39.77 and maximum of 39.77 meters.
       7. Puncture cost between minimum of $21.89 and maximum of $21.89MM
       8. Puncture scenario yielded 22.0 intersections with structures, with minimum of 2.28 and maximum of 2.28 of population impacted
       9. Puncture hazard radius distributed between minimum of 38.44 and maximum of 38.44 meters.
       10. Product type is FG.
       11. Class area location is/are 1.0.
24. "NPS8 Petro Vera to Lone Rock From 13-11-47-27-W3 To 16-10-47-27-W3
    1. Total Cumulative Length (m): 83.82
    2. Likelihood of failure distributed between minimum of 2.674e-02 and maximum of 1.136e-01.
       1. Installation date between minimum of 1971-01-01 and maximum of 1971-01-01
       2. Mainline coating type of Tape
       3. Wall thickness between minimum of 5.6 and maximum of 5.6 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.34 and maximum of $13.28MM
    4. Total length driven by Safety: 31.87 meters.
    5. Safety Cost distributed between minimum of $0.34 and maximum of $12.03MM:
       1. Leak cost between minimum of $0.00 and maximum of $12.11MM
       2. Leak scenario yielded 5.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted.
       3. Leak hazard radius distributed between minimum of 2.28 and maximum of 2.28 meters.
       4. Rupture cost between minimum of $12.11 and maximum of $12.11MM
       5. Rupture scenario yielded 3.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       6. Rupture hazard radius distributed between minimum of 30.46 and maximum of 30.46 meters.
       7. Puncture cost between minimum of $0.00 and maximum of $12.11MM
       8. Puncture scenario yielded 6.0 intersections with structures, with minimum of 1.26 and maximum of 1.26 of population impacted
       9. Puncture hazard radius distributed between minimum of 8.99 and maximum of 8.99 meters.
       10. Product type is Blend.
       11. Class area location is/are 1.0.
    6. Total length driven by Environmental: 51.95 meters.
    7. Environmental Cost distributed between minimum of $0.77 and maximum of $0.80MM:
       1. Leak cost between minimum of $0.05 and maximum of $0.05MM
       2. Leak spill volume between a minimum of 492.22 and maximum of 492.22 gallons
       3. Rupture cost between minimum of $25.04 and maximum of $25.04MM
       4. Rupture spill volume is between a minimum of 236237.43 and maximum of 236237.43 gallons
       5. Puncture cost between minimum of $1.71 and maximum of $1.71MM
       6. Puncture spill volume is between a minimum of 16173.37 and maximum of 16173.37 gallons
       7. Land use distributed as
          1. Agricultural: 83.82
25. "STRATHCONA AOSPL CONNECTION NPS 12
    1. Total Cumulative Length (m): 78.6
    2. Likelihood of failure distributed between minimum of 1.044e-02 and maximum of 4.436e-02.
       1. Installation date between minimum of 2010-01-01 and maximum of 2010-01-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 9.52 and maximum of 9.52 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.34 and maximum of $1.60MM
    4. Total length driven by Economic Loss: 78.6 meters.
    5. Economic Loss Cost distributed between minimum of $0.98 and maximum of $1.01MM:
       1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is Crude Oil.
       4. Leak cost between minimum of $0.99 and maximum of $1.01MM
       5. Leak scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $2,057.56 and maximum of $2,058.77
       7. Rupture cost between minimum of $3.17 and maximum of $3.17MM
       8. Rupture scenario yielded 1.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $2,157,946.29 and maximum of $2,159,210.24
       10. Puncture cost between minimum of $1.05 and maximum of $1.08MM
       11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $67,606.80 and maximum of $67,646.40"
26. "STRATHCONA INTERPIPE CONNECTION NPS 12
    1. Total Cumulative Length (m): 64.93
    2. Likelihood of failure distributed between minimum of 1.733e-02 and maximum of 7.358e-02.
       1. Installation date between minimum of 2006-01-01 and maximum of 2006-01-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.66 and maximum of $2.48MM
    4. Total length driven by Economic Loss: 64.93 meters.
    5. Economic Loss Cost distributed between minimum of $1.03 and maximum of $1.10MM:
       1. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
       2. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
       3. Product type is Crude Oil.
       4. Leak cost between minimum of $0.99 and maximum of $1.01MM
       5. Leak scenario yielded 1.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
       6. Leak product loss costs between minimum of $1,855.48 and maximum of $1,856.97
       7. Rupture cost between minimum of $23.31 and maximum of $23.31MM
       8. Rupture scenario yielded 1.0 intersections with structures, with minimum of $20,374,375.00 and maximum of $20,374,375.00 in cost of structures impacted
       9. Rupture product loss costs between minimum of $1,946,005.91 and maximum of $1,947,573.44
       10. Puncture cost between minimum of $1.05 and maximum of $1.07MM
       11. Puncture scenario yielded 2.0 intersections with structures, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $60,966.87 and maximum of $61,015.98"
27. "SS-02 NPS 4
    1. Total Cumulative Length (m): 62.96
    2. Likelihood of failure distributed between minimum of 1.297e-02 and maximum of 5.510e-02.
       1. Installation date between minimum of 1965-01-01 and maximum of 1965-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 6.35 and maximum of 6.35 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.82 and maximum of $2.66MM
    4. Total length driven by Environmental: 62.96 meters.
    5. Environmental Cost distributed between minimum of $1.57 and maximum of $2.42MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 1855.22 gallons
       3. Rupture cost between minimum of $25.67 and maximum of $25.69MM
       4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242374.55 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 60958.19 gallons
       7. Land use distributed as
          1. Agricultural: 62.96
28. "GRANADA LATERAL NPS 3
    1. Total Cumulative Length (m): 58.79
    2. Likelihood of failure distributed between minimum of 7.275e-03 and maximum of 7.275e-03.
       1. Installation date between minimum of 1982-01-01 and maximum of 1982-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $122.63 and maximum of $122.97MM
    4. Total length driven by Safety: 58.79 meters.
    5. Safety Cost distributed between minimum of $119.71 and maximum of $120.04MM:
       1. Leak cost between minimum of $121.06 and maximum of $121.06MM
       2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 12.24 and maximum of 12.24 meters.
       4. Rupture cost between minimum of $286.46 and maximum of $286.46MM
       5. Rupture scenario yielded 2.0 intersections with structures, with minimum of 29.84 and maximum of 29.84 of population impacted
       6. Rupture hazard radius distributed between minimum of 80.38 and maximum of 80.38 meters.
       7. Puncture cost between minimum of $286.46 and maximum of $286.46MM
       8. Puncture scenario yielded 3.0 intersections with structures, with minimum of 29.84 and maximum of 29.84 of population impacted
       9. Puncture hazard radius distributed between minimum of 57.84 and maximum of 57.84 meters.
       10. Product type is NGL.
       11. Class area location is/are nan.
29. "TIE-IN TO SSPL NPS 8
    1. Total Cumulative Length (m): 57.27
    2. Likelihood of failure distributed between minimum of 1.499e-02 and maximum of 1.499e-02.
       1. Installation date between minimum of 2012-01-01 and maximum of 2012-01-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 7.9 and maximum of 7.9 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $4.69 and maximum of $5.19MM
    4. Total length driven by Environmental: 57.27 meters.
    5. Environmental Cost distributed between minimum of $4.43 and maximum of $4.90MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1854.5 and maximum of 1855.1 gallons
       3. Rupture cost between minimum of $94.34 and maximum of $94.37MM
       4. Rupture spill volume is between a minimum of 890048.06 and maximum of 890333.18 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
       6. Puncture spill volume is between a minimum of 60934.8 and maximum of 60954.32 gallons
       7. Land use distributed as
          1. Agricultural: 57.27
30. "SS-66 NPS 4
    1. Total Cumulative Length (m): 51.85
    2. Likelihood of failure distributed between minimum of 1.733e-02 and maximum of 7.358e-02.
       1. Installation date between minimum of 1997-01-01 and maximum of 1997-01-01
       2. Mainline coating type of Single-wrap Tape
       3. Wall thickness between minimum of 3.96 and maximum of 3.96 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.01 and maximum of $2.62MM
    4. Total length driven by Environmental: 51.85 meters.
    5. Environmental Cost distributed between minimum of $0.77 and maximum of $2.36MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 1856.63 gallons
       3. Rupture cost between minimum of $25.67 and maximum of $25.71MM
       4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242559.62 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.47MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 61004.74 gallons
       7. Land use distributed as
          1. Agricultural: 51.85
31. "NPS4 SS-57 From 10-27-10-19-W3 To 12-27-10-19-W3
    1. Total Cumulative Length (m): 40.0
    2. Likelihood of failure distributed between minimum of 3.090e-02 and maximum of 3.090e-02.
       1. Installation date between minimum of 1987-01-01 and maximum of 1987-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 1.0
    3. Consequence of failure distributed between minimum of $1.06 and maximum of $1.62MM
    4. Total length driven by Environmental: 40.0 meters.
    5. Environmental Cost distributed between minimum of $0.84 and maximum of $1.39MM:
       1. Leak cost between minimum of $0.17 and maximum of $0.29MM
       2. Leak spill volume between a minimum of 1648.33 and maximum of 1648.37 gallons
       3. Rupture cost between minimum of $22.82 and maximum of $38.31MM
       4. Rupture spill volume is between a minimum of 215345.83 and maximum of 215351.24 gallons
       5. Puncture cost between minimum of $5.74 and maximum of $9.64MM
       6. Puncture spill volume is between a minimum of 54160.36 and maximum of 54161.72 gallons
       7. Land use distributed as
          1. Agricultural: 36.98
          2. Water Course: 3.02
32. "Kerrbert 4 inch Water
    1. Total Cumulative Length (m): 40.0
    2. Likelihood of failure distributed between minimum of 1.312e-01 and maximum of 1.312e-01.
       1. Installation date between minimum of 1970-01-01 and maximum of 1970-01-01
       2. Mainline coating type of Single-wrap Tape
       3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 1.0
       7. Count of water crossings is 1.0
    3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.23MM
    4. Total length driven by Economic Loss: 40.0 meters.
    5. Economic Loss Cost distributed between minimum of $0.21 and maximum of $0.23MM:
       1. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
       2. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
       3. Product type is Fresh Water.
       4. Leak cost between minimum of $0.21 and maximum of $0.23MM
       5. Leak scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted.
       6. Leak product loss costs between minimum of $0.00 and maximum of $0.00
       7. Rupture cost between minimum of $0.21 and maximum of $0.23MM
       8. Rupture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       9. Rupture product loss costs between minimum of $0.00 and maximum of $0.00
       10. Puncture cost between minimum of $0.21 and maximum of $0.23MM
       11. Puncture scenario yielded 0.0 intersections with structures, with minimum of $nan and maximum of $nan in cost of structures impacted
       12. Puncture Product Loss costs between minimum of $0.00 and maximum of $0.00"
33. "NPS8 Condensate to Enbridge From 03-05-053-23W4 To 02-05-053-23W4
    1. Total Cumulative Length (m): 38.22
    2. Likelihood of failure distributed between minimum of 2.314e-02 and maximum of 2.314e-02.
       1. Installation date between minimum of 1976-01-01 and maximum of 1976-01-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 5.56 and maximum of 5.56 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $127.13 and maximum of $127.92MM
    4. Total length driven by Safety: 38.22 meters.
    5. Safety Cost distributed between minimum of $121.39 and maximum of $121.74MM:
       1. Leak cost between minimum of $121.06 and maximum of $121.06MM
       2. Leak scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted.
       3. Leak hazard radius distributed between minimum of 11.13 and maximum of 11.13 meters.
       4. Rupture cost between minimum of $133.16 and maximum of $133.16MM
       5. Rupture scenario yielded 1.0 intersections with structures, with minimum of 13.87 and maximum of 13.87 of population impacted
       6. Rupture hazard radius distributed between minimum of 129.12 and maximum of 129.12 meters.
       7. Puncture cost between minimum of $121.06 and maximum of $121.06MM
       8. Puncture scenario yielded 1.0 intersections with structures, with minimum of 12.61 and maximum of 12.61 of population impacted
       9. Puncture hazard radius distributed between minimum of 45.37 and maximum of 45.37 meters.
       10. Product type is Condensate.
       11. Class area location is/are 1.0.
34. "CROMER DELIVERY LATERAL NPS 8
    1. Total Cumulative Length (m): 27.36
    2. Likelihood of failure distributed between minimum of 3.090e-02 and maximum of 3.090e-02.
       1. Installation date between minimum of 1900-01-01 and maximum of 1900-01-01
       2. Mainline coating type of Unknown
       3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $12.64 and maximum of $12.66MM
    4. Total length driven by Environmental: 27.36 meters.
    5. Environmental Cost distributed between minimum of $12.33 and maximum of $12.34MM:
       1. Leak cost between minimum of $0.33 and maximum of $0.33MM
       2. Leak spill volume between a minimum of 1856.18 and maximum of 1858.45 gallons
       3. Rupture cost between minimum of $158.50 and maximum of $158.69MM
       4. Rupture spill volume is between a minimum of 890852.69 and maximum of 891942.44 gallons
       5. Puncture cost between minimum of $10.85 and maximum of $10.86MM
       6. Puncture spill volume is between a minimum of 60989.88 and maximum of 61064.49 gallons
       7. Land use distributed as
          1. Bush/Creek: 27.36
35. "NPS4 SS-12 From 15-15-16-17-W3 To 15-15-16-17W3
    1. Total Cumulative Length (m): 26.48
    2. Likelihood of failure distributed between minimum of 1.297e-02 and maximum of 1.297e-02.
       1. Installation date between minimum of 1955-01-01 and maximum of 1955-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 6.02 and maximum of 6.02 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 0.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $2.59 and maximum of $4.72MM
    4. Total length driven by Environmental: 26.48 meters.
    5. Environmental Cost distributed between minimum of $2.33 and maximum of $4.44MM:
       1. Leak cost between minimum of $0.20 and maximum of $0.20MM
       2. Leak spill volume between a minimum of 1853.91 and maximum of 1854.46 gallons
       3. Rupture cost between minimum of $25.67 and maximum of $25.68MM
       4. Rupture spill volume is between a minimum of 242203.9 and maximum of 242275.67 gallons
       5. Puncture cost between minimum of $6.46 and maximum of $6.46MM
       6. Puncture spill volume is between a minimum of 60915.28 and maximum of 60933.33 gallons
       7. Land use distributed as
          1. Agricultural: 26.48
36. "EMPRESS WASTE WATER DISCHARGE NPS 10
    1. Total Cumulative Length (m): 13.08
    2. Likelihood of failure distributed between minimum of 1.297e-02 and maximum of 1.297e-02.
       1. Installation date between minimum of 1964-01-01 and maximum of 1964-01-01
       2. Mainline coating type of Extruded Polyethylene
       3. Wall thickness between minimum of 4.78 and maximum of 4.78 mm
       4. Geotechnical hazard POF between minimum of nan and maximum of nan
       5. Field bends encountered: nan
       6. Count of road crossings is 2.0
       7. Count of water crossings is 0.0
    3. Consequence of failure distributed between minimum of $1.01 and maximum of $1.01MM
    4. Total length driven by Environmental: 13.08 meters.
    5. Environmental Cost distributed between minimum of $0.73 and maximum of $0.73MM:
       1. Leak cost between minimum of $0.05 and maximum of $0.05MM
       2. Leak spill volume between a minimum of 574.48 and maximum of 574.74 gallons
       3. Rupture cost between minimum of $35.67 and maximum of $35.69MM
       4. Rupture spill volume is between a minimum of 428309.79 and maximum of 428501.41 gallons
       5. Puncture cost between minimum of $1.57 and maximum of $1.57MM
       6. Puncture spill volume is between a minimum of 18876.05 and maximum of 18884.5 gallons
       7. Land use distributed as
          1. Water Course: 13.08
    6. Safety Consequence Reportable Pipeline Segments
37. "BRETON TO EDMONTON NPS 10
    1. Total Cumulative Length (m): 15129.54
       1. SCC Method 2 : 13142.2
       2. TPD : 545.43
       3. MD Method 2 : 769.23
       4. CSCC Method 2 : 672.68
    2. Likelihood of failure distributed between minimum of 1.026e-03 and maximum of 1.000e+00.
    3. Leak scenario:
       1. No. of intersections with structures is 105.0, with minimum of 0.0 and maximum of 25.22 of population impacted
       2. Hazard area distributed between minimum of 10.9 and maximum of 12.16 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 220.0, with minimum of 1.26 and maximum of 1072.29 of population impacted
       2. Hazard area distributed between minimum of 163.58 and maximum of 185.15 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 318.0, with minimum of 0.0 and maximum of 450.0 of population impacted
       2. Hazard area distributed between minimum of 50.73 and maximum of 57.42 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0, 3.0, 4.0."
38. "EASTERN DELIVERY SYSTEM (EDS) NORTH NPS 10/12
    1. Total Cumulative Length (m): 8962.4
       1. TPD : 8962.4
    2. Likelihood of failure distributed between minimum of 1.245e-03 and maximum of 6.218e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 27.0, with minimum of 1.26 and maximum of 19.51 of population impacted
       2. Hazard area distributed between minimum of 11.52 and maximum of 11.52 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 299.0, with minimum of 1.26 and maximum of 351.26 of population impacted
       2. Hazard area distributed between minimum of 174.17 and maximum of 197.94 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 167.0, with minimum of 1.26 and maximum of 28.63 of population impacted
       2. Hazard area distributed between minimum of 54.02 and maximum of 54.02 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0, 3.0."
39. "WINDSOR TO SARNIA NPS 12
    1. Total Cumulative Length (m): 6964.38
       1. TPD : 6964.38
    2. Likelihood of failure distributed between minimum of 1.018e-03 and maximum of 1.159e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 18.0, with minimum of 1.26 and maximum of 2.97 of population impacted
       2. Hazard area distributed between minimum of 11.71 and maximum of 11.71 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 300.0, with minimum of 1.26 and maximum of 330.74 of population impacted
       2. Hazard area distributed between minimum of 201.6 and maximum of 201.6 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 157.0, with minimum of 1.26 and maximum of 32.61 of population impacted
       2. Hazard area distributed between minimum of 55.01 and maximum of 55.01 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0, 3.0."
40. "COCHRANE TO ROCKY MOUNTAIN HOUSE NPS 8
    1. Total Cumulative Length (m): 6667.24
       1. TPD : 6577.24
       2. MD Method 2 : 90.0
    2. Likelihood of failure distributed between minimum of 1.812e-03 and maximum of 9.577e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 52.0, with minimum of 0.0 and maximum of 14.14 of population impacted
       2. Hazard area distributed between minimum of 11.58 and maximum of 12.24 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 225.0, with minimum of 1.26 and maximum of 49.23 of population impacted
       2. Hazard area distributed between minimum of 148.55 and maximum of 158.1 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 133.0, with minimum of 1.26 and maximum of 17.23 of population impacted
       2. Hazard area distributed between minimum of 54.35 and maximum of 57.84 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0."
41. "SS-15 NPS 6
    1. Total Cumulative Length (m): 5229.36
       1. IC Method 1 : 5229.36
    2. Likelihood of failure distributed between minimum of 9.211e-01 and maximum of 9.263e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 4.11 and maximum of 4.11 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 43.81 and maximum of 43.81 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 16.44 and maximum of 16.44 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are nan."
42. "UTIKUMA TO EDMONTON NPS 24
    1. Total Cumulative Length (m): 4713.92
       1. EC Method 2 : 30.0
       2. SCC Method 2 : 4065.67
       3. TPD : 291.03
       4. MD Method 2 : 60.0
       5. CT : 209.99
       6. RES : 30.0
       7. CSCC Method 2 : 27.25
    2. Likelihood of failure distributed between minimum of 1.071e-03 and maximum of 8.734e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 644.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 3.59 and maximum of 3.59 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 346.0, with minimum of 1.26 and maximum of 451.26 of population impacted
       2. Hazard area distributed between minimum of 122.95 and maximum of 122.95 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 730.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 14.3 and maximum of 14.3 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0, 2.0, 3.0."
43. "UTILITY NPS 8
    1. Total Cumulative Length (m): 4668.03
       1. MD Method 1 : 4668.03
    2. Likelihood of failure distributed between minimum of 1.005e-01 and maximum of 1.262e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 16.0, with minimum of 0.0 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 10.66 and maximum of 10.66 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 40.0, with minimum of 1.26 and maximum of 59.22 of population impacted
       2. Hazard area distributed between minimum of 135.26 and maximum of 135.26 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 45.0, with minimum of 0.0 and maximum of 33.38 of population impacted
       2. Hazard area distributed between minimum of 49.48 and maximum of 49.48 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0."
44. "NPS8 SARNIA CONDENSATE TO SUNCOR
    1. Total Cumulative Length (m): 4227.46
       1. MD Method 1 : 4227.46
    2. Likelihood of failure distributed between minimum of 1.026e-02 and maximum of 1.226e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 21.0, with minimum of 0.0 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 11.8 and maximum of 11.8 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 38.0, with minimum of 1.26 and maximum of 56.94 of population impacted
       2. Hazard area distributed between minimum of 135.89 and maximum of 135.89 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 49.0, with minimum of 0.0 and maximum of 23.05 of population impacted
       2. Hazard area distributed between minimum of 47.76 and maximum of 47.76 meters.
    6. Product type is Condensate.
    7. Class area location is/are 1.0, 2.0."
45. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
    1. Total Cumulative Length (m): 4215.61
       1. TPD : 2239.99
       2. MD Method 2 : 372.11
       3. CSCC Method 2 : 1603.5
    2. Likelihood of failure distributed between minimum of 1.182e-03 and maximum of 6.139e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 16.0, with minimum of 2.28 and maximum of 35.98 of population impacted
       2. Hazard area distributed between minimum of 11.39 and maximum of 12.16 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 105.0, with minimum of 2.28 and maximum of 90.93 of population impacted
       2. Hazard area distributed between minimum of 171.98 and maximum of 185.15 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 60.0, with minimum of 0.0 and maximum of 35.98 of population impacted
       2. Hazard area distributed between minimum of 53.34 and maximum of 57.42 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0."
46. "BRETON TO EDMONTON NPS 8
    1. Total Cumulative Length (m): 4207.67
       1. EC Method 2 : 383.72
       2. IC Method 2 : 698.03
       3. TPD : 2207.0
       4. MD Method 2 : 918.92
    2. Likelihood of failure distributed between minimum of 1.006e-03 and maximum of 7.594e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 117.0, with minimum of 0.0 and maximum of 171.0 of population impacted
       2. Hazard area distributed between minimum of 11.13 and maximum of 12.03 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 236.0, with minimum of 2.28 and maximum of 697.68 of population impacted
       2. Hazard area distributed between minimum of 129.12 and maximum of 138.23 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 355.0, with minimum of 0.0 and maximum of 344.28 of population impacted
       2. Hazard area distributed between minimum of 45.37 and maximum of 48.58 meters.
    6. Product type is Condensate.
    7. Class area location is/are 1.0, 2.0, 3.0, 4.0."
47. "SECT 1 EMPRESS TO CABRI NPS 6
    1. Total Cumulative Length (m): 2343.62
       1. TPD : 118.02
       2. MD Method 1 : 2225.61
    2. Likelihood of failure distributed between minimum of 6.440e-03 and maximum of 1.085e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 18.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.34 and maximum of 12.34 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 45.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 130.83 and maximum of 130.83 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 41.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 58.33 and maximum of 58.33 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0."
48. "AMERADA FERRIER 1-6 TO 10-33 JUNCTION NPS 4
    1. Total Cumulative Length (m): 2330.38
       1. MD Method 1 : 2330.38
    2. Likelihood of failure distributed between minimum of 1.707e-02 and maximum of 1.138e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 4.0, with minimum of 0.0 and maximum of 2.28 of population impacted
       2. Hazard area distributed between minimum of 11.55 and maximum of 11.55 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 38.0, with minimum of 2.28 and maximum of 31.92 of population impacted
       2. Hazard area distributed between minimum of 80.3 and maximum of 80.3 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 28.0, with minimum of 2.28 and maximum of 29.64 of population impacted
       2. Hazard area distributed between minimum of 46.87 and maximum of 46.87 meters.
    6. Product type is LVP Products.
    7. Class area location is/are 1.0, 2.0."
49. "STRACHAN TO ROCKY MOUNTAIN HOUSE NGL NPS 6
    1. Total Cumulative Length (m): 2273.89
       1. TPD : 2273.89
    2. Likelihood of failure distributed between minimum of 1.101e-03 and maximum of 2.701e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 20.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 10.89 and maximum of 10.89 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 77.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 113.66 and maximum of 113.66 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 50.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 50.68 and maximum of 50.68 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0."
50. "SUNDRE TO BENTLEY NPS 8
    1. Total Cumulative Length (m): 2116.74
       1. TPD : 2116.74
    2. Likelihood of failure distributed between minimum of 1.646e-03 and maximum of 1.094e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 40.0, with minimum of 1.26 and maximum of 5.25 of population impacted
       2. Hazard area distributed between minimum of 20.4 and maximum of 20.4 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 132.0, with minimum of 2.28 and maximum of 8.1 of population impacted
       2. Hazard area distributed between minimum of 135.46 and maximum of 135.46 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 98.0, with minimum of 1.26 and maximum of 5.25 of population impacted
       2. Hazard area distributed between minimum of 55.42 and maximum of 55.42 meters.
    6. Product type is Butane/Condensate.
    7. Class area location is/are 1.0, 2.0."
51. "BUCK CREEK FRAC PLANT TO BRETON NPS 6
    1. Total Cumulative Length (m): 2093.98
       1. TPD : 112.72
       2. MD Method 1 : 1981.26
    2. Likelihood of failure distributed between minimum of 4.161e-03 and maximum of 1.068e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 6.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 9.71 and maximum of 9.71 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 33.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 99.99 and maximum of 99.99 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 15.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 44.58 and maximum of 44.58 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0."
52. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
    1. Total Cumulative Length (m): 1898.37
       1. TPD : 833.25
       2. MD Method 2 : 1065.11
    2. Likelihood of failure distributed between minimum of 5.150e-03 and maximum of 9.714e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 24.0, with minimum of 32.0 and maximum of 32.0 of population impacted
       2. Hazard area distributed between minimum of 3.77 and maximum of 4.11 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 60.0, with minimum of 2.28 and maximum of 32.0 of population impacted
       2. Hazard area distributed between minimum of 72.8 and maximum of 79.49 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 56.0, with minimum of 0.0 and maximum of 32.0 of population impacted
       2. Hazard area distributed between minimum of 15.06 and maximum of 16.44 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0, 2.0."
53. "STRACHAN TO ROCKY MOUNTAIN HOUSE CONDENSATE NPS 6
    1. Total Cumulative Length (m): 1875.33
       1. TPD : 1875.33
    2. Likelihood of failure distributed between minimum of 1.108e-03 and maximum of 2.534e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 21.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 11.12 and maximum of 11.12 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 80.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 105.04 and maximum of 105.04 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 47.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 45.35 and maximum of 45.35 meters.
    6. Product type is Condensate.
    7. Class area location is/are 1.0, 2.0."
54. "COED BV 203 TO EST NPS 8
    1. Total Cumulative Length (m): 1694.93
       1. IC Method 1 : 1694.93
    2. Likelihood of failure distributed between minimum of 9.299e-01 and maximum of 9.718e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 44.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 16.0, with minimum of 12.61 and maximum of 53.5 of population impacted
       2. Hazard area distributed between minimum of 138.23 and maximum of 138.23 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 46.0, with minimum of 0.0 and maximum of 40.89 of population impacted
       2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
    6. Product type is Condensate.
    7. Class area location is/are 2.0."
55. "KALKASKA MARYSVILLE TO SARNIA NPS 8
    1. Total Cumulative Length (m): 1681.51
       1. TPD : 1681.51
    2. Likelihood of failure distributed between minimum of 1.206e-03 and maximum of 4.380e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 10.0, with minimum of 1.26 and maximum of 12.0 of population impacted
       2. Hazard area distributed between minimum of 11.99 and maximum of 11.99 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 40.0, with minimum of 3.78 and maximum of 154.59 of population impacted
       2. Hazard area distributed between minimum of 154.44 and maximum of 154.44 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 52.0, with minimum of 1.26 and maximum of 28.56 of population impacted
       2. Hazard area distributed between minimum of 56.5 and maximum of 56.5 meters.
    6. Product type is Liquid petroleum gas (LPG).
    7. Class area location is/are 2.0, 3.0."
56. "WEST PEMBINA TO BRAZEAU NPS 3
    1. Total Cumulative Length (m): 1647.26
       1. TPD : 1647.26
    2. Likelihood of failure distributed between minimum of 7.182e-03 and maximum of 1.104e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 24.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 53.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 80.38 and maximum of 80.38 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 50.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0."
57. "BATCH TRANSFER LINE NPS 24
    1. Total Cumulative Length (m): 1622.82
       1. CSCC Method 1a : 1622.82
    2. Likelihood of failure distributed between minimum of 1.440e-02 and maximum of 6.015e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 32.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 2.91 and maximum of 2.91 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 16.0, with minimum of 12.61 and maximum of 100.88 of population impacted
       2. Hazard area distributed between minimum of 99.14 and maximum of 99.14 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 34.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 11.53 and maximum of 11.53 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0, 2.0."
58. "SUNDRE TO HARTELL NPS 12
    1. Total Cumulative Length (m): 1416.56
       1. SCC Method 2 : 59.99
       2. TPD : 775.67
       3. MD Method 1 : 399.97
       4. MD Method 2 : 180.93
    2. Likelihood of failure distributed between minimum of 1.082e-03 and maximum of 1.016e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 2697.0, with minimum of 0.0 and maximum of 32.0 of population impacted
       2. Hazard area distributed between minimum of 3.64 and maximum of 4.11 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 293.0, with minimum of 2.28 and maximum of 51.51 of population impacted
       2. Hazard area distributed between minimum of 70.19 and maximum of 79.49 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 752.0, with minimum of 0.0 and maximum of 32.0 of population impacted
       2. Hazard area distributed between minimum of 14.52 and maximum of 16.44 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0, 2.0, 3.0."
59. "C3 FROM ESSO NPS 6
    1. Total Cumulative Length (m): 1389.25
       1. IC Method 1 : 1389.25
    2. Likelihood of failure distributed between minimum of 9.108e-01 and maximum of 9.210e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 15.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 9.02 and maximum of 9.02 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 18.0, with minimum of 1.26 and maximum of 41.48 of population impacted
       2. Hazard area distributed between minimum of 91.99 and maximum of 91.99 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 20.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 28.89 and maximum of 28.89 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0."
60. "KALKASKA SARNIA TO PUMP STATION NPS 8
    1. Total Cumulative Length (m): 1330.88
       1. IC Method 1 : 1330.88
    2. Likelihood of failure distributed between minimum of 9.015e-01 and maximum of 9.044e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 11.01 and maximum of 11.01 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 2.0, with minimum of 0.0 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 140.37 and maximum of 140.37 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 1.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 51.35 and maximum of 51.35 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0."
61. "EDS OPERATIVE NPS 12
    1. Total Cumulative Length (m): 1330.76
       1. IC Method 1 : 1330.76
    2. Likelihood of failure distributed between minimum of 9.015e-01 and maximum of 9.039e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 11.04 and maximum of 11.04 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 3.0, with minimum of 1.26 and maximum of 2.52 of population impacted
       2. Hazard area distributed between minimum of 188.59 and maximum of 188.59 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 1.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 51.46 and maximum of 51.46 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0."
62. "10-33 VALVE SITE TO MAIN LINE TIE-IN 2-6 NPS 3
    1. Total Cumulative Length (m): 1305.88
       1. TPD : 1305.88
    2. Likelihood of failure distributed between minimum of 2.315e-03 and maximum of 1.543e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 8.0, with minimum of 0.0 and maximum of 0.0 of population impacted
       2. Hazard area distributed between minimum of 11.53 and maximum of 11.53 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 36.0, with minimum of 2.28 and maximum of 27.36 of population impacted
       2. Hazard area distributed between minimum of 75.16 and maximum of 75.16 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 34.0, with minimum of 0.0 and maximum of 27.36 of population impacted
       2. Hazard area distributed between minimum of 54.08 and maximum of 54.08 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0."
63. "NPS8 LPG Sarnia to St Clair Terminal
    1. Total Cumulative Length (m): 1266.65
       1. TPD : 1266.65
    2. Likelihood of failure distributed between minimum of 1.174e-03 and maximum of 8.199e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 24.0, with minimum of 1.26 and maximum of 12.0 of population impacted
       2. Hazard area distributed between minimum of 10.84 and maximum of 10.84 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 53.0, with minimum of 1.26 and maximum of 147.75 of population impacted
       2. Hazard area distributed between minimum of 137.89 and maximum of 137.89 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 75.0, with minimum of 1.26 and maximum of 28.56 of population impacted
       2. Hazard area distributed between minimum of 50.45 and maximum of 50.45 meters.
    6. Product type is Liquid petroleum gas (LPG).
    7. Class area location is/are 1.0, 2.0, 3.0."
64. "CARROT CREEK LATERAL NPS 2
    1. Total Cumulative Length (m): 1263.04
       1. IC Method 1 : 1263.04
    2. Likelihood of failure distributed between minimum of 9.053e-01 and maximum of 9.148e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 60.1 and maximum of 60.1 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
    6. Product type is NGL.
    7. Class area location is/are nan."
65. "Sarnia 6 inch tied into 6 inch E/P line
    1. Total Cumulative Length (m): 1191.32
       1. IC Method 1 : 1191.32
    2. Likelihood of failure distributed between minimum of 9.107e-01 and maximum of 9.129e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 40.0, with minimum of 0.0 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 11.02 and maximum of 11.02 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 21.0, with minimum of 1.26 and maximum of 2.52 of population impacted
       2. Hazard area distributed between minimum of 115.22 and maximum of 115.22 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 47.0, with minimum of 0.0 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 51.38 and maximum of 51.38 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0."
66. "PEYTO OLDMAN TO EDSON NPS 4
    1. Total Cumulative Length (m): 1157.62
       1. TPD : 1157.62
    2. Likelihood of failure distributed between minimum of 1.045e-03 and maximum of 9.787e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 12.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 80.0, with minimum of 2.28 and maximum of 25.22 of population impacted
       2. Hazard area distributed between minimum of 97.06 and maximum of 97.06 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 55.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0."
67. "SILVER SPRINGS TO BRETON NPS 8
    1. Total Cumulative Length (m): 1118.05
       1. TPD : 1118.05
    2. Likelihood of failure distributed between minimum of 1.806e-03 and maximum of 7.207e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 15.0, with minimum of 3.98 and maximum of 35.98 of population impacted
       2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 50.0, with minimum of 2.28 and maximum of 35.98 of population impacted
       2. Hazard area distributed between minimum of 138.23 and maximum of 138.23 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 36.0, with minimum of 2.28 and maximum of 35.98 of population impacted
       2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
    6. Product type is Condensate.
    7. Class area location is/are 1.0, 2.0."
68. "EVERDELL TO FERRIER WEST NPS 3
    1. Total Cumulative Length (m): 1019.88
       1. TPD : 1019.88
    2. Likelihood of failure distributed between minimum of 1.867e-03 and maximum of 1.435e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 10.0, with minimum of 12.61 and maximum of 13.87 of population impacted
       2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 25.0, with minimum of 1.26 and maximum of 13.87 of population impacted
       2. Hazard area distributed between minimum of 80.38 and maximum of 80.38 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 20.0, with minimum of 1.26 and maximum of 13.87 of population impacted
       2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0."
69. "KERROBERT TO NORTH UNITY NPS 6
    1. Total Cumulative Length (m): 1018.88
       1. TPD : 1018.88
    2. Likelihood of failure distributed between minimum of 1.260e-03 and maximum of 9.069e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 22.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 27.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 112.52 and maximum of 112.52 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 32.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
    6. Product type is Condensate.
    7. Class area location is/are 1.0."
70. "MADDEN 13-30 TO SUNDRE 16-8 NPS 8
    1. Total Cumulative Length (m): 1000.92
       1. MD Method 1 : 1000.92
    2. Likelihood of failure distributed between minimum of 1.036e-01 and maximum of 1.100e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 53.0, with minimum of 3.98 and maximum of 35.98 of population impacted
       2. Hazard area distributed between minimum of 3.7 and maximum of 3.7 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 44.0, with minimum of 2.28 and maximum of 35.98 of population impacted
       2. Hazard area distributed between minimum of 50.04 and maximum of 50.04 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 70.0, with minimum of 3.98 and maximum of 35.98 of population impacted
       2. Hazard area distributed between minimum of 14.77 and maximum of 14.77 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0, 2.0."
71. "SPRINGDALE TO ELLERSLIE NPS 16
    1. Total Cumulative Length (m): 933.21
       1. TPD : 933.21
    2. Likelihood of failure distributed between minimum of 1.469e-03 and maximum of 3.172e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 40.0, with minimum of 2.97 and maximum of 2.97 of population impacted
       2. Hazard area distributed between minimum of 3.93 and maximum of 3.93 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 120.0, with minimum of 2.97 and maximum of 54.72 of population impacted
       2. Hazard area distributed between minimum of 93.25 and maximum of 93.25 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 99.0, with minimum of 2.28 and maximum of 9.12 of population impacted
       2. Hazard area distributed between minimum of 15.69 and maximum of 15.69 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0, 2.0, 3.0."
72. "EDSON TO WOLF LAKE NPS 4
    1. Total Cumulative Length (m): 913.44
       1. TPD : 913.44
    2. Likelihood of failure distributed between minimum of 1.493e-03 and maximum of 1.303e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 4.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 36.0, with minimum of 2.52 and maximum of 25.22 of population impacted
       2. Hazard area distributed between minimum of 97.06 and maximum of 97.06 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 24.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0."
73. "NPS6 Station 8 to Buck Creek Frac Plant From 4-5-49-9W5 To 13-24-48-7W
    1. Total Cumulative Length (m): 905.92
       1. TPD : 106.51
       2. MD Method 1 : 454.07
       3. CT : 345.34
    2. Likelihood of failure distributed between minimum of 1.101e-03 and maximum of 1.451e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 6.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 10.87 and maximum of 10.87 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 29.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 113.48 and maximum of 113.48 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 15.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 50.6 and maximum of 50.6 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0."
74. "ESSO ETHANE NPS 6
    1. Total Cumulative Length (m): 885.6
       1. IC Method 1 : 885.6
    2. Likelihood of failure distributed between minimum of 9.107e-01 and maximum of 9.130e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 10.0, with minimum of 0.0 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 11.02 and maximum of 11.02 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 7.0, with minimum of 1.26 and maximum of 47.54 of population impacted
       2. Hazard area distributed between minimum of 115.22 and maximum of 115.22 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 16.0, with minimum of 0.0 and maximum of 23.05 of population impacted
       2. Hazard area distributed between minimum of 51.38 and maximum of 51.38 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0."
75. "LONE ROCK TO KERROBERT NPS 10
    1. Total Cumulative Length (m): 851.61
       1. TPD : 851.61
    2. Likelihood of failure distributed between minimum of 1.830e-03 and maximum of 5.916e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 60.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 4.02 and maximum of 4.02 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 41.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 66.53 and maximum of 66.53 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 73.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 16.07 and maximum of 16.07 meters.
    6. Product type is Blend.
    7. Class area location is/are 1.0."
76. "ROCKY MOUNTAIN HOUSE TO SILVER SPRINGS NPS 8
    1. Total Cumulative Length (m): 800.67
       1. TPD : 650.7
       2. MD Method 2 : 149.97
    2. Likelihood of failure distributed between minimum of 1.806e-03 and maximum of 4.022e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 1.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 11.46 and maximum of 12.03 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 40.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 132.52 and maximum of 138.23 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 19.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 46.57 and maximum of 48.58 meters.
    6. Product type is Condensate.
    7. Class area location is/are 1.0, 2.0."
77. "SECT 7 MANSON TO RAPID CITY NPS 6
    1. Total Cumulative Length (m): 785.6
       1. MD Method 1 : 785.6
    2. Likelihood of failure distributed between minimum of 1.023e-01 and maximum of 1.110e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 17.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.34 and maximum of 12.34 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 55.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 130.83 and maximum of 130.83 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 39.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 58.33 and maximum of 58.33 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0."
78. "NPS10 RPII Mainline From 10-36-54-24W4 To 11-02-80-8W5
    1. Total Cumulative Length (m): 777.28
       1. TPD : 777.28
    2. Likelihood of failure distributed between minimum of 4.336e-03 and maximum of 4.336e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 155.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 248.0, with minimum of 2.28 and maximum of 9.12 of population impacted
       2. Hazard area distributed between minimum of 164.13 and maximum of 164.13 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 230.0, with minimum of 2.28 and maximum of 6.84 of population impacted
       2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
    6. Product type is Condensate.
    7. Class area location is/are 1.0."
79. "FOOTHILLS EMPRESS 4 TO EMPRESS 6 NPS 36
    1. Total Cumulative Length (m): 763.03
       1. IC Method 1 : 763.03
    2. Likelihood of failure distributed between minimum of 9.002e-01 and maximum of 9.002e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 117.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 9.71 and maximum of 9.71 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 3.0, with minimum of 12.61 and maximum of 79.7 of population impacted
       2. Hazard area distributed between minimum of 355.87 and maximum of 355.87 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 25.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 44.58 and maximum of 44.58 meters.
    6. Product type is NGL.
    7. Class area location is/are nan."
80. "16-19-037-03W5 TO 10-19-037-03W5 NPS 4
    1. Total Cumulative Length (m): 761.03
       1. IC Method 1 : 761.03
    2. Likelihood of failure distributed between minimum of 9.214e-01 and maximum of 9.214e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 4.11 and maximum of 4.11 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 30.81 and maximum of 30.81 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 16.44 and maximum of 16.44 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are nan."
81. "SECT 2 CABRI TO HERBERT NPS 6
    1. Total Cumulative Length (m): 731.56
       1. TPD : 731.56
    2. Likelihood of failure distributed between minimum of 1.019e-02 and maximum of 1.020e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 10.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 12.34 and maximum of 12.34 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 41.0, with minimum of 4.56 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 130.83 and maximum of 130.83 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 30.0, with minimum of 0.0 and maximum of 0.0 of population impacted
       2. Hazard area distributed between minimum of 58.33 and maximum of 58.33 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0."
82. "UNITY TO LONE ROCK NPS 4
    1. Total Cumulative Length (m): 729.63
       1. SCC Method 1b : 29.99
       2. TPD : 699.63
    2. Likelihood of failure distributed between minimum of 5.971e-03 and maximum of 2.880e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 10.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 12.02 and maximum of 12.02 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 17.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 83.2 and maximum of 83.2 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 17.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 48.57 and maximum of 48.57 meters.
    6. Product type is Condensate.
    7. Class area location is/are 1.0."
83. "CRIMSON LAKE TO 10-33 NPS 4
    1. Total Cumulative Length (m): 704.43
       1. TPD : 704.43
    2. Likelihood of failure distributed between minimum of 1.344e-03 and maximum of 5.001e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 107.0, with minimum of 0.0 and maximum of 2.97 of population impacted
       2. Hazard area distributed between minimum of 3.95 and maximum of 3.95 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 113.0, with minimum of 2.28 and maximum of 30.33 of population impacted
       2. Hazard area distributed between minimum of 29.55 and maximum of 29.55 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 157.0, with minimum of 0.0 and maximum of 30.33 of population impacted
       2. Hazard area distributed between minimum of 15.77 and maximum of 15.77 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 2.0, 3.0."
84. "NPS12 Carway to border From 6-3-1-26W4 To 1-3-1-26W4
    1. Total Cumulative Length (m): 700.9
       1. MD Method 1 : 700.9
    2. Likelihood of failure distributed between minimum of 1.016e-01 and maximum of 1.018e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 9.46 and maximum of 9.46 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 131.02 and maximum of 131.02 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
       2. Hazard area distributed between minimum of 35.14 and maximum of 35.14 meters.
    6. Product type is Crude / Butane Batch.
    7. Class area location is/are 1.0, 2.0."
85. "SECT 9 PORTAGE TO FORT WHYTE TERMINAL NPS 6
    1. Total Cumulative Length (m): 700.09
       1. TPD : 700.09
    2. Likelihood of failure distributed between minimum of 1.601e-03 and maximum of 1.028e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 13.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.34 and maximum of 12.34 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 55.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 130.83 and maximum of 130.83 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 47.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 58.33 and maximum of 58.33 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0, 2.0."
86. "SECT 8 RAPID CITY TO PORTAGE NPS 6
    1. Total Cumulative Length (m): 679.83
       1. TPD : 679.83
    2. Likelihood of failure distributed between minimum of 1.499e-03 and maximum of 1.214e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 22.0, with minimum of 1.26 and maximum of 1.26 of population impacted
       2. Hazard area distributed between minimum of 12.34 and maximum of 12.34 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 75.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 130.83 and maximum of 130.83 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 45.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 58.33 and maximum of 58.33 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0."
87. "RADIAL LAKE EAST LATERAL NPS 4
    1. Total Cumulative Length (m): 665.53
       1. TPD : 665.53
    2. Likelihood of failure distributed between minimum of 1.000e-03 and maximum of 1.370e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 1.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 11.33 and maximum of 11.33 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 18.0, with minimum of 3.54 and maximum of 51.43 of population impacted
       2. Hazard area distributed between minimum of 88.95 and maximum of 88.95 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 11.0, with minimum of 1.26 and maximum of 19.51 of population impacted
       2. Hazard area distributed between minimum of 53.01 and maximum of 53.01 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0, 2.0, 3.0."
88. "RICINUS TO STRACHAN LATERAL NPS 4
    1. Total Cumulative Length (m): 652.77
       1. TPD : 652.77
    2. Likelihood of failure distributed between minimum of 1.920e-03 and maximum of 1.448e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 9.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 20.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 97.06 and maximum of 97.06 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 19.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0."
89. "NPS4 Harmattan to Sundre From 1-34-31-4W5 To 16-8-34-5W5
    1. Total Cumulative Length (m): 649.63
       1. TPD : 649.63
    2. Likelihood of failure distributed between minimum of 5.655e-03 and maximum of 1.056e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 9.0, with minimum of 1.26 and maximum of 2.28 of population impacted
       2. Hazard area distributed between minimum of 12.76 and maximum of 12.76 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 26.0, with minimum of 1.26 and maximum of 3.54 of population impacted
       2. Hazard area distributed between minimum of 102.22 and maximum of 102.22 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 19.0, with minimum of 1.26 and maximum of 2.28 of population impacted
       2. Hazard area distributed between minimum of 60.91 and maximum of 60.91 meters.
    6. Product type is Butane.
    7. Class area location is/are 1.0, 2.0."
90. "BONAVISTA LATERAL 14-24 TO 3-27 NPS 4
    1. Total Cumulative Length (m): 632.96
       1. TPD : 632.96
    2. Likelihood of failure distributed between minimum of 2.026e-02 and maximum of 2.026e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 39.0, with minimum of 2.97 and maximum of 2.97 of population impacted
       2. Hazard area distributed between minimum of 3.86 and maximum of 3.86 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 25.0, with minimum of 2.97 and maximum of 5.94 of population impacted
       2. Hazard area distributed between minimum of 28.92 and maximum of 28.92 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 42.0, with minimum of 2.97 and maximum of 2.97 of population impacted
       2. Hazard area distributed between minimum of 15.43 and maximum of 15.43 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 2.0."
91. "NPS12 Medicine River Jct to Sundre From 9-27-39-3-W5 To 16-8-34-5-W5
    1. Total Cumulative Length (m): 618.71
       1. TPD : 497.68
       2. CT : 42.12
       3. NF : 78.91
    2. Likelihood of failure distributed between minimum of 1.046e-03 and maximum of 3.302e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 55.0, with minimum of 2.28 and maximum of 2.97 of population impacted
       2. Hazard area distributed between minimum of 3.84 and maximum of 3.95 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 97.0, with minimum of 2.28 and maximum of 5.82 of population impacted
       2. Hazard area distributed between minimum of 74.13 and maximum of 76.25 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 80.0, with minimum of 1.26 and maximum of 2.97 of population impacted
       2. Hazard area distributed between minimum of 15.33 and maximum of 15.77 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0, 2.0."
92. "DEWDNEY SPUR NPS 6
    1. Total Cumulative Length (m): 585.58
       1. TPD : 585.58
    2. Likelihood of failure distributed between minimum of 8.318e-03 and maximum of 8.318e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 10.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.34 and maximum of 12.34 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 11.0, with minimum of 1.26 and maximum of 13.87 of population impacted
       2. Hazard area distributed between minimum of 130.83 and maximum of 130.83 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 20.0, with minimum of 1.26 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 58.33 and maximum of 58.33 meters.
    6. Product type is NGL.
    7. Class area location is/are 1.0."
93. "NITON BV 22 TO STATION 8 NPS 4
    1. Total Cumulative Length (m): 538.97
       1. TPD : 538.97
    2. Likelihood of failure distributed between minimum of 3.469e-03 and maximum of 3.469e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 11.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 11.49 and maximum of 11.49 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 39.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 90.36 and maximum of 90.36 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 31.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 53.85 and maximum of 53.85 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0."
94. "SSPL TRUNK LINE NPS 12
    1. Total Cumulative Length (m): 510.28
       1. TPD : 5.51
       2. MD Method 2 : 504.77
    2. Likelihood of failure distributed between minimum of 1.002e-02 and maximum of 9.796e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 53.0, with minimum of 2.28 and maximum of 2.28 of population impacted
       2. Hazard area distributed between minimum of 3.97 and maximum of 3.97 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 77.0, with minimum of 2.28 and maximum of 2.28 of population impacted
       2. Hazard area distributed between minimum of 76.72 and maximum of 76.72 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 84.0, with minimum of 2.28 and maximum of 2.28 of population impacted
       2. Hazard area distributed between minimum of 15.87 and maximum of 15.87 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0."
95. "RADIAL LAKE TO LOCHEARN PUMP STATION NPS 3
    1. Total Cumulative Length (m): 499.75
       1. TPD : 499.75
    2. Likelihood of failure distributed between minimum of 3.604e-03 and maximum of 1.435e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 6.0, with minimum of 2.97 and maximum of 2.97 of population impacted
       2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 22.0, with minimum of 2.97 and maximum of 20.2 of population impacted
       2. Hazard area distributed between minimum of 80.38 and maximum of 80.38 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 23.0, with minimum of 2.97 and maximum of 20.2 of population impacted
       2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 2.0."
96. "16 EST to Enbridge 7-5-53-23W4 to 2-5-53-23W4
    1. Total Cumulative Length (m): 482.65
       1. EC Method 1 : 482.65
    2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.901e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 16.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 9.03 and maximum of 9.03 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 2.0, with minimum of 12.61 and maximum of 13.87 of population impacted
       2. Hazard area distributed between minimum of 178.36 and maximum of 178.36 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 16.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 28.91 and maximum of 28.91 meters.
    6. Product type is HVP Product.
    7. Class area location is/are 1.0."
97. "NORTH FERRIER 08-20 TO 09-27 NPS 8
    1. Total Cumulative Length (m): 454.97
       1. EC Method 2 : 89.98
       2. IC Method 2 : 82.38
       3. SCC Method 1b : 29.99
       4. TPD : 252.61
    2. Likelihood of failure distributed between minimum of 1.486e-03 and maximum of 1.982e-01.
    3. Leak scenario:
       1. No. of intersections with structures is 43.0, with minimum of 0.0 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 3.99 and maximum of 4.11 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 85.0, with minimum of 2.28 and maximum of 34.28 of population impacted
       2. Hazard area distributed between minimum of 53.97 and maximum of 55.69 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 67.0, with minimum of 0.0 and maximum of 17.23 of population impacted
       2. Hazard area distributed between minimum of 15.93 and maximum of 16.44 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0, 3.0."
98. "NORTH FERRIER 14-20 TO 8-20 NPS 4
    1. Total Cumulative Length (m): 444.32
       1. TPD : 444.32
    2. Likelihood of failure distributed between minimum of 2.715e-03 and maximum of 4.607e-03.
    3. Leak scenario:
       1. No. of intersections with structures is 13.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 4.11 and maximum of 4.11 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 17.0, with minimum of 12.61 and maximum of 13.87 of population impacted
       2. Hazard area distributed between minimum of 30.81 and maximum of 30.81 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 27.0, with minimum of 12.61 and maximum of 13.87 of population impacted
       2. Hazard area distributed between minimum of 16.44 and maximum of 16.44 meters.
    6. Product type is Crude Oil.
    7. Class area location is/are 1.0."
99. "BUCK LAKE TO WINFIELD NPS 4
    1. Total Cumulative Length (m): 431.08
       1. TPD : 431.08
    2. Likelihood of failure distributed between minimum of 3.435e-03 and maximum of 1.313e-02.
    3. Leak scenario:
       1. No. of intersections with structures is 2.0, with minimum of 12.61 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
    4. Rupture scenario:
       1. No. of intersections with structures is 16.0, with minimum of 2.28 and maximum of 25.22 of population impacted
       2. Hazard area distributed between minimum of 83.22 and maximum of 83.22 meters.
    5. Puncture scenario:
       1. No. of intersections with structures is 15.0, with minimum of 2.28 and maximum of 12.61 of population impacted
       2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
    6. Product type is Condensate.
    7. Class area location is/are 1.0, 2.0."
100. "BUCK LAKE TO WINFIELD NPS 3
     1. Total Cumulative Length (m): 411.64
        1. TPD : 411.64
     2. Likelihood of failure distributed between minimum of 1.065e-02 and maximum of 1.065e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 3.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 9.97 and maximum of 9.97 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 17.0, with minimum of 2.28 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 63.82 and maximum of 63.82 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 12.0, with minimum of 2.28 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 45.92 and maximum of 45.92 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
101. "BUCK CREEK TO STATION 1 NPS 3
     1. Total Cumulative Length (m): 406.71
        1. IC Method 1 : 406.71
     2. Likelihood of failure distributed between minimum of 9.053e-01 and maximum of 9.621e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 5.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 11.7 and maximum of 11.7 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 7.0, with minimum of 2.28 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 57.3 and maximum of 57.3 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 8.0, with minimum of 2.28 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 42.7 and maximum of 42.7 meters.
     6. Product type is Ethane.
     7. Class area location is/are 1.0."
102. "NPS4 Lochern BV to North Sask BV From 6-21-39-7W5 To 7-20-39-7W5
     1. Total Cumulative Length (m): 406.57
        1. TPD : 406.57
     2. Likelihood of failure distributed between minimum of 1.377e-02 and maximum of 1.388e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 3.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 7.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 97.06 and maximum of 97.06 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 6.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
103. "WILLESDEN GREEN TO SILVER SPRINGS NPS 3
     1. Total Cumulative Length (m): 402.35
        1. TPD : 402.35
     2. Likelihood of failure distributed between minimum of 3.414e-03 and maximum of 1.356e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 5.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 20.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 80.38 and maximum of 80.38 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 17.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is NGL.
     7. Class area location is/are 1.0."
104. "NORTH UNITY TO BELTON NPS 12
     1. Total Cumulative Length (m): 374.86
        1. TPD : 374.86
     2. Likelihood of failure distributed between minimum of 1.980e-03 and maximum of 5.126e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 21.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 4.02 and maximum of 4.02 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 9.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 77.71 and maximum of 77.71 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 24.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 16.07 and maximum of 16.07 meters.
     6. Product type is Blend.
     7. Class area location is/are 1.0."
105. "SECT 5 RICHARDSON TO GRENFELL NPS 6
     1. Total Cumulative Length (m): 350.15
        1. EC Method 2 : 15.67
        2. IC Method 2 : 30.0
        3. TPD : 304.48
     2. Likelihood of failure distributed between minimum of 2.358e-03 and maximum of 2.072e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 18.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 12.34 and maximum of 12.34 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 59.0, with minimum of 4.56 and maximum of 9.12 of population impacted
        2. Hazard area distributed between minimum of 130.83 and maximum of 130.83 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 53.0, with minimum of 2.28 and maximum of 4.56 of population impacted
        2. Hazard area distributed between minimum of 58.33 and maximum of 58.33 meters.
     6. Product type is NGL.
     7. Class area location is/are 1.0."
106. "KERROBERT TO ENBRIDGE SALES GAS NPS 10
     1. Total Cumulative Length (m): 340.96
        1. IC Method 1 : 340.96
     2. Likelihood of failure distributed between minimum of 9.041e-01 and maximum of 9.043e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 14.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 9.72 and maximum of 9.72 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 5.0, with minimum of 2.28 and maximum of 4.56 of population impacted
        2. Hazard area distributed between minimum of 143.81 and maximum of 143.81 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 16.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 44.6 and maximum of 44.6 meters.
     6. Product type is NGL.
     7. Class area location is/are 1.0."
107. "CROOKED LAKE LATERAL NPS 6 FROM 15-17-39-26W4 TO 3-5-40-28W4
     1. Total Cumulative Length (m): 315.5
        1. TPD : 315.5
     2. Likelihood of failure distributed between minimum of 5.804e-03 and maximum of 9.433e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 10.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 3.95 and maximum of 3.95 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 51.0, with minimum of 2.28 and maximum of 6.84 of population impacted
        2. Hazard area distributed between minimum of 42.02 and maximum of 42.02 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 34.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 15.77 and maximum of 15.77 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 1.0, 2.0."
108. "Empress 4A line\_Propane
     1. Total Cumulative Length (m): 303.53
        1. TPD : 303.53
     2. Likelihood of failure distributed between minimum of 6.452e-03 and maximum of 6.452e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 6.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 5.0, with minimum of 47.07 and maximum of 64.3 of population impacted
        2. Hazard area distributed between minimum of 97.06 and maximum of 97.06 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 7.0, with minimum of 12.61 and maximum of 64.3 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
109. "Empress 4B line\_Butane
     1. Total Cumulative Length (m): 302.58
        1. TPD : 302.58
     2. Likelihood of failure distributed between minimum of 6.452e-03 and maximum of 6.452e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 6.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 5.0, with minimum of 47.07 and maximum of 64.3 of population impacted
        2. Hazard area distributed between minimum of 97.06 and maximum of 97.06 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 7.0, with minimum of 12.61 and maximum of 64.3 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
110. "Empress 4C line\_NGL
     1. Total Cumulative Length (m): 302.56
        1. TPD : 302.56
     2. Likelihood of failure distributed between minimum of 6.452e-03 and maximum of 6.452e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 6.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 5.0, with minimum of 47.07 and maximum of 64.3 of population impacted
        2. Hazard area distributed between minimum of 97.06 and maximum of 97.06 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 7.0, with minimum of 12.61 and maximum of 64.3 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
111. "ENBRIDGE TRANSFER LINE NPS 30
     1. Total Cumulative Length (m): 298.94
        1. EC Method 1 : 3.18
        2. IC Method 1 : 295.75
     2. Likelihood of failure distributed between minimum of 1.247e-02 and maximum of 2.784e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 17.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 2.87 and maximum of 2.87 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 2.0, with minimum of 450.0 and maximum of 450.0 of population impacted
        2. Hazard area distributed between minimum of 119.78 and maximum of 119.78 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 17.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 11.37 and maximum of 11.37 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 1.0."
112. "WASCANA LATERAL NPS 12
     1. Total Cumulative Length (m): 297.4
        1. TPD : 297.4
     2. Likelihood of failure distributed between minimum of 4.184e-03 and maximum of 4.184e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 10.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 4.11 and maximum of 4.11 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 31.0, with minimum of 32.0 and maximum of 34.46 of population impacted
        2. Hazard area distributed between minimum of 79.49 and maximum of 79.49 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 45.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 16.44 and maximum of 16.44 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 2.0."
113. "SECT 3 HERBERT TO CARON NPS 6
     1. Total Cumulative Length (m): 291.76
        1. TPD : 291.76
     2. Likelihood of failure distributed between minimum of 6.341e-03 and maximum of 1.129e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 9.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 12.34 and maximum of 12.34 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 45.0, with minimum of 1.26 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 130.83 and maximum of 130.83 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 41.0, with minimum of 1.26 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 58.33 and maximum of 58.33 meters.
     6. Product type is NGL.
     7. Class area location is/are 1.0."
114. "RADIAL LAKE RIVER CROSSING NPS 8
     1. Total Cumulative Length (m): 281.86
        1. CT : 281.86
     2. Likelihood of failure distributed between minimum of 2.852e-03 and maximum of 5.385e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 11.33 and maximum of 11.33 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 2.0, with minimum of 2.28 and maximum of 4.56 of population impacted
        2. Hazard area distributed between minimum of 144.9 and maximum of 144.9 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 2.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 53.01 and maximum of 53.01 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
115. "SOUTH GARRINGTON 1-27 LATERAL NPS 4
     1. Total Cumulative Length (m): 281.0
        1. IC Method 1 : 281.0
     2. Likelihood of failure distributed between minimum of 9.070e-01 and maximum of 9.092e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 3.95 and maximum of 3.95 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 2.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 29.55 and maximum of 29.55 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 15.77 and maximum of 15.77 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 2.0."
116. "LONE ROCK TO DULWICH NPS 6
     1. Total Cumulative Length (m): 265.33
        1. SCC Method 1b : 205.91
        2. TPD : 59.42
     2. Likelihood of failure distributed between minimum of 4.077e-03 and maximum of 6.395e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 3.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 11.41 and maximum of 11.41 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 11.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 107.45 and maximum of 107.45 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 5.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 46.39 and maximum of 46.39 meters.
     6. Product type is Condensate.
     7. Class area location is/are 1.0."
117. "WEST BRAZEAU TO STATION 8 NPS 4
     1. Total Cumulative Length (m): 248.0
        1. TPD : 248.0
     2. Likelihood of failure distributed between minimum of 1.377e-03 and maximum of 3.752e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 8.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 10.67 and maximum of 10.67 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 43.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 83.12 and maximum of 83.12 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 18.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 49.54 and maximum of 49.54 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
118. "NORTH FERRIER 10-36 TO 07-32 NPS 3
     1. Total Cumulative Length (m): 244.89
        1. TPD : 244.89
     2. Likelihood of failure distributed between minimum of 3.661e-03 and maximum of 3.661e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 3.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 12.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 68.4 and maximum of 68.4 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 12.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
     6. Product type is LVP Products.
     7. Class area location is/are 1.0."
119. "NPS3 Emerge From 11-33-48-27W3 To 2-6-49-27W3
     1. Total Cumulative Length (m): 243.83
        1. TPD : 243.83
     2. Likelihood of failure distributed between minimum of 3.396e-03 and maximum of 1.348e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 7.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 12.0, with minimum of 1.26 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 68.4 and maximum of 68.4 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 12.0, with minimum of 1.26 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
     6. Product type is Condensate.
     7. Class area location is/are 1.0."
120. "SUNDRE 16-8 TO 13-11 NPS 6
     1. Total Cumulative Length (m): 243.42
        1. TPD : 243.42
     2. Likelihood of failure distributed between minimum of 3.988e-03 and maximum of 7.090e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 6.0, with minimum of 1.26 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 12.0, with minimum of 2.28 and maximum of 3.54 of population impacted
        2. Hazard area distributed between minimum of 112.52 and maximum of 112.52 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 9.0, with minimum of 1.26 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
     6. Product type is Condensate.
     7. Class area location is/are 1.0."
121. "WOLF SOUTH PS TO BURLINGTON WOLF LAKE BV NPS 4
     1. Total Cumulative Length (m): 232.2
        1. TPD : 232.2
     2. Likelihood of failure distributed between minimum of 5.995e-03 and maximum of 8.051e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 1.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 12.25 and maximum of 12.25 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 8.0, with minimum of 2.52 and maximum of 2.52 of population impacted
        2. Hazard area distributed between minimum of 97.09 and maximum of 97.09 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 4.0, with minimum of 1.26 and maximum of 2.52 of population impacted
        2. Hazard area distributed between minimum of 57.86 and maximum of 57.86 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
122. "NPS3 Warburg Lateral to Mainline From 14-15-48-3W5 TO 6-15-48-3W5
     1. Total Cumulative Length (m): 228.56
        1. TPD : 228.56
     2. Likelihood of failure distributed between minimum of 1.605e-02 and maximum of 1.618e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 3.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 11.09 and maximum of 11.09 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 3.0, with minimum of 12.61 and maximum of 13.87 of population impacted
        2. Hazard area distributed between minimum of 71.92 and maximum of 71.92 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 4.0, with minimum of 12.61 and maximum of 13.87 of population impacted
        2. Hazard area distributed between minimum of 51.75 and maximum of 51.75 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
123. "NPS20 ENBRIDGE CONDENSATE TRANSFER from 10-34-33-22W3 to 2-34-33-22W3
     1. Total Cumulative Length (m): 227.45
        1. CSCC Method 1a : 227.45
     2. Likelihood of failure distributed between minimum of 4.193e-02 and maximum of 5.349e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 38.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 6.63 and maximum of 6.63 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 7.0, with minimum of 4.56 and maximum of 4.56 of population impacted
        2. Hazard area distributed between minimum of 158.06 and maximum of 158.06 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 38.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 28.82 and maximum of 28.82 meters.
     6. Product type is Condensate.
     7. Class area location is/are 1.0."
124. "PETRO VERA TO LONE ROCK NPS 8
     1. Total Cumulative Length (m): 217.47
        1. EC Method 1 : 217.47
     2. Likelihood of failure distributed between minimum of 9.903e-01 and maximum of 9.912e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 11.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 2.28 and maximum of 2.28 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 7.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 30.46 and maximum of 30.46 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 11.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 8.99 and maximum of 8.99 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 1.0."
125. "NPS4 BretonBV to BretonPS-South Line From 16-11-48-4W5 To 13-12-48-4W5
     1. Total Cumulative Length (m): 211.56
        1. TPD : 211.56
     2. Likelihood of failure distributed between minimum of 1.336e-02 and maximum of 1.340e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 1.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 10.31 and maximum of 10.31 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 4.0, with minimum of 2.28 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 72.68 and maximum of 72.68 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 4.0, with minimum of 2.28 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 42.43 and maximum of 42.43 meters.
     6. Product type is Condensate.
     7. Class area location is/are 1.0."
126. "NPS4 BretonBV to BretonPS-North Line From 16-11-48-4W5 To 13-12-48-4W5
     1. Total Cumulative Length (m): 210.94
        1. TPD : 210.94
     2. Likelihood of failure distributed between minimum of 5.492e-03 and maximum of 1.337e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 1.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 10.31 and maximum of 10.31 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 4.0, with minimum of 2.28 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 72.68 and maximum of 72.68 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 4.0, with minimum of 2.28 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 42.43 and maximum of 42.43 meters.
     6. Product type is Condensate.
     7. Class area location is/are 1.0."
127. "SECT 6 GRENFELL TO MANSON NPS 6
     1. Total Cumulative Length (m): 205.01
        1. EC Method 2 : 30.0
        2. TPD : 175.01
     2. Likelihood of failure distributed between minimum of 2.362e-03 and maximum of 2.752e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 10.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 12.34 and maximum of 12.34 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 67.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 130.83 and maximum of 130.83 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 43.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 58.33 and maximum of 58.33 meters.
     6. Product type is NGL.
     7. Class area location is/are 1.0."
128. "GRANADA LATERAL NPS 3
     1. Total Cumulative Length (m): 195.98
        1. IC Method 1 : 195.98
     2. Likelihood of failure distributed between minimum of 9.011e-01 and maximum of 9.013e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 1.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 2.0, with minimum of 29.84 and maximum of 29.84 of population impacted
        2. Hazard area distributed between minimum of 80.38 and maximum of 80.38 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 3.0, with minimum of 29.84 and maximum of 29.84 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is NGL.
     7. Class area location is/are nan."
129. "UNITY TO WEST SENLAC NPS 3
     1. Total Cumulative Length (m): 194.6
        1. TPD : 194.6
     2. Likelihood of failure distributed between minimum of 7.148e-03 and maximum of 1.430e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 4.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 12.02 and maximum of 12.02 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 7.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 68.39 and maximum of 68.39 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 6.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 48.57 and maximum of 48.57 meters.
     6. Product type is Condensate.
     7. Class area location is/are 1.0."
130. "03 Tie in to Radial Lake From 06-20-39-07W5 To 07-20-39-07W5
     1. Total Cumulative Length (m): 191.6
        1. EC Method 1 : 191.6
     2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.902e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 1.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 80.38 and maximum of 80.38 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
131. "MEDICINE RIVER 10-19 TO 09-27 NPS 4
     1. Total Cumulative Length (m): 188.09
        1. TPD : 188.09
     2. Likelihood of failure distributed between minimum of 8.514e-03 and maximum of 8.514e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 11.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 11.55 and maximum of 11.55 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 35.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 80.3 and maximum of 80.3 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 29.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 46.87 and maximum of 46.87 meters.
     6. Product type is LVP Products.
     7. Class area location is/are 1.0."
132. "FORT WHYTE INLET PIPING NPS 6
     1. Total Cumulative Length (m): 181.78
        1. IC Method 1 : 181.78
     2. Likelihood of failure distributed between minimum of 9.212e-01 and maximum of 9.212e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 129.72 and maximum of 129.72 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is NGL.
     7. Class area location is/are nan."
133. "FORT SASKATCHEWAN TO EST (YO-YO) NPS 16
     1. Total Cumulative Length (m): 177.68
        1. TPD : 177.68
     2. Likelihood of failure distributed between minimum of 1.133e-03 and maximum of 2.813e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 32.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 10.2 and maximum of 10.2 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 73.0, with minimum of 13.68 and maximum of 72.29 of population impacted
        2. Hazard area distributed between minimum of 204.62 and maximum of 204.62 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 92.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 47.09 and maximum of 47.09 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0, 2.0."
134. "BELTON TO MARIPOSA NPS 10
     1. Total Cumulative Length (m): 177.25
        1. TPD : 177.25
     2. Likelihood of failure distributed between minimum of 1.785e-03 and maximum of 6.781e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 8.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 4.11 and maximum of 4.11 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 12.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 68.05 and maximum of 68.05 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 11.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 16.44 and maximum of 16.44 meters.
     6. Product type is Blend.
     7. Class area location is/are 1.0."
135. "PECO PUMP TO BRAZEAU STATION NPS 4
     1. Total Cumulative Length (m): 173.57
        1. TPD : 173.57
     2. Likelihood of failure distributed between minimum of 1.508e-03 and maximum of 1.973e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 2.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 16.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 97.06 and maximum of 97.06 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 10.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
136. "PECO TO BRAZEAU NPS 3
     1. Total Cumulative Length (m): 173.55
        1. TPD : 173.55
     2. Likelihood of failure distributed between minimum of 1.772e-03 and maximum of 2.704e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 1.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 12.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 80.38 and maximum of 80.38 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 9.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
137. "NIPISI CONDENSATE NPS 6
     1. Total Cumulative Length (m): 171.51
        1. IC Method 1 : 171.51
     2. Likelihood of failure distributed between minimum of 9.117e-01 and maximum of 9.117e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 112.52 and maximum of 112.52 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
     6. Product type is Condensate.
     7. Class area location is/are nan."
138. "KERROBERT TO SASK ENERGY FUEL GAS NPS 2
     1. Total Cumulative Length (m): 163.47
        1. IC Method 1 : 163.47
     2. Likelihood of failure distributed between minimum of 9.066e-01 and maximum of 9.160e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 20.0, with minimum of 0.0 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 10.69 and maximum of 10.69 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 21.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 39.77 and maximum of 39.77 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 22.0, with minimum of 0.0 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 38.44 and maximum of 38.44 meters.
     6. Product type is FG.
     7. Class area location is/are 1.0."
139. "NPS3 Eta Lake to Cynthia Booster Station From 2-7-51-11W5 To 9-16-51
     1. Total Cumulative Length (m): 150.93
        1. TPD : 150.93
     2. Likelihood of failure distributed between minimum of 3.525e-03 and maximum of 1.402e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 1.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 10.79 and maximum of 10.79 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 4.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 69.76 and maximum of 69.76 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 4.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 50.19 and maximum of 50.19 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
140. "NORTH MARSDEN TIE IN TO WINTER TIE IN NPS 12
     1. Total Cumulative Length (m): 147.99
        1. TPD : 147.99
     2. Likelihood of failure distributed between minimum of 2.055e-03 and maximum of 4.255e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 6.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 4.11 and maximum of 4.11 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 6.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 79.49 and maximum of 79.49 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 9.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 16.44 and maximum of 16.44 meters.
     6. Product type is Blend.
     7. Class area location is/are 1.0."
141. "RAVEN RIVER PS TO SUNDRE PS NPS 8
     1. Total Cumulative Length (m): 145.88
        1. TPD : 145.88
     2. Likelihood of failure distributed between minimum of 2.338e-03 and maximum of 2.362e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 4.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 26.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 138.23 and maximum of 138.23 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 13.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
     6. Product type is LVP Products.
     7. Class area location is/are 1.0."
142. "WEST SENLAC TO UNITY NPS 6
     1. Total Cumulative Length (m): 130.91
        1. TPD : 130.91
     2. Likelihood of failure distributed between minimum of 3.979e-03 and maximum of 7.081e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 9.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 4.11 and maximum of 4.11 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 6.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 43.8 and maximum of 43.8 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 11.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 16.44 and maximum of 16.44 meters.
     6. Product type is Blend.
     7. Class area location is/are 1.0."
143. "OLDS TO HARMATTAN NPS 3
     1. Total Cumulative Length (m): 127.74
        1. MD Method 1 : 127.74
     2. Likelihood of failure distributed between minimum of 1.149e-01 and maximum of 1.149e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 7.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 11.09 and maximum of 11.09 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 21.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 63.72 and maximum of 63.72 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 19.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 45.25 and maximum of 45.25 meters.
     6. Product type is Condensate.
     7. Class area location is/are 1.0."
144. "ELLERSLIE TO STRATHCONA NPS 12
     1. Total Cumulative Length (m): 123.85
        1. TPD : 3.94
        2. MD Method 2 : 119.91
     2. Likelihood of failure distributed between minimum of 1.004e-03 and maximum of 5.185e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 90.0, with minimum of 2.97 and maximum of 2.97 of population impacted
        2. Hazard area distributed between minimum of 3.83 and maximum of 3.83 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 163.0, with minimum of 16.65 and maximum of 114.0 of population impacted
        2. Hazard area distributed between minimum of 74.05 and maximum of 74.05 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 187.0, with minimum of 2.97 and maximum of 2.97 of population impacted
        2. Hazard area distributed between minimum of 15.32 and maximum of 15.32 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 4.0."
145. "STATION 1 TO BUCK CREEK FRAC PLANT NPS 3
     1. Total Cumulative Length (m): 122.71
        1. TPD : 122.71
     2. Likelihood of failure distributed between minimum of 7.056e-03 and maximum of 1.503e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 1.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 8.97 and maximum of 8.97 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 4.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 56.62 and maximum of 56.62 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 2.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 28.72 and maximum of 28.72 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
146. "NPS8 Empress to Laporte from 5-12-20-1W4 to 4-2-27-26W3
     1. Total Cumulative Length (m): 115.9
        1. TPD : 115.9
     2. Likelihood of failure distributed between minimum of 2.967e-03 and maximum of 8.104e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 7.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 11.0, with minimum of 17.23 and maximum of 17.23 of population impacted
        2. Hazard area distributed between minimum of 158.1 and maximum of 158.1 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 13.0, with minimum of 17.23 and maximum of 17.23 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is NGL.
     7. Class area location is/are 1.0."
147. "NPS8 Laporte to Kerrobert from 4-2-27-26W3 to 4-34-33-22W3
     1. Total Cumulative Length (m): 115.76
        1. TPD : 115.76
     2. Likelihood of failure distributed between minimum of 8.104e-03 and maximum of 8.104e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 5.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 21.0, with minimum of 17.23 and maximum of 17.23 of population impacted
        2. Hazard area distributed between minimum of 158.1 and maximum of 158.1 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 14.0, with minimum of 17.23 and maximum of 17.23 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is NGL.
     7. Class area location is/are 1.0."
148. "NPS6 Brazeau NGL Lateral to Stn 8 From 5-31-48-12W5 To 4-5-49-9W5
     1. Total Cumulative Length (m): 113.38
        1. TPD : 113.38
     2. Likelihood of failure distributed between minimum of 1.232e-03 and maximum of 1.232e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 3.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 11.49 and maximum of 11.49 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 49.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 120.73 and maximum of 120.73 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 20.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 53.83 and maximum of 53.83 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
149. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5
     1. Total Cumulative Length (m): 110.96
        1. TPD : 110.96
     2. Likelihood of failure distributed between minimum of 1.864e-03 and maximum of 7.150e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 207.0, with minimum of 2.28 and maximum of 2.97 of population impacted
        2. Hazard area distributed between minimum of 3.95 and maximum of 3.95 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 109.0, with minimum of 2.97 and maximum of 4.56 of population impacted
        2. Hazard area distributed between minimum of 53.42 and maximum of 53.42 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 228.0, with minimum of 2.28 and maximum of 2.97 of population impacted
        2. Hazard area distributed between minimum of 15.77 and maximum of 15.77 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 1.0."
150. "LAPORTE TO KERROBERT NPS 10
     1. Total Cumulative Length (m): 110.26
        1. TPD : 110.26
     2. Likelihood of failure distributed between minimum of 2.144e-03 and maximum of 6.778e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 6.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 24.0, with minimum of 17.23 and maximum of 17.23 of population impacted
        2. Hazard area distributed between minimum of 186.5 and maximum of 186.5 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 12.0, with minimum of 17.23 and maximum of 17.23 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is NGL.
     7. Class area location is/are 1.0."
151. "SOUTH GARRINGTON 12-24 TO 04-16 NPS 4
     1. Total Cumulative Length (m): 98.8
        1. TPD : 98.8
     2. Likelihood of failure distributed between minimum of 8.540e-03 and maximum of 8.540e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 9.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 3.95 and maximum of 3.95 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 11.0, with minimum of 2.28 and maximum of 4.56 of population impacted
        2. Hazard area distributed between minimum of 29.55 and maximum of 29.55 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 14.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 15.77 and maximum of 15.77 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 1.0."
152. "NPS8 Petro Vera to Lone Rock From 13-11-47-27-W3 To 16-10-47-27-W3
     1. Total Cumulative Length (m): 98.03
        1. EC Method 1 : 98.03
     2. Likelihood of failure distributed between minimum of 9.903e-01 and maximum of 9.912e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 5.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 2.28 and maximum of 2.28 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 3.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 30.46 and maximum of 30.46 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 6.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 8.99 and maximum of 8.99 meters.
     6. Product type is Blend.
     7. Class area location is/are 1.0."
153. "MEDICINE RIVER JUNCTION TO RAVEN RIVER PUMP STATION NPS 8
     1. Total Cumulative Length (m): 97.27
        1. TPD : 97.27
     2. Likelihood of failure distributed between minimum of 2.329e-03 and maximum of 2.329e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 11.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 12.03 and maximum of 12.03 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 71.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 138.23 and maximum of 138.23 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 35.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 48.58 and maximum of 48.58 meters.
     6. Product type is LVP Products.
     7. Class area location is/are 1.0."
154. "GARRINGTON LATERAL NPS 3
     1. Total Cumulative Length (m): 89.88
        1. TPD : 89.88
     2. Likelihood of failure distributed between minimum of 7.141e-03 and maximum of 1.430e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 0.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 1.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 80.38 and maximum of 80.38 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 1.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
155. "SYLVAN LAKE 01-21 TO 13-32 NPS 4
     1. Total Cumulative Length (m): 85.52
        1. MD Method 1 : 85.52
     2. Likelihood of failure distributed between minimum of 1.048e-01 and maximum of 1.181e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 13.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 19.59 and maximum of 19.59 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 21.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 85.15 and maximum of 85.15 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 19.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 53.75 and maximum of 53.75 meters.
     6. Product type is Butane/Condensate.
     7. Class area location is/are 1.0."
156. "BONAVISTA 10-28 TO 10-7 NPS 4
     1. Total Cumulative Length (m): 85.12
        1. MD Method 1 : 85.12
     2. Likelihood of failure distributed between minimum of 1.146e-01 and maximum of 1.146e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 5.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 3.79 and maximum of 3.79 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 29.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 28.36 and maximum of 28.36 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 27.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 15.13 and maximum of 15.13 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 1.0."
157. "CROOKED LAKE TO GILBY LATERAL NPS 6
     1. Total Cumulative Length (m): 84.12
        1. MD Method 1 : 84.12
     2. Likelihood of failure distributed between minimum of 1.067e-02 and maximum of 1.247e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 1.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 3.95 and maximum of 3.95 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 11.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 42.02 and maximum of 42.02 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 2.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 15.77 and maximum of 15.77 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 1.0."
158. "NPS6 Emerge From 2-6-49-27W3 To 11-33-48-27W3
     1. Total Cumulative Length (m): 65.88
        1. TPD : 65.88
     2. Likelihood of failure distributed between minimum of 5.419e-03 and maximum of 8.451e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 6.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 4.11 and maximum of 4.11 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 10.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 43.81 and maximum of 43.81 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 12.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 16.44 and maximum of 16.44 meters.
     6. Product type is Blend.
     7. Class area location is/are 1.0."
159. "STRATHCONA INTERPIPE CONNECTION NPS 12
     1. Total Cumulative Length (m): 64.93
        1. IC Method 1 : 64.93
     2. Likelihood of failure distributed between minimum of 9.035e-01 and maximum of 9.090e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 1.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 3.93 and maximum of 3.93 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 1.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 75.84 and maximum of 75.84 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 2.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 15.69 and maximum of 15.69 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 1.0."
160. "NPS8 Red Earth to Rainbow P/L tie-in From 9-18-87-8-W5 To 15-29-81-9-W
     1. Total Cumulative Length (m): 63.1
        1. TPD : 63.1
     2. Likelihood of failure distributed between minimum of 1.862e-03 and maximum of 1.862e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 102.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 3.95 and maximum of 3.95 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 85.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 53.42 and maximum of 53.42 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 154.0, with minimum of 2.28 and maximum of 2.28 of population impacted
        2. Hazard area distributed between minimum of 15.77 and maximum of 15.77 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 2.0."
161. "EMPRESS TO LAPORTE NPS 10
     1. Total Cumulative Length (m): 55.82
        1. TPD : 55.82
     2. Likelihood of failure distributed between minimum of 2.147e-03 and maximum of 6.559e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 4.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 12.24 and maximum of 12.24 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 14.0, with minimum of 17.23 and maximum of 17.23 of population impacted
        2. Hazard area distributed between minimum of 186.5 and maximum of 186.5 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 10.0, with minimum of 17.23 and maximum of 17.23 of population impacted
        2. Hazard area distributed between minimum of 57.84 and maximum of 57.84 meters.
     6. Product type is NGL.
     7. Class area location is/are 1.0."
162. "DULWICH TO LONE ROCK BLEND NPS 10
     1. Total Cumulative Length (m): 48.44
        1. TPD : 48.44
     2. Likelihood of failure distributed between minimum of 2.173e-03 and maximum of 2.173e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 7.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 4.02 and maximum of 4.02 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 11.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 66.55 and maximum of 66.55 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 9.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 16.08 and maximum of 16.08 meters.
     6. Product type is Blend.
     7. Class area location is/are 1.0."
163. "MI-97 NPS 10
     1. Total Cumulative Length (m): 43.13
        1. TPD : 43.13
     2. Likelihood of failure distributed between minimum of 7.125e-03 and maximum of 7.125e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 6.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 3.59 and maximum of 3.59 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 23.0, with minimum of 2.52 and maximum of 2.52 of population impacted
        2. Hazard area distributed between minimum of 59.2 and maximum of 59.2 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 14.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 14.3 and maximum of 14.3 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 2.0."
164. "NPS8 Condensate to Enbridge From 03-05-053-23W4 To 02-05-053-23W4
     1. Total Cumulative Length (m): 38.22
        1. EC Method 1 : 38.22
     2. Likelihood of failure distributed between minimum of 6.261e-02 and maximum of 1.434e-01.
     3. Leak scenario:
        1. No. of intersections with structures is 1.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 11.13 and maximum of 11.13 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 1.0, with minimum of 13.87 and maximum of 13.87 of population impacted
        2. Hazard area distributed between minimum of 129.12 and maximum of 129.12 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 1.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 45.37 and maximum of 45.37 meters.
     6. Product type is Condensate.
     7. Class area location is/are 1.0."
165. "WASCANA LATERAL NPS 16
     1. Total Cumulative Length (m): 31.36
        1. TPD : 31.36
     2. Likelihood of failure distributed between minimum of 2.045e-03 and maximum of 2.045e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 2253.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 3.81 and maximum of 3.81 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 94.0, with minimum of 32.0 and maximum of 32.0 of population impacted
        2. Hazard area distributed between minimum of 90.55 and maximum of 90.55 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 565.0, with minimum of 0.0 and maximum of 0.0 of population impacted
        2. Hazard area distributed between minimum of 15.23 and maximum of 15.23 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 1.0."
166. "SUNDRE TO SPRINGDALE NPS 12
     1. Total Cumulative Length (m): 29.99
        1. SCC Method 1b : 29.99
     2. Likelihood of failure distributed between minimum of 1.400e-02 and maximum of 1.400e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 21.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 4.15 and maximum of 4.15 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 85.0, with minimum of 5.82 and maximum of 5.82 of population impacted
        2. Hazard area distributed between minimum of 80.22 and maximum of 80.22 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 54.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 16.59 and maximum of 16.59 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 2.0."
167. "PINCHER CREEK TO CARWAY NPS 12
     1. Total Cumulative Length (m): 29.99
        1. MD Method 2 : 29.99
     2. Likelihood of failure distributed between minimum of 1.087e-02 and maximum of 1.087e-02.
     3. Leak scenario:
        1. No. of intersections with structures is 1.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 4.11 and maximum of 4.11 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 21.0, with minimum of 4.56 and maximum of 4.56 of population impacted
        2. Hazard area distributed between minimum of 79.49 and maximum of 79.49 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 2.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 16.44 and maximum of 16.44 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 1.0."
168. "MARIPOSA TO KERROBERT NPS 12 (BLEND LOOP)
     1. Total Cumulative Length (m): 16.22
        1. TPD : 16.22
     2. Likelihood of failure distributed between minimum of 1.734e-03 and maximum of 4.141e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 15.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 4.05 and maximum of 4.05 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 10.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 78.38 and maximum of 78.38 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 17.0, with minimum of 1.26 and maximum of 1.26 of population impacted
        2. Hazard area distributed between minimum of 16.21 and maximum of 16.21 meters.
     6. Product type is Blend.
     7. Class area location is/are 1.0."
169. "Windsor to Detroit NPS12
     1. Total Cumulative Length (m): 2.63
        1. TPD : 2.63
     2. Likelihood of failure distributed between minimum of 1.214e-03 and maximum of 1.214e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 9.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 11.61 and maximum of 11.61 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 8.0, with minimum of 30.26 and maximum of 30.26 of population impacted
        2. Hazard area distributed between minimum of 199.6 and maximum of 199.6 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 23.0, with minimum of 25.22 and maximum of 25.22 of population impacted
        2. Hazard area distributed between minimum of 54.47 and maximum of 54.47 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 2.0."
170. "WASCANA MAINLINE NPS 12
     1. Total Cumulative Length (m): 1.62
        1. TPD : 1.62
     2. Likelihood of failure distributed between minimum of 1.169e-03 and maximum of 1.169e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 9.0, with minimum of nan and maximum of nan of population impacted
        2. Hazard area distributed between minimum of 3.83 and maximum of 3.83 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 34.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 73.88 and maximum of 73.88 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 18.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 15.28 and maximum of 15.28 meters.
     6. Product type is Crude Oil.
     7. Class area location is/are 2.0."
171. "BV 204 TO EST NPS 12
     1. Total Cumulative Length (m): 0.8
        1. TPD : 0.8
     2. Likelihood of failure distributed between minimum of 1.466e-03 and maximum of 1.466e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 55.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 9.03 and maximum of 9.03 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 11.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 150.44 and maximum of 150.44 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 57.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 28.91 and maximum of 28.91 meters.
     6. Product type is NGL.
     7. Class area location is/are 1.0."
172. "16 EST to Enbridge from 7-5-53-23W4 to 14-5-53-23W4
     1. Total Cumulative Length (m): 0.33
        1. TPD : 0.33
     2. Likelihood of failure distributed between minimum of 1.114e-03 and maximum of 1.114e-03.
     3. Leak scenario:
        1. No. of intersections with structures is 34.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 9.03 and maximum of 9.03 meters.
     4. Rupture scenario:
        1. No. of intersections with structures is 6.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 178.36 and maximum of 178.36 meters.
     5. Puncture scenario:
        1. No. of intersections with structures is 38.0, with minimum of 12.61 and maximum of 12.61 of population impacted
        2. Hazard area distributed between minimum of 28.91 and maximum of 28.91 meters.
     6. Product type is HVP Product.
     7. Class area location is/are 1.0."
     8. Environmental Consequence Reportable Pipeline Segments
173. "UTIKUMA TO EDMONTON NPS 24,
     1. Total Cumulative Length (m): 17896.03,
        1. EC Method 2 : 30.0
        2. SCC Method 2 : 17866.03
     2. Likelihood of failure distributed between minimum of 9.116e-02 and maximum of 7.106e-01.,
     3. Consequence of failure distributed between minimum of $10.01 and maximum of $106.45 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.15 and maximum of $70.45 Millions of dollars
        2. Spill volume is between a minimum of 1394.24 and maximum of 463178.48 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $15.84 and maximum of $156.03 Millions of dollars
        2. Spill volume is between a minimum of 134802.13 and maximum of 877018.37 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $2.96 and maximum of $70.45 Millions of dollars
        2. Spill volume is between a minimum of 27917.27 and maximum of 463178.48 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 9,160.62, Commercial/Industrial: 0.10, Forested: 3,982.77, High Density Residential: 3.51, Low Density Residential: 0.10, Remote: 4,636.77, Water Course: 112.16"
174. "ZN-70/ZN-89/ZN-90 NPS 8,
     1. Total Cumulative Length (m): 16073.65,
        1. MD Method 1 : 16073.65
     2. Likelihood of failure distributed between minimum of 1.018e-01 and maximum of 1.019e-01.,
     3. Consequence of failure distributed between minimum of $11.92 and maximum of $20.72 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.15 and maximum of $0.26 Millions of dollars
        2. Spill volume is between a minimum of 1398.53 and maximum of 1606.02 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $71.14 and maximum of $123.62 Millions of dollars
        2. Spill volume is between a minimum of 671208.81 and maximum of 770790.15 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $4.87 and maximum of $8.46 Millions of dollars
        2. Spill volume is between a minimum of 45952.54 and maximum of 52770.12 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Forested: 7,263.99, Remote: 8,769.80, Water Course: 39.86"
175. "SSPL TRUNK LINE NPS 12,
     1. Total Cumulative Length (m): 8577.99,
        1. MD Method 2 : 8577.99
     2. Likelihood of failure distributed between minimum of 9.008e-01 and maximum of 1.000e+00.,
     3. Consequence of failure distributed between minimum of $1.00 and maximum of $2.84 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.18 and maximum of $0.39 Millions of dollars
        2. Spill volume is between a minimum of 1715.23 and maximum of 2217.74 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $4.81 and maximum of $15.45 Millions of dollars
        2. Spill volume is between a minimum of 45418.47 and maximum of 127296.67 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $5.97 and maximum of $12.65 Millions of dollars
        2. Spill volume is between a minimum of 56358.71 and maximum of 72869.87 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 6,348.83, Remote: 2,035.23, Water Course: 193.92"
176. "NPS8 SARNIA CONDENSATE TO SUNCOR,
     1. Total Cumulative Length (m): 7547.74,
        1. MD Method 1 : 7547.74
     2. Likelihood of failure distributed between minimum of 1.003e-01 and maximum of 1.796e-01.,
     3. Consequence of failure distributed between minimum of $15.82 and maximum of $29.41 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.20 and maximum of $0.35 Millions of dollars
        2. Spill volume is between a minimum of 1889.11 and maximum of 1989.97 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $96.10 and maximum of $169.14 Millions of dollars
        2. Spill volume is between a minimum of 906656.27 and maximum of 955064.68 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $6.58 and maximum of $11.58 Millions of dollars
        2. Spill volume is between a minimum of 62071.83 and maximum of 65385.99 gallons,
     7. Product type is Condensate.
     8. Land Use is distributed as follows
        1. Agricultural: 1,826.34, Forested: 1,528.89, Utility Corridor: 4,191.21, Water Course: 1.30"
177. "SS-15 NPS 6,
     1. Total Cumulative Length (m): 5229.36,
        1. IC Method 1 : 5229.36
     2. Likelihood of failure distributed between minimum of 9.211e-01 and maximum of 9.263e-01.,
     3. Consequence of failure distributed between minimum of $1.39 and maximum of $1.59 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.20 and maximum of $0.21 Millions of dollars
        2. Spill volume is between a minimum of 1853.91 and maximum of 1962.4 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $55.64 and maximum of $58.90 Millions of dollars
        2. Spill volume is between a minimum of 524962.0 and maximum of 555682.93 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $6.46 and maximum of $6.83 Millions of dollars
        2. Spill volume is between a minimum of 60915.28 and maximum of 64480.05 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 5,229.36"
178. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4,
     1. Total Cumulative Length (m): 4863.2,
        1. MD Method 2 : 4863.2
     2. Likelihood of failure distributed between minimum of 9.005e-01 and maximum of 1.000e+00.,
     3. Consequence of failure distributed between minimum of $1.01 and maximum of $3.97 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.16 and maximum of $0.35 Millions of dollars
        2. Spill volume is between a minimum of 1529.63 and maximum of 2279.8 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $5.03 and maximum of $22.46 Millions of dollars
        2. Spill volume is between a minimum of 40565.87 and maximum of 211909.33 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $5.33 and maximum of $11.64 Millions of dollars
        2. Spill volume is between a minimum of 50260.28 and maximum of 74909.09 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 4,600.43, Forested: 162.68, Remote: 90.00, Water Course: 10.10"
179. "COED BV 203 TO EST NPS 8,
     1. Total Cumulative Length (m): 2259.9,
        1. IC Method 1 : 2259.9
     2. Likelihood of failure distributed between minimum of 9.299e-01 and maximum of 9.718e-01.,
     3. Consequence of failure distributed between minimum of $4.66 and maximum of $13.35 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.13 and maximum of $0.35 Millions of dollars
        2. Spill volume is between a minimum of 1973.38 and maximum of 2019.77 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $64.53 and maximum of $169.76 Millions of dollars
        2. Spill volume is between a minimum of 947101.66 and maximum of 969363.57 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $4.42 and maximum of $11.62 Millions of dollars
        2. Spill volume is between a minimum of 64840.82 and maximum of 66364.92 gallons,
     7. Product type is Condensate.
     8. Land Use is distributed as follows
        1. Commercial/Industrial: 2,256.78, Water Course: 3.12"
180. "MADDEN 13-30 TO SUNDRE 16-8 NPS 8,
     1. Total Cumulative Length (m): 1391.33,
        1. MD Method 1 : 1391.33
     2. Likelihood of failure distributed between minimum of 9.003e-01 and maximum of 9.167e-01.,
     3. Consequence of failure distributed between minimum of $1.00 and maximum of $1.83 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.16 and maximum of $0.31 Millions of dollars
        2. Spill volume is between a minimum of 1464.95 and maximum of 1739.6 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $2.36 and maximum of $9.17 Millions of dollars
        2. Spill volume is between a minimum of 22230.68 and maximum of 51528.46 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $5.10 and maximum of $10.15 Millions of dollars
        2. Spill volume is between a minimum of 48134.95 and maximum of 57159.28 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 167.18, Water Course: 1,224.15"
181. "16-19-037-03W5 TO 10-19-037-03W5 NPS 4,
     1. Total Cumulative Length (m): 761.03,
        1. IC Method 1 : 761.03
     2. Likelihood of failure distributed between minimum of 9.214e-01 and maximum of 9.214e-01.,
     3. Consequence of failure distributed between minimum of $1.41 and maximum of $1.43 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.20 and maximum of $0.20 Millions of dollars
        2. Spill volume is between a minimum of 1854.82 and maximum of 1869.87 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $25.68 and maximum of $25.89 Millions of dollars
        2. Spill volume is between a minimum of 242322.23 and maximum of 244289.53 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $6.46 and maximum of $6.51 Millions of dollars
        2. Spill volume is between a minimum of 60945.04 and maximum of 61439.82 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 761.03"
182. "RAINBOW LAKE TO CADOTTE NPS 20,
     1. Total Cumulative Length (m): 556.81,
        1. SCC Method 2 : 209.97
        2. MD Method 2 : 329.96
        3. CT : 16.87
     2. Likelihood of failure distributed between minimum of 1.053e-01 and maximum of 3.939e-01.,
     3. Consequence of failure distributed between minimum of $12.01 and maximum of $52.13 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.21 and maximum of $0.37 Millions of dollars
        2. Spill volume is between a minimum of 1673.49 and maximum of 2554.65 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $32.90 and maximum of $120.84 Millions of dollars
        2. Spill volume is between a minimum of 184947.54 and maximum of 1140132.84 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $6.96 and maximum of $12.22 Millions of dollars
        2. Spill volume is between a minimum of 54987.09 and maximum of 83939.9 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 170.37, Forested: 210.49, Remote: 149.98, Water Course: 25.97"
183. "Access C5 Line 36,
     1. Total Cumulative Length (m): 404.28,
        1. EC Method 1 : 404.28
     2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.907e-01.,
     3. Consequence of failure distributed between minimum of $1.21 and maximum of $1.24 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.13 and maximum of $0.14 Millions of dollars
        2. Spill volume is between a minimum of 1973.44 and maximum of 1981.77 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $38.08 and maximum of $38.24 Millions of dollars
        2. Spill volume is between a minimum of 558809.69 and maximum of 561166.98 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $4.42 and maximum of $4.44 Millions of dollars
        2. Spill volume is between a minimum of 64842.88 and maximum of 65116.41 gallons,
     7. Product type is LVP Products.
     8. Land Use is distributed as follows
        1. Commercial/Industrial: 404.28"
184. "Access C5 Line 37,
     1. Total Cumulative Length (m): 404.14,
        1. EC Method 1 : 404.14
     2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.907e-01.,
     3. Consequence of failure distributed between minimum of $1.21 and maximum of $1.24 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.13 and maximum of $0.14 Millions of dollars
        2. Spill volume is between a minimum of 1973.44 and maximum of 1981.77 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $38.08 and maximum of $38.24 Millions of dollars
        2. Spill volume is between a minimum of 558809.69 and maximum of 561166.19 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $4.42 and maximum of $4.44 Millions of dollars
        2. Spill volume is between a minimum of 64842.88 and maximum of 65116.32 gallons,
     7. Product type is LVP Products.
     8. Land Use is distributed as follows
        1. Commercial/Industrial: 404.14"
185. "CADOTTE LAKE TO UTIKUMA STATION NPS 20,
     1. Total Cumulative Length (m): 320.83,
        1. SCC Method 2 : 260.84
        2. MD Method 2 : 59.99
     2. Likelihood of failure distributed between minimum of 1.276e-01 and maximum of 9.895e-01.,
     3. Consequence of failure distributed between minimum of $1.94 and maximum of $25.90 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.20 and maximum of $0.39 Millions of dollars
        2. Spill volume is between a minimum of 1848.94 and maximum of 2973.33 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $10.59 and maximum of $59.30 Millions of dollars
        2. Spill volume is between a minimum of 99872.03 and maximum of 559504.4 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $6.44 and maximum of $12.86 Millions of dollars
        2. Spill volume is between a minimum of 60751.93 and maximum of 97696.98 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 29.99, Forested: 152.98, Remote: 136.99, Water Course: 0.86"
186. "14-02 to 12-02 NPS 24,
     1. Total Cumulative Length (m): 317.4,
        1. EC Method 1 : 317.4
     2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.902e-01.,
     3. Consequence of failure distributed between minimum of $9.30 and maximum of $9.37 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.09 and maximum of $0.09 Millions of dollars
        2. Spill volume is between a minimum of 825.78 and maximum of 832.0 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $325.26 and maximum of $327.70 Millions of dollars
        2. Spill volume is between a minimum of 3068711.06 and maximum of 3091803.54 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $2.88 and maximum of $2.90 Millions of dollars
        2. Spill volume is between a minimum of 27133.36 and maximum of 27337.55 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 317.40"
187. "CROMER DELIVERY LATERAL NPS 8,
     1. Total Cumulative Length (m): 218.89,
        1. EC Method 1 : 27.36
        2. MD Method 1 : 191.53
     2. Likelihood of failure distributed between minimum of 1.020e-01 and maximum of 9.931e-01.,
     3. Consequence of failure distributed between minimum of $12.33 and maximum of $26.57 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.20 and maximum of $0.33 Millions of dollars
        2. Spill volume is between a minimum of 1854.53 and maximum of 1858.45 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $94.54 and maximum of $158.69 Millions of dollars
        2. Spill volume is between a minimum of 890061.32 and maximum of 891942.44 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $6.47 and maximum of $10.86 Millions of dollars
        2. Spill volume is between a minimum of 60935.7 and maximum of 61064.49 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 51.66, Bush/Creek: 167.23"
188. "UNITY TO LONE ROCK NPS 4,
     1. Total Cumulative Length (m): 119.97,
        1. SCC Method 1b : 119.97
     2. Likelihood of failure distributed between minimum of 1.190e-01 and maximum of 4.814e-01.,
     3. Consequence of failure distributed between minimum of $12.15 and maximum of $13.77 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.21 and maximum of $0.24 Millions of dollars
        2. Spill volume is between a minimum of 1972.39 and maximum of 2232.64 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $27.31 and maximum of $30.92 Millions of dollars
        2. Spill volume is between a minimum of 257682.32 and maximum of 291682.48 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $6.87 and maximum of $7.78 Millions of dollars
        2. Spill volume is between a minimum of 64808.16 and maximum of 73359.34 gallons,
     7. Product type is Condensate.
     8. Land Use is distributed as follows
        1. Agricultural: 119.97"
189. "NI-95 NPS 8,
     1. Total Cumulative Length (m): 107.19,
        1. SCC Method 1b : 107.19
     2. Likelihood of failure distributed between minimum of 2.171e-01 and maximum of 6.961e-01.,
     3. Consequence of failure distributed between minimum of $39.65 and maximum of $40.69 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.19 and maximum of $0.19 Millions of dollars
        2. Spill volume is between a minimum of 1800.82 and maximum of 1810.77 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $91.61 and maximum of $92.11 Millions of dollars
        2. Spill volume is between a minimum of 864282.66 and maximum of 869059.11 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $6.27 and maximum of $6.31 Millions of dollars
        2. Spill volume is between a minimum of 59170.84 and maximum of 59497.84 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 107.19"
190. "SS-11 NPS 6,
     1. Total Cumulative Length (m): 89.97,
        1. SCC Method 1b : 89.97
     2. Likelihood of failure distributed between minimum of 1.145e-01 and maximum of 5.500e-01.,
     3. Consequence of failure distributed between minimum of $25.66 and maximum of $26.10 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.20 and maximum of $0.21 Millions of dollars
        2. Spill volume is between a minimum of 1933.12 and maximum of 1958.94 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $58.02 and maximum of $58.79 Millions of dollars
        2. Spill volume is between a minimum of 547391.09 and maximum of 554702.8 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $6.73 and maximum of $6.82 Millions of dollars
        2. Spill volume is between a minimum of 63517.89 and maximum of 64366.32 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Remote: 89.97"
191. "SS-03 NPS 6,
     1. Total Cumulative Length (m): 59.06,
        1. SCC Method 1b : 59.06
     2. Likelihood of failure distributed between minimum of 3.816e-01 and maximum of 9.522e-01.,
     3. Consequence of failure distributed between minimum of $22.25 and maximum of $23.96 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.19 and maximum of $0.19 Millions of dollars
        2. Spill volume is between a minimum of 1815.99 and maximum of 1815.99 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $54.50 and maximum of $54.50 Millions of dollars
        2. Spill volume is between a minimum of 514224.45 and maximum of 514224.45 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $6.32 and maximum of $6.32 Millions of dollars
        2. Spill volume is between a minimum of 59669.32 and maximum of 59669.32 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 59.06"
192. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5,
     1. Total Cumulative Length (m): 30.0,
        1. SCC Method 1b : 30.0
     2. Likelihood of failure distributed between minimum of 9.984e-01 and maximum of 9.984e-01.,
     3. Consequence of failure distributed between minimum of $48.84 and maximum of $48.89 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.22 and maximum of $0.22 Millions of dollars
        2. Spill volume is between a minimum of 2045.08 and maximum of 2047.2 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $104.03 and maximum of $104.14 Millions of dollars
        2. Spill volume is between a minimum of 981512.08 and maximum of 982532.16 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $7.12 and maximum of $7.13 Millions of dollars
        2. Spill volume is between a minimum of 67196.64 and maximum of 67266.48 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Remote: 30.00"
193. "WASCANA MAINLINE NPS 12,
     1. Total Cumulative Length (m): 30.0,
        1. MD Method 2 : 30.0
     2. Likelihood of failure distributed between minimum of 1.369e-01 and maximum of 1.394e-01.,
     3. Consequence of failure distributed between minimum of $11.78 and maximum of $11.80 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.26 and maximum of $0.26 Millions of dollars
        2. Spill volume is between a minimum of 2406.46 and maximum of 2406.46 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $69.54 and maximum of $69.54 Millions of dollars
        2. Spill volume is between a minimum of 656052.52 and maximum of 656052.52 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $8.38 and maximum of $8.38 Millions of dollars
        2. Spill volume is between a minimum of 79070.96 and maximum of 79070.96 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 30.00"
194. "NPS8 Red Earth to Rainbow P/L tie-in From 9-18-87-8-W5 To 15-29-81-9-W,
     1. Total Cumulative Length (m): 29.99,
        1. SCC Method 1b : 29.99
     2. Likelihood of failure distributed between minimum of 1.927e-01 and maximum of 1.927e-01.,
     3. Consequence of failure distributed between minimum of $33.21 and maximum of $33.21 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.19 and maximum of $0.19 Millions of dollars
        2. Spill volume is between a minimum of 1816.46 and maximum of 1816.54 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $92.40 and maximum of $92.41 Millions of dollars
        2. Spill volume is between a minimum of 871790.09 and maximum of 871826.89 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $6.33 and maximum of $6.33 Millions of dollars
        2. Spill volume is between a minimum of 59684.81 and maximum of 59687.33 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Forested: 29.99"
195. "CACTUS LAKE TO KERROBERT NPS 10,
     1. Total Cumulative Length (m): 29.99,
        1. SCC Method 1b : 29.99
     2. Likelihood of failure distributed between minimum of 9.090e-01 and maximum of 9.090e-01.,
     3. Consequence of failure distributed between minimum of $1.14 and maximum of $1.14 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.23 and maximum of $0.23 Millions of dollars
        2. Spill volume is between a minimum of 2216.94 and maximum of 2216.94 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $2.25 and maximum of $2.25 Millions of dollars
        2. Spill volume is between a minimum of 21243.81 and maximum of 21243.81 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $7.72 and maximum of $7.72 Millions of dollars
        2. Spill volume is between a minimum of 72843.58 and maximum of 72843.58 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Remote: 29.99"
196. "BRETON TO EDMONTON NPS 8,
     1. Total Cumulative Length (m): 29.99,
        1. MD Method 2 : 29.99
     2. Likelihood of failure distributed between minimum of 9.239e-01 and maximum of 9.239e-01.,
     3. Consequence of failure distributed between minimum of $1.52 and maximum of $1.52 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.28 and maximum of $0.28 Millions of dollars
        2. Spill volume is between a minimum of 2636.76 and maximum of 2638.57 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $7.35 and maximum of $7.35 Millions of dollars
        2. Spill volume is between a minimum of 69321.25 and maximum of 69321.25 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $9.18 and maximum of $9.19 Millions of dollars
        2. Spill volume is between a minimum of 86637.92 and maximum of 86697.32 gallons,
     7. Product type is Condensate.
     8. Land Use is distributed as follows
        1. Agricultural: 29.99"
197. "SS-48 NPS 6,
     1. Total Cumulative Length (m): 29.96,
        1. SCC Method 1b : 29.96
     2. Likelihood of failure distributed between minimum of 1.018e-01 and maximum of 1.018e-01.,
     3. Consequence of failure distributed between minimum of $21.63 and maximum of $21.63 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.17 and maximum of $0.17 Millions of dollars
        2. Spill volume is between a minimum of 1650.03 and maximum of 1650.03 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $49.52 and maximum of $49.52 Millions of dollars
        2. Spill volume is between a minimum of 467229.46 and maximum of 467229.46 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $5.75 and maximum of $5.75 Millions of dollars
        2. Spill volume is between a minimum of 54216.14 and maximum of 54216.14 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Remote: 29.96"
198. "NPS4 Eckville Lateral From 06-18-039-03W5 to 04-33-039-03W5,
     1. Total Cumulative Length (m): 29.96,
        1. SCC Method 1b : 29.96
     2. Likelihood of failure distributed between minimum of 4.741e-01 and maximum of 4.741e-01.,
     3. Consequence of failure distributed between minimum of $10.03 and maximum of $10.04 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.18 and maximum of $0.18 Millions of dollars
        2. Spill volume is between a minimum of 1706.75 and maximum of 1708.59 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $23.63 and maximum of $23.66 Millions of dollars
        2. Spill volume is between a minimum of 222977.56 and maximum of 223218.44 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $5.94 and maximum of $5.95 Millions of dollars
        2. Spill volume is between a minimum of 56079.77 and maximum of 56140.35 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 29.96"
199. "SUNDRE TO BENTLEY NPS 8,
     1. Total Cumulative Length (m): 27.68,
        1. SCC Method 1b : 27.68
     2. Likelihood of failure distributed between minimum of 9.801e-01 and maximum of 9.801e-01.,
     3. Consequence of failure distributed between minimum of $1.24 and maximum of $1.25 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.11 and maximum of $0.11 Millions of dollars
        2. Spill volume is between a minimum of 2192.33 and maximum of 2274.9 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $2.62 and maximum of $2.62 Millions of dollars
        2. Spill volume is between a minimum of 53330.52 and maximum of 53330.52 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $3.54 and maximum of $3.68 Millions of dollars
        2. Spill volume is between a minimum of 72034.87 and maximum of 74748.07 gallons,
     7. Product type is Butane/Condensate.
     8. Land Use is distributed as follows
        1. Agricultural: 27.68"
200. "NPS6 Brookfield to Joffre From 15-20-38-25W4 To 15-17-39-26W4,
     1. Total Cumulative Length (m): 20.6,
        1. SCC Method 1b : 20.6
     2. Likelihood of failure distributed between minimum of 1.656e-01 and maximum of 1.656e-01.,
     3. Consequence of failure distributed between minimum of $26.28 and maximum of $26.28 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.22 and maximum of $0.22 Millions of dollars
        2. Spill volume is between a minimum of 2045.75 and maximum of 2045.75 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $61.40 and maximum of $61.40 Millions of dollars
        2. Spill volume is between a minimum of 579283.2 and maximum of 579283.2 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $7.12 and maximum of $7.12 Millions of dollars
        2. Spill volume is between a minimum of 67218.57 and maximum of 67218.57 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Agricultural: 20.60"
201. "NPS4 SS-57 From 10-27-10-19-W3 To 12-27-10-19-W3,
     1. Total Cumulative Length (m): 3.02,
        1. EC Method 1 : 3.02
     2. Likelihood of failure distributed between minimum of 9.903e-01 and maximum of 9.903e-01.,
     3. Consequence of failure distributed between minimum of $1.39 and maximum of $1.39 Millions of dollars,
     4. Leak scenario:
        1. Environmental cost between minimum of $0.29 and maximum of $0.29 Millions of dollars
        2. Spill volume is between a minimum of 1648.37 and maximum of 1648.37 gallons,
     5. Rupture scenario:
        1. Environmental cost between minimum of $38.31 and maximum of $38.31 Millions of dollars
        2. Spill volume is between a minimum of 215351.24 and maximum of 215351.24 gallons,
     6. Puncture scenario:
        1. Environmental cost between minimum of $9.64 and maximum of $9.64 Millions of dollars
        2. Spill volume is between a minimum of 54161.72 and maximum of 54161.72 gallons,
     7. Product type is Crude Oil.
     8. Land Use is distributed as follows
        1. Water Course: 3.02"
     9. Economic Loss Consequence Reportable Pipeline Segments
202. "SECT 7 MANSON TO RAPID CITY NPS 6
     1. Total Cumulative Length (m): 106821.69
        1. MD Method 1 : 106821.69
     2. Likelihood of failure distributed between minimum of 1.008e-01 and maximum of 1.789e-01.
     3. Consequence of failure distributed between minimum of $3.17 and maximum of $6.00 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $2.96 Millions of dollars
        2. No. of intersections with structures is 17.0, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.48 and maximum of 2.48 meters.
        4. Product Loss costs between minimum of $62,251.66 and maximum of $62,251.66
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $17.84 and maximum of $20.55 Millions of dollars
        2. No. of intersections with structures is 55.0, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 75.8 and maximum of 75.8 meters.
        4. Product Loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.26 and maximum of $4.95 Millions of dollars
        2. No. of intersections with structures is 39.0, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 34.91 and maximum of 34.91 meters.
        4. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13
     7. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
203. "SECT 1 EMPRESS TO CABRI NPS 6
     1. Total Cumulative Length (m): 93694.11
        1. MD Method 1 : 93694.11
     2. Likelihood of failure distributed between minimum of 1.006e-01 and maximum of 1.085e-01.
     3. Consequence of failure distributed between minimum of $3.18 and maximum of $23.54 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $20.62 Millions of dollars
        2. No. of intersections with structures is 18.0, with minimum of $25,000.00 and maximum of $20,349,375.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.48 and maximum of 2.48 meters.
        4. Product Loss costs between minimum of $62,251.66 and maximum of $62,251.66
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $17.84 and maximum of $38.21 Millions of dollars
        2. No. of intersections with structures is 45.0, with minimum of $25,000.00 and maximum of $20,374,375.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 75.8 and maximum of 75.8 meters.
        4. Product Loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.26 and maximum of $22.63 Millions of dollars
        2. No. of intersections with structures is 41.0, with minimum of $25,000.00 and maximum of $20,374,375.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 34.91 and maximum of 34.91 meters.
        4. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13
     7. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
204. "UTIKUMA TO EDMONTON NPS 24
     1. Total Cumulative Length (m): 32296.4
        1. EC Method 2 : 60.0
        2. SCC Method 2 : 32116.41
        3. MD Method 2 : 60.0
        4. RES : 60.0
     2. Likelihood of failure distributed between minimum of 8.629e-02 and maximum of 8.734e-01.
     3. Consequence of failure distributed between minimum of $2.50 and maximum of $12.92 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $2.47 and maximum of $5.49 Millions of dollars
        2. No. of intersections with structures is 644.0, with minimum of $18,600.00 and maximum of $2,688,250.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.15 and maximum of 2.15 meters.
        4. Product Loss costs between minimum of $1,514.19 and maximum of $513,907.55
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $2.54 and maximum of $25.63 Millions of dollars
        2. No. of intersections with structures is 346.0, with minimum of $25,000.00 and maximum of $22,663,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 72.08 and maximum of 72.08 meters.
        4. Product Loss costs between minimum of $69,532.38 and maximum of $973,072.76
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.48 and maximum of $5.57 Millions of dollars
        2. No. of intersections with structures is 730.0, with minimum of $18,600.00 and maximum of $2,713,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 8.39 and maximum of 8.39 meters.
        4. Product Loss costs between minimum of $3,183.95 and maximum of $513,907.55
     7. Repair costs between minimum of $73,000.00 and maximum of $404,000.00.
     8. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
     9. Product type is Crude Oil."
205. "BUCK CREEK FRAC PLANT TO BRETON NPS 6
     1. Total Cumulative Length (m): 30302.96
        1. MD Method 1 : 30302.96
     2. Likelihood of failure distributed between minimum of 1.017e-01 and maximum of 1.082e-01.
     3. Consequence of failure distributed between minimum of $1.66 and maximum of $4.35 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.24 and maximum of $2.93 Millions of dollars
        2. No. of intersections with structures is 6.0, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.73 and maximum of 1.73 meters.
        4. Product Loss costs between minimum of $30,397.21 and maximum of $30,397.21
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $8.82 and maximum of $15.40 Millions of dollars
        2. No. of intersections with structures is 33.0, with minimum of $18,600.00 and maximum of $6,579,225.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 58.56 and maximum of 58.56 meters.
        4. Product Loss costs between minimum of $8,607,418.48 and maximum of $8,607,418.48
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.21 and maximum of $3.90 Millions of dollars
        2. No. of intersections with structures is 15.0, with minimum of $18,600.00 and maximum of $2,688,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 26.97 and maximum of 26.97 meters.
        4. Product Loss costs between minimum of $998,783.28 and maximum of $998,783.28
     7. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is HVP Product."
206. "SSPL TRUNK LINE NPS 12
     1. Total Cumulative Length (m): 10786.69
        1. MD Method 2 : 10786.69
     2. Likelihood of failure distributed between minimum of 1.067e-01 and maximum of 1.000e+00.
     3. Consequence of failure distributed between minimum of $0.85 and maximum of $1.13 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.85 and maximum of $1.12 Millions of dollars
        2. No. of intersections with structures is 53.0, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.38 and maximum of 2.38 meters.
        4. Product Loss costs between minimum of $1,903.09 and maximum of $2,460.63
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.89 and maximum of $1.17 Millions of dollars
        2. No. of intersections with structures is 77.0, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 44.98 and maximum of 44.98 meters.
        4. Product Loss costs between minimum of $41,880.03 and maximum of $141,238.69
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.91 and maximum of $1.18 Millions of dollars
        2. No. of intersections with structures is 84.0, with minimum of $25,000.00 and maximum of $269,868.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.3 and maximum of 9.3 meters.
        4. Product Loss costs between minimum of $62,531.33 and maximum of $80,850.86
     7. Repair costs between minimum of $44,000.00 and maximum of $187,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
207. "BRETON TO EDMONTON NPS 10
     1. Total Cumulative Length (m): 10681.94
        1. SCC Method 2 : 9872.15
        2. MD Method 2 : 629.84
        3. CSCC Method 2 : 179.95
     2. Likelihood of failure distributed between minimum of 1.053e-02 and maximum of 1.000e+00.
     3. Consequence of failure distributed between minimum of $0.26 and maximum of $89.50 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.26 and maximum of $5.70 Millions of dollars
        2. No. of intersections with structures is 105.0, with minimum of $18,600.00 and maximum of $5,376,500.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.06 and maximum of 2.43 meters.
        4. Product Loss costs between minimum of $42,899.29 and maximum of $59,691.29
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.24 and maximum of $201.26 Millions of dollars
        2. No. of intersections with structures is 220.0, with minimum of $25,000.00 and maximum of $200,956,075.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 93.93 and maximum of 105.79 meters.
        4. Product Loss costs between minimum of $20,118.82 and maximum of $48,667.11
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.63 and maximum of $98.76 Millions of dollars
        2. No. of intersections with structures is 318.0, with minimum of $0.00 and maximum of $97,071,340.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 30.53 and maximum of 34.38 meters.
        4. Product Loss costs between minimum of $1,409,573.18 and maximum of $1,961,320.39
     7. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is HVP Product."
208. "MADDEN 13-30 TO SUNDRE 16-8 NPS 8
     1. Total Cumulative Length (m): 10660.51
        1. MD Method 1 : 10660.51
     2. Likelihood of failure distributed between minimum of 1.085e-01 and maximum of 9.167e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $2.07 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $2.06 Millions of dollars
        2. No. of intersections with structures is 53.0, with minimum of $25,000.00 and maximum of $1,839,600.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.22 and maximum of 2.22 meters.
        4. Product Loss costs between minimum of $1,625.35 and maximum of $1,930.93
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $2.11 Millions of dollars
        2. No. of intersections with structures is 44.0, with minimum of $25,000.00 and maximum of $1,839,600.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 29.34 and maximum of 29.34 meters.
        4. Product Loss costs between minimum of $7,155.80 and maximum of $57,172.05
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $2.12 Millions of dollars
        2. No. of intersections with structures is 70.0, with minimum of $25,000.00 and maximum of $1,839,600.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 8.66 and maximum of 8.66 meters.
        4. Product Loss costs between minimum of $53,405.26 and maximum of $63,445.91
     7. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
209. "Empress 8 inch Water
     1. Total Cumulative Length (m): 10119.82
        1. EC Method 1 : 10119.82
     2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.904e-01.
     3. Consequence of failure distributed between minimum of $0.20 and maximum of $0.22 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.22 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.22 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.22 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     7. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Fresh Water."
210. "Empress 10 inch Water
     1. Total Cumulative Length (m): 10102.58
        1. EC Method 1 : 10102.58
     2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.906e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     7. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Fresh Water."
211. "Sarnia 8 inch Fresh Water
     1. Total Cumulative Length (m): 7977.89
        1. EC Method 1 : 7977.89
     2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.906e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.25 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.25 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.25 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.25 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     7. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Fresh Water."
212. "UTILITY NPS 8
     1. Total Cumulative Length (m): 7825.84
        1. MD Method 1 : 7825.84
     2. Likelihood of failure distributed between minimum of 1.005e-01 and maximum of 1.262e-01.
     3. Consequence of failure distributed between minimum of $2.97 and maximum of $4.66 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.25 and maximum of $0.52 Millions of dollars
        2. No. of intersections with structures is 16.0, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.99 and maximum of 1.99 meters.
        4. Product Loss costs between minimum of $40,141.48 and maximum of $40,141.48
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $19.48 and maximum of $25.75 Millions of dollars
        2. No. of intersections with structures is 40.0, with minimum of $25,000.00 and maximum of $6,266,540.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 78.26 and maximum of 78.26 meters.
        4. Product Loss costs between minimum of $19,265,442.30 and maximum of $19,265,442.30
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.53 and maximum of $5.33 Millions of dollars
        2. No. of intersections with structures is 45.0, with minimum of $25,000.00 and maximum of $3,792,943.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 29.81 and maximum of 29.81 meters.
        4. Product Loss costs between minimum of $1,318,957.76 and maximum of $1,318,957.76
     7. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is HVP Product."
213. "ROCKY MOUNTAIN HOUSE TO BRETON NPS 10
     1. Total Cumulative Length (m): 7207.95
        1. SCC Method 2 : 59.99
        2. MD Method 2 : 1716.89
        3. CSCC Method 2 : 5431.07
     2. Likelihood of failure distributed between minimum of 1.008e-01 and maximum of 8.709e-01.
     3. Consequence of failure distributed between minimum of $2.35 and maximum of $19.93 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.62 Millions of dollars
        2. No. of intersections with structures is 16.0, with minimum of $25,000.00 and maximum of $339,600.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.2 and maximum of 2.43 meters.
        4. Product Loss costs between minimum of $49,027.76 and maximum of $59,691.29
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $36.77 and maximum of $73.79 Millions of dollars
        2. No. of intersections with structures is 105.0, with minimum of $25,000.00 and maximum of $29,065,968.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 98.56 and maximum of 105.79 meters.
        4. Product Loss costs between minimum of $36,553,283.29 and maximum of $44,503,622.40
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.83 and maximum of $2.52 Millions of dollars
        2. No. of intersections with structures is 60.0, with minimum of $25,000.00 and maximum of $339,600.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 32.03 and maximum of 34.38 meters.
        4. Product Loss costs between minimum of $1,610,940.77 and maximum of $1,961,320.39
     7. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is HVP Product."
214. "EMPRESS WATER LINE NPS 10
     1. Total Cumulative Length (m): 6987.6
        1. EC Method 1 : 6987.6
     2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.904e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     7. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Fresh Water."
215. "EMPRESS WASTE WATER DISCHARGE NPS 10
     1. Total Cumulative Length (m): 6957.2
        1. IC Method 1 : 6957.2
     2. Likelihood of failure distributed between minimum of 9.458e-01 and maximum of 9.484e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.28 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     7. Repair costs between minimum of $17,000.00 and maximum of $79,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is WATER DISPOSAL."
216. "NPS12 Hartell to Pincher Creek From 2-29-19-2-W5 To 16-14-4-29-W4
     1. Total Cumulative Length (m): 5921.75
        1. MD Method 2 : 5891.75
        2. RES : 30.0
     2. Likelihood of failure distributed between minimum of 1.108e-01 and maximum of 1.000e+00.
     3. Consequence of failure distributed between minimum of $0.85 and maximum of $1.11 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.85 and maximum of $0.99 Millions of dollars
        2. No. of intersections with structures is 24.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.18 and maximum of 2.47 meters.
        4. Product Loss costs between minimum of $1,697.16 and maximum of $2,711.24
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.88 and maximum of $2.44 Millions of dollars
        2. No. of intersections with structures is 60.0, with minimum of $25,000.00 and maximum of $1,500,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 41.16 and maximum of 46.6 meters.
        4. Product Loss costs between minimum of $32,292.36 and maximum of $276,046.39
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.90 and maximum of $1.08 Millions of dollars
        2. No. of intersections with structures is 56.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 8.51 and maximum of 9.64 meters.
        4. Product Loss costs between minimum of $55,764.98 and maximum of $89,085.14
     7. Repair costs between minimum of $44,000.00 and maximum of $187,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
217. "MARSHALL TO DULWICH BUTANE NPS 4
     1. Total Cumulative Length (m): 5476.82
        1. TPD : 5476.82
     2. Likelihood of failure distributed between minimum of 1.395e-02 and maximum of 1.395e-02.
     3. Consequence of failure distributed between minimum of $11.15 and maximum of $11.20 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.51 and maximum of $0.53 Millions of dollars
        2. No. of intersections with structures is 4.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.63 and maximum of 2.63 meters.
        4. Product Loss costs between minimum of $297,296.59 and maximum of $297,296.59
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $39.05 and maximum of $39.10 Millions of dollars
        2. No. of intersections with structures is 12.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 59.81 and maximum of 59.81 meters.
        4. Product Loss costs between minimum of $38,840,282.94 and maximum of $38,840,282.94
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $9.98 and maximum of $10.03 Millions of dollars
        2. No. of intersections with structures is 9.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 36.39 and maximum of 36.39 meters.
        4. Product Loss costs between minimum of $9,768,490.70 and maximum of $9,768,490.70
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Butane."
218. "SS-15 NPS 6
     1. Total Cumulative Length (m): 5229.36
        1. IC Method 1 : 5229.36
     2. Likelihood of failure distributed between minimum of 9.211e-01 and maximum of 9.263e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.23 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.21 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.47 and maximum of 2.47 meters.
        4. Product Loss costs between minimum of $2,056.96 and maximum of $2,177.33
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.80 and maximum of $0.83 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 25.68 and maximum of 25.68 meters.
        4. Product Loss costs between minimum of $582,457.84 and maximum of $616,543.44
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.28 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 9.64 and maximum of 9.64 meters.
        4. Product Loss costs between minimum of $67,586.95 and maximum of $71,542.16
     7. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
219. "C3 FROM ESSO NPS 6
     1. Total Cumulative Length (m): 4075.15
        1. IC Method 1 : 4075.15
     2. Likelihood of failure distributed between minimum of 9.108e-01 and maximum of 9.211e-01.
     3. Consequence of failure distributed between minimum of $0.28 and maximum of $0.58 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.24 and maximum of $0.50 Millions of dollars
        2. No. of intersections with structures is 15.0, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.55 and maximum of 1.55 meters.
        4. Product Loss costs between minimum of $24,336.15 and maximum of $24,336.15
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $7.10 and maximum of $11.97 Millions of dollars
        2. No. of intersections with structures is 18.0, with minimum of $25,000.00 and maximum of $4,871,372.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 54.05 and maximum of 54.05 meters.
        4. Product Loss costs between minimum of $6,891,140.89 and maximum of $6,891,140.89
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.01 and maximum of $1.28 Millions of dollars
        2. No. of intersections with structures is 20.0, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 8.89 and maximum of 8.89 meters.
        4. Product Loss costs between minimum of $799,630.73 and maximum of $799,630.73
     7. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is HVP Product."
220. "RICHARDSON GAS LINE NPS 3
     1. Total Cumulative Length (m): 3703.21
        1. EC Method 1 : 3703.21
     2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.907e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.24 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.23 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 0.58 and maximum of 0.58 meters.
        4. Product Loss costs between minimum of $3,382.92 and maximum of $3,382.92
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.47 and maximum of $0.51 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 5.14 and maximum of 5.14 meters.
        4. Product Loss costs between minimum of $267,358.90 and maximum of $267,358.90
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.32 and maximum of $0.34 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 3.31 and maximum of 3.31 meters.
        4. Product Loss costs between minimum of $111,154.91 and maximum of $111,154.91
     7. Repair costs between minimum of $6,000.00 and maximum of $21,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
221. "Sarnia 6 inch tied into 6 inch E/P line
     1. Total Cumulative Length (m): 2501.78
        1. IC Method 1 : 2501.78
     2. Likelihood of failure distributed between minimum of 9.107e-01 and maximum of 9.129e-01.
     3. Consequence of failure distributed between minimum of $0.33 and maximum of $0.65 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.26 and maximum of $0.58 Millions of dollars
        2. No. of intersections with structures is 40.0, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.09 and maximum of 2.09 meters.
        4. Product Loss costs between minimum of $44,363.99 and maximum of $44,363.99
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $12.80 and maximum of $13.31 Millions of dollars
        2. No. of intersections with structures is 21.0, with minimum of $25,000.00 and maximum of $537,650.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 67.1 and maximum of 67.1 meters.
        4. Product Loss costs between minimum of $12,562,319.03 and maximum of $12,562,319.03
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.67 and maximum of $1.99 Millions of dollars
        2. No. of intersections with structures is 47.0, with minimum of $25,000.00 and maximum of $293,825.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 30.9 and maximum of 30.9 meters.
        4. Product Loss costs between minimum of $1,457,700.03 and maximum of $1,457,700.03
     7. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is HVP Product."
222. "Kerrbert 4 inch Water
     1. Total Cumulative Length (m): 2341.68
        1. EC Method 1 : 2341.68
     2. Likelihood of failure distributed between minimum of 9.904e-01 and maximum of 9.914e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.23 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.23 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.23 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.23 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 0.0 and maximum of 0.0 meters.
        4. Product Loss costs between minimum of $0.00 and maximum of $0.00
     7. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Fresh Water."
223. "10-36 LACT TO CROOKED LAKE NPS 6
     1. Total Cumulative Length (m): 2315.46
        1. IC Method 1 : 2315.46
     2. Likelihood of failure distributed between minimum of 9.060e-01 and maximum of 9.063e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.21 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.21 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.37 and maximum of 2.37 meters.
        4. Product Loss costs between minimum of $1,877.22 and maximum of $1,928.94
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.74 and maximum of $0.76 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 24.64 and maximum of 24.64 meters.
        4. Product Loss costs between minimum of $531,561.71 and maximum of $546,207.16
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 9.25 and maximum of 9.25 meters.
        4. Product Loss costs between minimum of $61,681.09 and maximum of $63,380.51
     7. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
224. "COED BV 203 TO EST NPS 8
     1. Total Cumulative Length (m): 2259.9
        1. IC Method 1 : 2259.9
     2. Likelihood of failure distributed between minimum of 9.299e-01 and maximum of 9.718e-01.
     3. Consequence of failure distributed between minimum of $0.34 and maximum of $3.62 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.25 and maximum of $2.97 Millions of dollars
        2. No. of intersections with structures is 44.0, with minimum of $25,000.00 and maximum of $2,713,250.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 7.14 and maximum of 7.14 meters.
        4. Product Loss costs between minimum of $2,189.51 and maximum of $2,240.98
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $1.41 and maximum of $12.13 Millions of dollars
        2. No. of intersections with structures is 16.0, with minimum of $100,000.00 and maximum of $10,828,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 80.9 and maximum of 80.9 meters.
        4. Product Loss costs between minimum of $1,050,831.84 and maximum of $1,075,531.96
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.35 and maximum of $8.44 Millions of dollars
        2. No. of intersections with structures is 46.0, with minimum of $25,000.00 and maximum of $8,114,750.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 28.43 and maximum of 28.43 meters.
        4. Product Loss costs between minimum of $71,942.43 and maximum of $73,633.46
     7. Repair costs between minimum of $50,000.00 and maximum of $50,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Condensate."
225. "SPEED CORNER TO FORT SASKATCHEWAN INLET (KEYSPAN) NPS 16
     1. Total Cumulative Length (m): 1771.15
        1. IC Method 1 : 1771.15
     2. Likelihood of failure distributed between minimum of 9.106e-01 and maximum of 9.158e-01.
     3. Consequence of failure distributed between minimum of $1.36 and maximum of $1.59 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $1.02 and maximum of $1.10 Millions of dollars
        2. No. of intersections with structures is 15.0, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.86 and maximum of 1.86 meters.
        4. Product Loss costs between minimum of $35,177.42 and maximum of $35,177.42
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $59.11 and maximum of $59.26 Millions of dollars
        2. No. of intersections with structures is 8.0, with minimum of $25,000.00 and maximum of $175,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 116.45 and maximum of 116.45 meters.
        4. Product Loss costs between minimum of $58,099,358.13 and maximum of $58,099,358.13
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.14 and maximum of $2.27 Millions of dollars
        2. No. of intersections with structures is 23.0, with minimum of $25,000.00 and maximum of $125,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 28.42 and maximum of 28.42 meters.
        4. Product Loss costs between minimum of $1,155,850.00 and maximum of $1,155,850.00
     7. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is HVP Product."
226. "BUCK CREEK TO STATION 1 NPS 3
     1. Total Cumulative Length (m): 1684.92
        1. IC Method 1 : 1684.92
     2. Likelihood of failure distributed between minimum of 9.053e-01 and maximum of 9.624e-01.
     3. Consequence of failure distributed between minimum of $0.30 and maximum of $2.98 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.28 and maximum of $2.97 Millions of dollars
        2. No. of intersections with structures is 5.0, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.09 and maximum of 2.09 meters.
        4. Product Loss costs between minimum of $74,968.65 and maximum of $74,968.65
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $6.13 and maximum of $8.82 Millions of dollars
        2. No. of intersections with structures is 7.0, with minimum of $269,868.00 and maximum of $2,688,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 41.28 and maximum of 41.28 meters.
        4. Product Loss costs between minimum of $5,924,929.50 and maximum of $5,924,929.50
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.67 and maximum of $5.36 Millions of dollars
        2. No. of intersections with structures is 8.0, with minimum of $269,868.00 and maximum of $2,688,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 30.76 and maximum of 30.76 meters.
        4. Product Loss costs between minimum of $2,463,299.44 and maximum of $2,463,299.44
     7. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Ethane."
227. "NPS4 SS-35 From 5-34-11-19-W3 To 5-35-11-19-W3
     1. Total Cumulative Length (m): 1532.63
        1. EC Method 1 : 1532.63
     2. Likelihood of failure distributed between minimum of 9.913e-01 and maximum of 9.916e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.24 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 8.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.27 and maximum of 2.27 meters.
        4. Product Loss costs between minimum of $1,714.65 and maximum of $1,749.93
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.43 and maximum of $0.49 Millions of dollars
        2. No. of intersections with structures is 5.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 16.63 and maximum of 16.63 meters.
        4. Product Loss costs between minimum of $224,010.14 and maximum of $228,619.19
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.29 Millions of dollars
        2. No. of intersections with structures is 8.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 8.87 and maximum of 8.87 meters.
        4. Product Loss costs between minimum of $56,339.47 and maximum of $57,498.67
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
228. "KALKASKA SARNIA TO PUMP STATION NPS 8
     1. Total Cumulative Length (m): 1330.88
        1. IC Method 1 : 1330.88
     2. Likelihood of failure distributed between minimum of 9.015e-01 and maximum of 9.044e-01.
     3. Consequence of failure distributed between minimum of $0.28 and maximum of $0.31 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.26 and maximum of $0.26 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.09 and maximum of 2.09 meters.
        4. Product Loss costs between minimum of $44,314.96 and maximum of $44,314.96
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $21.48 and maximum of $21.75 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $50,000.00 and maximum of $268,825.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 81.1 and maximum of 81.1 meters.
        4. Product Loss costs between minimum of $21,268,460.05 and maximum of $21,268,460.05
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.67 and maximum of $1.94 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $268,825.00 and maximum of $268,825.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 30.89 and maximum of 30.89 meters.
        4. Product Loss costs between minimum of $1,456,089.09 and maximum of $1,456,089.09
     7. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
229. "EDS OPERATIVE NPS 12
     1. Total Cumulative Length (m): 1330.76
        1. IC Method 1 : 1330.76
     2. Likelihood of failure distributed between minimum of 9.015e-01 and maximum of 9.039e-01.
     3. Consequence of failure distributed between minimum of $0.92 and maximum of $0.99 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.89 and maximum of $0.89 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.1 and maximum of 2.1 meters.
        4. Product Loss costs between minimum of $44,566.23 and maximum of $44,566.23
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $47.58 and maximum of $48.15 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $268,825.00 and maximum of $562,650.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 107.68 and maximum of 107.68 meters.
        4. Product Loss costs between minimum of $46,740,539.02 and maximum of $46,740,539.02
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.31 and maximum of $2.58 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $268,825.00 and maximum of $268,825.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 30.95 and maximum of 30.95 meters.
        4. Product Loss costs between minimum of $1,464,345.16 and maximum of $1,464,345.16
     7. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is NGL."
230. "CARROT CREEK LATERAL NPS 2
     1. Total Cumulative Length (m): 1263.04
        1. IC Method 1 : 1263.04
     2. Likelihood of failure distributed between minimum of 9.053e-01 and maximum of 9.148e-01.
     3. Consequence of failure distributed between minimum of $0.27 and maximum of $0.28 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.27 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.45 and maximum of 2.45 meters.
        4. Product Loss costs between minimum of $60,855.70 and maximum of $60,855.70
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $2.42 and maximum of $2.42 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 35.92 and maximum of 35.92 meters.
        4. Product Loss costs between minimum of $2,214,603.35 and maximum of $2,214,603.35
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.21 and maximum of $2.21 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 34.62 and maximum of 34.62 meters.
        4. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23
     7. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
231. "FOOTHILLS EMPRESS 4 TO EMPRESS 6 NPS 36
     1. Total Cumulative Length (m): 1144.55
        1. IC Method 1 : 1144.55
     2. Likelihood of failure distributed between minimum of 9.002e-01 and maximum of 9.002e-01.
     3. Consequence of failure distributed between minimum of $4.32 and maximum of $6.99 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $4.33 and maximum of $7.04 Millions of dollars
        2. No. of intersections with structures is 117.0, with minimum of $0.00 and maximum of $2,713,250.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.73 and maximum of 1.73 meters.
        4. Product Loss costs between minimum of $30,397.21 and maximum of $30,397.21
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $258.48 and maximum of $265.88 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $25,000.00 and maximum of $7,418,325.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 198.1 and maximum of 198.1 meters.
        4. Product Loss costs between minimum of $254,159,387.22 and maximum of $254,159,387.22
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $5.30 and maximum of $8.01 Millions of dollars
        2. No. of intersections with structures is 25.0, with minimum of $0.00 and maximum of $2,713,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 26.97 and maximum of 26.97 meters.
        4. Product Loss costs between minimum of $998,783.28 and maximum of $998,783.28
     7. Repair costs between minimum of $100,500.00 and maximum of $100,500.00.
     8. Outage losses between minimum of $4,200,000.00 and maximum of $4,200,000.00.
     9. Product type is NGL."
232. "NIPISI FUEL GAS NPS 3
     1. Total Cumulative Length (m): 1135.8
        1. IC Method 1 : 1135.8
     2. Likelihood of failure distributed between minimum of 9.036e-01 and maximum of 9.087e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.26 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.27 Millions of dollars
        2. No. of intersections with structures is 48.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 0.54 and maximum of 0.54 meters.
        4. Product Loss costs between minimum of $9,264.52 and maximum of $9,264.52
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.94 and maximum of $0.99 Millions of dollars
        2. No. of intersections with structures is 37.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 4.59 and maximum of 4.59 meters.
        4. Product Loss costs between minimum of $732,194.60 and maximum of $732,194.60
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.51 and maximum of $0.56 Millions of dollars
        2. No. of intersections with structures is 49.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 2.99 and maximum of 2.99 meters.
        4. Product Loss costs between minimum of $304,411.14 and maximum of $304,411.14
     7. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is FG."
233. "KERROBERT TO SASK ENERGY FUEL GAS NPS 2
     1. Total Cumulative Length (m): 1021.76
        1. IC Method 1 : 1021.76
     2. Likelihood of failure distributed between minimum of 9.066e-01 and maximum of 9.160e-01.
     3. Consequence of failure distributed between minimum of $0.33 and maximum of $0.64 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.31 and maximum of $0.61 Millions of dollars
        2. No. of intersections with structures is 20.0, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.79 and maximum of 1.79 meters.
        4. Product Loss costs between minimum of $106,972.91 and maximum of $106,972.91
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $4.10 and maximum of $4.39 Millions of dollars
        2. No. of intersections with structures is 21.0, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 28.65 and maximum of 28.65 meters.
        4. Product Loss costs between minimum of $3,892,857.05 and maximum of $3,892,857.05
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $3.72 and maximum of $4.02 Millions of dollars
        2. No. of intersections with structures is 22.0, with minimum of $25,000.00 and maximum of $294,868.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 27.69 and maximum of 27.69 meters.
        4. Product Loss costs between minimum of $3,514,886.76 and maximum of $3,514,886.76
     7. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is FG."
234. "ESSO ETHANE NPS 6
     1. Total Cumulative Length (m): 885.6
        1. IC Method 1 : 885.6
     2. Likelihood of failure distributed between minimum of 9.107e-01 and maximum of 9.130e-01.
     3. Consequence of failure distributed between minimum of $0.33 and maximum of $0.63 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.26 and maximum of $0.52 Millions of dollars
        2. No. of intersections with structures is 10.0, with minimum of $25,000.00 and maximum of $268,825.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.09 and maximum of 2.09 meters.
        4. Product Loss costs between minimum of $44,363.99 and maximum of $44,363.99
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $13.04 and maximum of $18.77 Millions of dollars
        2. No. of intersections with structures is 7.0, with minimum of $268,825.00 and maximum of $5,997,715.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 67.1 and maximum of 67.1 meters.
        4. Product Loss costs between minimum of $12,562,319.03 and maximum of $12,562,319.03
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.67 and maximum of $4.90 Millions of dollars
        2. No. of intersections with structures is 16.0, with minimum of $25,000.00 and maximum of $3,226,943.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 30.9 and maximum of 30.9 meters.
        4. Product Loss costs between minimum of $1,457,700.03 and maximum of $1,457,700.03
     7. Repair costs between minimum of $11,500.00 and maximum of $40,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is HVP Product."
235. "KERROBERT TO ENBRIDGE SALES GAS NPS 10
     1. Total Cumulative Length (m): 852.41
        1. IC Method 1 : 852.41
     2. Likelihood of failure distributed between minimum of 9.041e-01 and maximum of 9.043e-01.
     3. Consequence of failure distributed between minimum of $0.30 and maximum of $0.33 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.25 and maximum of $0.27 Millions of dollars
        2. No. of intersections with structures is 14.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.73 and maximum of 1.73 meters.
        4. Product Loss costs between minimum of $30,427.85 and maximum of $30,427.85
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $22.93 and maximum of $23.57 Millions of dollars
        2. No. of intersections with structures is 5.0, with minimum of $25,000.00 and maximum of $664,736.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 83.01 and maximum of 83.01 meters.
        4. Product Loss costs between minimum of $22,685,881.44 and maximum of $22,685,881.44
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.22 and maximum of $1.24 Millions of dollars
        2. No. of intersections with structures is 16.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 26.98 and maximum of 26.98 meters.
        4. Product Loss costs between minimum of $999,790.12 and maximum of $999,790.12
     7. Repair costs between minimum of $17,000.00 and maximum of $17,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
236. "NPS2 Yoyo line (Alliance flare line) From 8-14-55-22W4 To 9-14-55-22W4
     1. Total Cumulative Length (m): 799.43
        1. EC Method 1 : 799.43
     2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.901e-01.
     3. Consequence of failure distributed between minimum of $0.24 and maximum of $0.32 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.23 and maximum of $0.31 Millions of dollars
        2. No. of intersections with structures is 28.0, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.09 and maximum of 1.09 meters.
        4. Product Loss costs between minimum of $12,073.09 and maximum of $12,073.09
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.66 and maximum of $0.74 Millions of dollars
        2. No. of intersections with structures is 28.0, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 6.59 and maximum of 6.59 meters.
        4. Product Loss costs between minimum of $439,352.33 and maximum of $439,352.33
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.62 and maximum of $0.69 Millions of dollars
        2. No. of intersections with structures is 29.0, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 6.26 and maximum of 6.26 meters.
        4. Product Loss costs between minimum of $396,694.17 and maximum of $396,694.17
     7. Repair costs between minimum of $21,000.00 and maximum of $21,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is C3/C4."
237. "16-19-037-03W5 TO 10-19-037-03W5 NPS 4
     1. Total Cumulative Length (m): 775.79
        1. IC Method 1 : 775.79
     2. Likelihood of failure distributed between minimum of 9.121e-01 and maximum of 9.214e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.22 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.21 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.47 and maximum of 2.47 meters.
        4. Product Loss costs between minimum of $2,056.96 and maximum of $2,074.77
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.48 and maximum of $0.48 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 18.06 and maximum of 18.06 meters.
        4. Product Loss costs between minimum of $268,731.47 and maximum of $271,058.56
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.28 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 9.64 and maximum of 9.64 meters.
        4. Product Loss costs between minimum of $67,587.07 and maximum of $68,172.34
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
238. "NPS4 SS-57 From 10-27-10-19-W3 To 12-27-10-19-W3
     1. Total Cumulative Length (m): 763.86
        1. EC Method 1 : 763.86
     2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.904e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.24 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 5.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.33 and maximum of 2.33 meters.
        4. Product Loss costs between minimum of $1,811.69 and maximum of $1,828.91
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.45 and maximum of $0.52 Millions of dollars
        2. No. of intersections with structures is 4.0, with minimum of $25,000.00 and maximum of $75,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 17.05 and maximum of 17.05 meters.
        4. Product Loss costs between minimum of $236,688.53 and maximum of $238,937.33
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.32 Millions of dollars
        2. No. of intersections with structures is 7.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.1 and maximum of 9.1 meters.
        4. Product Loss costs between minimum of $59,528.14 and maximum of $60,093.72
     7. Repair costs between minimum of $9,000.00 and maximum of $31,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
239. "NPS8 SARNIA CONDENSATE TO SUNCOR
     1. Total Cumulative Length (m): 637.28
        1. MD Method 1 : 637.28
     2. Likelihood of failure distributed between minimum of 1.003e-01 and maximum of 1.065e-01.
     3. Consequence of failure distributed between minimum of $1.00 and maximum of $1.66 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.49 Millions of dollars
        2. No. of intersections with structures is 21.0, with minimum of $268,825.00 and maximum of $268,825.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 7.01 and maximum of 7.01 meters.
        4. Product Loss costs between minimum of $2,096.01 and maximum of $2,207.92
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $4.79 and maximum of $7.52 Millions of dollars
        2. No. of intersections with structures is 38.0, with minimum of $3,520,768.00 and maximum of $6,266,540.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 79.53 and maximum of 79.53 meters.
        4. Product Loss costs between minimum of $1,005,956.72 and maximum of $1,059,667.01
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.28 and maximum of $3.51 Millions of dollars
        2. No. of intersections with structures is 49.0, with minimum of $268,825.00 and maximum of $3,226,943.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 27.95 and maximum of 27.95 meters.
        4. Product Loss costs between minimum of $68,870.18 and maximum of $72,547.31
     7. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Condensate."
240. "AMERADA FERRIER 1-6 TO 10-33 JUNCTION NPS 4
     1. Total Cumulative Length (m): 609.45
        1. MD Method 1 : 609.45
     2. Likelihood of failure distributed between minimum of 1.135e-01 and maximum of 1.135e-01.
     3. Consequence of failure distributed between minimum of $1.51 and maximum of $1.62 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 4.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 6.86 and maximum of 6.86 meters.
        4. Product Loss costs between minimum of $2,252.79 and maximum of $2,272.85
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $5.02 and maximum of $5.56 Millions of dollars
        2. No. of intersections with structures is 38.0, with minimum of $4,518,000.00 and maximum of $5,057,736.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 47.0 and maximum of 47.0 meters.
        4. Product Loss costs between minimum of $294,315.81 and maximum of $296,935.83
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $4.80 and maximum of $5.07 Millions of dollars
        2. No. of intersections with structures is 28.0, with minimum of $4,518,000.00 and maximum of $4,787,868.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 27.43 and maximum of 27.43 meters.
        4. Product Loss costs between minimum of $74,021.64 and maximum of $74,680.58
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is LVP Products."
241. "16 EST to Enbridge 7-5-53-23W4 to 2-5-53-23W4
     1. Total Cumulative Length (m): 482.65
        1. EC Method 1 : 482.65
     2. Likelihood of failure distributed between minimum of 9.901e-01 and maximum of 9.901e-01.
     3. Consequence of failure distributed between minimum of $4.81 and maximum of $4.82 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $3.70 and maximum of $3.70 Millions of dollars
        2. No. of intersections with structures is 16.0, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.55 and maximum of 1.55 meters.
        4. Product Loss costs between minimum of $24,391.31 and maximum of $24,391.31
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $44.01 and maximum of $44.25 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $2,738,250.00 and maximum of $2,982,075.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 102.07 and maximum of 102.07 meters.
        4. Product Loss costs between minimum of $40,284,920.79 and maximum of $40,284,920.79
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $4.48 and maximum of $4.50 Millions of dollars
        2. No. of intersections with structures is 16.0, with minimum of $2,688,250.00 and maximum of $2,713,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 8.9 and maximum of 8.9 meters.
        4. Product Loss costs between minimum of $801,443.03 and maximum of $801,443.03
     7. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is HVP Product."
242. "BRETON TO EDMONTON NPS 8
     1. Total Cumulative Length (m): 479.86
        1. MD Method 2 : 479.86
     2. Likelihood of failure distributed between minimum of 1.390e-01 and maximum of 9.419e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $22.27 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $2.94 Millions of dollars
        2. No. of intersections with structures is 117.0, with minimum of $25,000.00 and maximum of $2,688,250.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 6.61 and maximum of 7.14 meters.
        4. Product Loss costs between minimum of $1,843.89 and maximum of $2,927.55
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.23 and maximum of $131.68 Millions of dollars
        2. No. of intersections with structures is 236.0, with minimum of $2,713,250.00 and maximum of $131,409,566.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 75.57 and maximum of 80.9 meters.
        4. Product Loss costs between minimum of $18,698.44 and maximum of $76,913.58
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.29 and maximum of $50.32 Millions of dollars
        2. No. of intersections with structures is 355.0, with minimum of $25,000.00 and maximum of $50,007,444.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 26.56 and maximum of 28.43 meters.
        4. Product Loss costs between minimum of $60,585.90 and maximum of $96,192.74
     7. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Condensate."
243. "NPS4 Harmattan to Sundre From 1-34-31-4W5 To 16-8-34-5W5
     1. Total Cumulative Length (m): 419.74
        1. TPD : 419.74
     2. Likelihood of failure distributed between minimum of 1.021e-02 and maximum of 1.061e-02.
     3. Consequence of failure distributed between minimum of $10.31 and maximum of $12.48 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.51 and maximum of $0.51 Millions of dollars
        2. No. of intersections with structures is 9.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.63 and maximum of 2.63 meters.
        4. Product Loss costs between minimum of $297,296.59 and maximum of $297,296.59
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $39.05 and maximum of $39.32 Millions of dollars
        2. No. of intersections with structures is 26.0, with minimum of $269,868.00 and maximum of $269,868.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 59.81 and maximum of 59.81 meters.
        4. Product Loss costs between minimum of $38,840,282.94 and maximum of $38,840,282.94
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $9.98 and maximum of $10.25 Millions of dollars
        2. No. of intersections with structures is 19.0, with minimum of $269,868.00 and maximum of $269,868.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 36.39 and maximum of 36.39 meters.
        4. Product Loss costs between minimum of $9,768,490.70 and maximum of $9,768,490.70
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Butane."
244. "RAINBOW LAKE TO CADOTTE NPS 20
     1. Total Cumulative Length (m): 406.83
        1. SCC Method 2 : 209.97
        2. MD Method 2 : 179.98
        3. CT : 16.87
     2. Likelihood of failure distributed between minimum of 1.053e-01 and maximum of 3.735e-01.
     3. Consequence of failure distributed between minimum of $1.00 and maximum of $1.40 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.86 and maximum of $1.13 Millions of dollars
        2. No. of intersections with structures is 90.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.3 and maximum of 2.3 meters.
        4. Product Loss costs between minimum of $1,856.78 and maximum of $2,834.44
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $1.34 and maximum of $2.12 Millions of dollars
        2. No. of intersections with structures is 21.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 65.37 and maximum of 65.37 meters.
        4. Product Loss costs between minimum of $205,203.70 and maximum of $1,265,004.53
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.93 and maximum of $1.21 Millions of dollars
        2. No. of intersections with structures is 96.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 8.98 and maximum of 8.98 meters.
        4. Product Loss costs between minimum of $61,009.49 and maximum of $93,133.32
     7. Repair costs between minimum of $57,000.00 and maximum of $330,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
245. "Access C5 Line 36
     1. Total Cumulative Length (m): 404.28
        1. EC Method 1 : 404.28
     2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.907e-01.
     3. Consequence of failure distributed between minimum of $0.26 and maximum of $0.36 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.24 and maximum of $0.34 Millions of dollars
        2. No. of intersections with structures is 6.0, with minimum of $25,000.00 and maximum of $100,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 7.14 and maximum of 7.14 meters.
        4. Product Loss costs between minimum of $2,189.58 and maximum of $2,198.82
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.96 and maximum of $0.96 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $100,000.00 and maximum of $100,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 65.85 and maximum of 65.85 meters.
        4. Product Loss costs between minimum of $620,012.66 and maximum of $622,628.13
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.31 and maximum of $0.41 Millions of dollars
        2. No. of intersections with structures is 6.0, with minimum of $25,000.00 and maximum of $100,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 28.43 and maximum of 28.43 meters.
        4. Product Loss costs between minimum of $71,944.72 and maximum of $72,248.21
     7. Repair costs between minimum of $40,000.00 and maximum of $40,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is LVP Products."
246. "Access C5 Line 37
     1. Total Cumulative Length (m): 404.14
        1. EC Method 1 : 404.14
     2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.907e-01.
     3. Consequence of failure distributed between minimum of $0.26 and maximum of $0.36 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.24 and maximum of $0.34 Millions of dollars
        2. No. of intersections with structures is 5.0, with minimum of $75,000.00 and maximum of $100,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 7.14 and maximum of 7.14 meters.
        4. Product Loss costs between minimum of $2,189.58 and maximum of $2,198.82
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.96 and maximum of $0.96 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $100,000.00 and maximum of $100,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 65.85 and maximum of 65.85 meters.
        4. Product Loss costs between minimum of $620,012.65 and maximum of $622,627.25
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.31 and maximum of $0.41 Millions of dollars
        2. No. of intersections with structures is 6.0, with minimum of $25,000.00 and maximum of $100,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 28.43 and maximum of 28.43 meters.
        4. Product Loss costs between minimum of $71,944.72 and maximum of $72,248.11
     7. Repair costs between minimum of $40,000.00 and maximum of $40,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is LVP Products."
247. "NPS8 Petro Vera to Lone Rock From 13-11-47-27-W3 To 16-10-47-27-W3
     1. Total Cumulative Length (m): 359.45
        1. EC Method 1 : 359.45
     2. Likelihood of failure distributed between minimum of 9.903e-01 and maximum of 9.912e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.49 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.48 Millions of dollars
        2. No. of intersections with structures is 5.0, with minimum of $268,825.00 and maximum of $268,825.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.36 and maximum of 1.36 meters.
        4. Product Loss costs between minimum of $546.13 and maximum of $553.81
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.48 and maximum of $0.77 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $268,825.00 and maximum of $293,825.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 17.86 and maximum of 17.86 meters.
        4. Product Loss costs between minimum of $262,111.05 and maximum of $265,795.71
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.23 and maximum of $0.53 Millions of dollars
        2. No. of intersections with structures is 6.0, with minimum of $268,825.00 and maximum of $293,825.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 5.27 and maximum of 5.27 meters.
        4. Product Loss costs between minimum of $17,944.74 and maximum of $18,197.00
     7. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Blend."
248. "NIPISI 11-02 TO 14-02 NPS 16
     1. Total Cumulative Length (m): 339.6
        1. IC Method 1 : 339.6
     2. Likelihood of failure distributed between minimum of 9.037e-01 and maximum of 9.085e-01.
     3. Consequence of failure distributed between minimum of $0.86 and maximum of $0.87 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.87 and maximum of $0.87 Millions of dollars
        2. No. of intersections with structures is 30.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.7 and maximum of 1.7 meters.
        4. Product Loss costs between minimum of $903.67 and maximum of $907.58
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $2.39 and maximum of $2.44 Millions of dollars
        2. No. of intersections with structures is 5.0, with minimum of $50,000.00 and maximum of $100,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 39.33 and maximum of 39.33 meters.
        4. Product Loss costs between minimum of $1,492,510.39 and maximum of $1,498,965.83
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.90 and maximum of $0.92 Millions of dollars
        2. No. of intersections with structures is 30.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 6.62 and maximum of 6.62 meters.
        4. Product Loss costs between minimum of $29,692.55 and maximum of $29,820.98
     7. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
249. "CONDOR FROM 14-12-38-5W5 TO 5-20-38-4W5 NPS4
     1. Total Cumulative Length (m): 328.68
        1. IC Method 1 : 328.68
     2. Likelihood of failure distributed between minimum of 9.069e-01 and maximum of 9.069e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.21 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.21 Millions of dollars
        2. No. of intersections with structures is 7.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.37 and maximum of 2.37 meters.
        4. Product Loss costs between minimum of $1,877.56 and maximum of $1,884.95
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.48 and maximum of $0.50 Millions of dollars
        2. No. of intersections with structures is 19.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 17.33 and maximum of 17.33 meters.
        4. Product Loss costs between minimum of $245,293.72 and maximum of $246,259.57
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 20.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.25 and maximum of 9.25 meters.
        4. Product Loss costs between minimum of $61,692.38 and maximum of $61,935.29
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
250. "14-02 to 12-02 NPS 24
     1. Total Cumulative Length (m): 317.4
        1. EC Method 1 : 317.4
     2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.902e-01.
     3. Consequence of failure distributed between minimum of $2.56 and maximum of $2.58 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $2.47 and maximum of $2.50 Millions of dollars
        2. No. of intersections with structures is 26.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.71 and maximum of 1.71 meters.
        4. Product Loss costs between minimum of $916.23 and maximum of $923.12
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $5.95 and maximum of $6.00 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $75,000.00 and maximum of $100,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 57.36 and maximum of 57.36 meters.
        4. Product Loss costs between minimum of $3,404,807.99 and maximum of $3,430,429.64
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.53 and maximum of $2.53 Millions of dollars
        2. No. of intersections with structures is 27.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 6.67 and maximum of 6.67 meters.
        4. Product Loss costs between minimum of $30,105.11 and maximum of $30,331.66
     7. Repair costs between minimum of $73,000.00 and maximum of $73,000.00.
     8. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
     9. Product type is Crude Oil."
251. "GRANADA LATERAL NPS 3
     1. Total Cumulative Length (m): 293.97
        1. IC Method 1 : 293.97
     2. Likelihood of failure distributed between minimum of 9.011e-01 and maximum of 9.013e-01.
     3. Consequence of failure distributed between minimum of $0.27 and maximum of $2.93 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $2.96 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.45 and maximum of 2.45 meters.
        4. Product Loss costs between minimum of $60,855.70 and maximum of $60,855.70
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $5.02 and maximum of $8.27 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $3,254,250.00 and maximum of $3,254,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 47.49 and maximum of 47.49 meters.
        4. Product Loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.21 and maximum of $5.46 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $3,254,250.00 and maximum of $3,254,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 34.62 and maximum of 34.62 meters.
        4. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23
     7. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
252. "SOUTH GARRINGTON 1-27 LATERAL NPS 4
     1. Total Cumulative Length (m): 281.0
        1. IC Method 1 : 281.0
     2. Likelihood of failure distributed between minimum of 9.070e-01 and maximum of 9.092e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.21 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.21 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.37 and maximum of 2.37 meters.
        4. Product Loss costs between minimum of $1,877.59 and maximum of $1,883.11
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.45 and maximum of $0.72 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $269,868.00 and maximum of $269,868.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 17.33 and maximum of 17.33 meters.
        4. Product Loss costs between minimum of $245,297.28 and maximum of $246,018.62
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.27 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 9.25 and maximum of 9.25 meters.
        4. Product Loss costs between minimum of $61,693.27 and maximum of $61,874.69
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
253. "NIPISI 14-02 TO 11-02 NPS24
     1. Total Cumulative Length (m): 264.71
        1. IC Method 1 : 264.71
     2. Likelihood of failure distributed between minimum of 9.011e-01 and maximum of 9.046e-01.
     3. Consequence of failure distributed between minimum of $2.47 and maximum of $2.48 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $2.50 and maximum of $2.50 Millions of dollars
        2. No. of intersections with structures is 23.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.7 and maximum of 1.7 meters.
        4. Product Loss costs between minimum of $902.81 and maximum of $905.85
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $5.91 and maximum of $5.94 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $75,000.00 and maximum of $100,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 56.88 and maximum of 56.88 meters.
        4. Product Loss costs between minimum of $3,354,945.27 and maximum of $3,366,266.89
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.53 and maximum of $2.55 Millions of dollars
        2. No. of intersections with structures is 23.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 6.62 and maximum of 6.62 meters.
        4. Product Loss costs between minimum of $29,664.23 and maximum of $29,764.33
     7. Repair costs between minimum of $73,000.00 and maximum of $73,000.00.
     8. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
     9. Product type is Crude Oil."
254. "PETRO VERA TO LONE ROCK NPS 8
     1. Total Cumulative Length (m): 248.54
        1. EC Method 1 : 248.54
     2. Likelihood of failure distributed between minimum of 9.903e-01 and maximum of 9.912e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.51 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.51 Millions of dollars
        2. No. of intersections with structures is 11.0, with minimum of $268,825.00 and maximum of $293,825.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.36 and maximum of 1.36 meters.
        4. Product Loss costs between minimum of $546.71 and maximum of $551.86
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.48 and maximum of $0.77 Millions of dollars
        2. No. of intersections with structures is 7.0, with minimum of $268,825.00 and maximum of $293,825.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 17.86 and maximum of 17.86 meters.
        4. Product Loss costs between minimum of $262,388.20 and maximum of $264,856.83
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.23 and maximum of $0.53 Millions of dollars
        2. No. of intersections with structures is 11.0, with minimum of $268,825.00 and maximum of $293,825.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 5.27 and maximum of 5.27 meters.
        4. Product Loss costs between minimum of $17,963.72 and maximum of $18,132.72
     7. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
255. "SS-20 NPS 4
     1. Total Cumulative Length (m): 219.8
        1. IC Method 1 : 219.8
     2. Likelihood of failure distributed between minimum of 9.028e-01 and maximum of 9.031e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.23 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 7.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.27 and maximum of 2.27 meters.
        4. Product Loss costs between minimum of $1,714.65 and maximum of $1,719.71
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.43 and maximum of $0.48 Millions of dollars
        2. No. of intersections with structures is 6.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 16.63 and maximum of 16.63 meters.
        4. Product Loss costs between minimum of $224,010.14 and maximum of $224,671.13
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.29 Millions of dollars
        2. No. of intersections with structures is 9.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 8.87 and maximum of 8.87 meters.
        4. Product Loss costs between minimum of $56,339.47 and maximum of $56,505.71
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
256. "CADOTTE LAKE TO UTIKUMA STATION NPS 20
     1. Total Cumulative Length (m): 215.41
        1. SCC Method 2 : 180.83
        2. MD Method 2 : 34.59
     2. Likelihood of failure distributed between minimum of 1.012e-01 and maximum of 9.895e-01.
     3. Consequence of failure distributed between minimum of $0.88 and maximum of $1.23 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.86 and maximum of $1.13 Millions of dollars
        2. No. of intersections with structures is 37.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.3 and maximum of 2.3 meters.
        4. Product Loss costs between minimum of $1,941.52 and maximum of $3,279.59
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.97 and maximum of $1.46 Millions of dollars
        2. No. of intersections with structures is 50.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 65.37 and maximum of 65.37 meters.
        4. Product Loss costs between minimum of $53,101.92 and maximum of $607,558.37
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.92 and maximum of $1.21 Millions of dollars
        2. No. of intersections with structures is 48.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 8.98 and maximum of 8.98 meters.
        4. Product Loss costs between minimum of $63,794.00 and maximum of $107,759.91
     7. Repair costs between minimum of $57,000.00 and maximum of $330,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
257. "03 Tie in to Radial Lake From 06-20-39-07W5 To 07-20-39-07W5
     1. Total Cumulative Length (m): 191.6
        1. EC Method 1 : 191.6
     2. Likelihood of failure distributed between minimum of 9.902e-01 and maximum of 9.902e-01.
     3. Consequence of failure distributed between minimum of $0.41 and maximum of $0.42 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.27 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.45 and maximum of 2.45 meters.
        4. Product Loss costs between minimum of $60,855.70 and maximum of $60,855.70
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $5.02 and maximum of $5.28 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $268,825.00 and maximum of $268,825.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 47.49 and maximum of 47.49 meters.
        4. Product Loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.21 and maximum of $2.21 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 34.62 and maximum of 34.62 meters.
        4. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23
     7. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is HVP Product."
258. "SS-27 NPS 4
     1. Total Cumulative Length (m): 182.72
        1. IC Method 1 : 182.72
     2. Likelihood of failure distributed between minimum of 9.036e-01 and maximum of 9.062e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.23 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.47 and maximum of 2.47 meters.
        4. Product Loss costs between minimum of $2,065.80 and maximum of $2,065.80
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.48 and maximum of $0.50 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 18.06 and maximum of 18.06 meters.
        4. Product Loss costs between minimum of $269,886.87 and maximum of $269,886.87
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.28 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.64 and maximum of 9.64 meters.
        4. Product Loss costs between minimum of $67,877.66 and maximum of $67,877.66
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
259. "FORT WHYTE INLET PIPING NPS 6
     1. Total Cumulative Length (m): 181.78
        1. IC Method 1 : 181.78
     2. Likelihood of failure distributed between minimum of 9.212e-01 and maximum of 9.212e-01.
     3. Consequence of failure distributed between minimum of $0.66 and maximum of $0.66 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.30 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.45 and maximum of 2.45 meters.
        4. Product Loss costs between minimum of $60,855.70 and maximum of $60,855.70
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $17.48 and maximum of $17.48 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 75.18 and maximum of 75.18 meters.
        4. Product Loss costs between minimum of $17,232,190.63 and maximum of $17,232,190.63
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.24 and maximum of $2.24 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 34.62 and maximum of 34.62 meters.
        4. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23
     7. Repair costs between minimum of $40,000.00 and maximum of $40,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
260. "EV-102 NPS 4
     1. Total Cumulative Length (m): 181.66
        1. IC Method 1 : 181.66
     2. Likelihood of failure distributed between minimum of 9.010e-01 and maximum of 9.030e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.23 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 7.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.47 and maximum of 2.47 meters.
        4. Product Loss costs between minimum of $2,056.96 and maximum of $2,061.14
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.50 and maximum of $0.53 Millions of dollars
        2. No. of intersections with structures is 5.0, with minimum of $25,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 18.06 and maximum of 18.06 meters.
        4. Product Loss costs between minimum of $268,730.99 and maximum of $269,277.30
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.28 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 10.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.64 and maximum of 9.64 meters.
        4. Product Loss costs between minimum of $67,586.95 and maximum of $67,724.35
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
261. "COCHRANE TO ROCKY MOUNTAIN HOUSE NPS 8
     1. Total Cumulative Length (m): 179.99
        1. EC Method 2 : 30.0
        2. MD Method 2 : 150.0
     2. Likelihood of failure distributed between minimum of 1.555e-02 and maximum of 9.577e-01.
     3. Consequence of failure distributed between minimum of $4.33 and maximum of $17.37 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 52.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.26 and maximum of 2.45 meters.
        4. Product Loss costs between minimum of $51,540.43 and maximum of $60,855.70
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $24.95 and maximum of $29.42 Millions of dollars
        2. No. of intersections with structures is 225.0, with minimum of $564,736.00 and maximum of $564,736.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 85.63 and maximum of 90.91 meters.
        4. Product Loss costs between minimum of $24,736,239.66 and maximum of $29,206,998.79
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.91 and maximum of $2.21 Millions of dollars
        2. No. of intersections with structures is 133.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 32.61 and maximum of 34.62 meters.
        4. Product Loss costs between minimum of $1,693,501.49 and maximum of $1,999,580.23
     7. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
262. "NIPISI CONDENSATE NPS 6
     1. Total Cumulative Length (m): 171.51
        1. IC Method 1 : 171.51
     2. Likelihood of failure distributed between minimum of 9.117e-01 and maximum of 9.117e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.22 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.21 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 7.14 and maximum of 7.14 meters.
        4. Product Loss costs between minimum of $2,189.52 and maximum of $2,193.27
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.84 and maximum of $0.84 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 65.85 and maximum of 65.85 meters.
        4. Product Loss costs between minimum of $619,994.30 and maximum of $621,057.70
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.28 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 28.43 and maximum of 28.43 meters.
        4. Product Loss costs between minimum of $71,942.59 and maximum of $72,065.98
     7. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Condensate."
263. "RADIAL LAKE RIVER CROSSING NPS 8
     1. Total Cumulative Length (m): 169.12
        1. CT : 169.12
     2. Likelihood of failure distributed between minimum of 5.152e-02 and maximum of 5.385e-02.
     3. Consequence of failure distributed between minimum of $12.23 and maximum of $12.35 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.26 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.18 and maximum of 2.18 meters.
        4. Product Loss costs between minimum of $48,231.06 and maximum of $48,231.06
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $23.67 and maximum of $23.75 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $269,868.00 and maximum of $355,118.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 83.61 and maximum of 83.61 meters.
        4. Product Loss costs between minimum of $23,147,943.65 and maximum of $23,147,943.65
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.80 and maximum of $1.83 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 31.84 and maximum of 31.84 meters.
        4. Product Loss costs between minimum of $1,584,762.99 and maximum of $1,584,762.99
     7. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is HVP Product."
264. "COLEVILLE TRANSGAS TIE IN
     1. Total Cumulative Length (m): 167.0
        1. IC Method 1 : 167.0
     2. Likelihood of failure distributed between minimum of 9.069e-01 and maximum of 9.100e-01.
     3. Consequence of failure distributed between minimum of $0.27 and maximum of $0.35 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.26 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.23 and maximum of 2.23 meters.
        4. Product Loss costs between minimum of $50,253.45 and maximum of $50,253.45
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $4.20 and maximum of $4.20 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 44.33 and maximum of 44.33 meters.
        4. Product Loss costs between minimum of $3,971,635.81 and maximum of $3,971,635.81
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.88 and maximum of $1.88 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 32.32 and maximum of 32.32 meters.
        4. Product Loss costs between minimum of $1,651,214.29 and maximum of $1,651,214.29
     7. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
265. "NPS4 Sundre Lateral From 7-4-34-5-W5 To 10-4-34-5-W5
     1. Total Cumulative Length (m): 154.15
        1. IC Method 1 : 154.15
     2. Likelihood of failure distributed between minimum of 9.013e-01 and maximum of 9.056e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.23 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 7.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.37 and maximum of 2.37 meters.
        4. Product Loss costs between minimum of $1,877.17 and maximum of $1,879.16
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.48 and maximum of $0.48 Millions of dollars
        2. No. of intersections with structures is 5.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 17.33 and maximum of 17.33 meters.
        4. Product Loss costs between minimum of $245,242.59 and maximum of $245,502.19
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 8.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.25 and maximum of 9.25 meters.
        4. Product Loss costs between minimum of $61,679.52 and maximum of $61,744.81
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
266. "SS-28 NPS 4
     1. Total Cumulative Length (m): 146.39
        1. IC Method 1 : 146.39
     2. Likelihood of failure distributed between minimum of 9.039e-01 and maximum of 9.090e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.24 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.47 and maximum of 2.47 meters.
        4. Product Loss costs between minimum of $2,056.96 and maximum of $2,060.61
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.48 and maximum of $0.50 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 18.06 and maximum of 18.06 meters.
        4. Product Loss costs between minimum of $268,730.99 and maximum of $269,207.75
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.28 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.64 and maximum of 9.64 meters.
        4. Product Loss costs between minimum of $67,586.95 and maximum of $67,706.85
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
267. "VERMILLION TIE IN NPS 4
     1. Total Cumulative Length (m): 112.13
        1. IC Method 1 : 112.13
     2. Likelihood of failure distributed between minimum of 9.016e-01 and maximum of 9.054e-01.
     3. Consequence of failure distributed between minimum of $0.23 and maximum of $0.24 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.24 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 6.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.46 and maximum of 2.46 meters.
        4. Product Loss costs between minimum of $2,036.14 and maximum of $2,038.15
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.50 and maximum of $0.55 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $25,000.00 and maximum of $75,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 17.98 and maximum of 17.98 meters.
        4. Product Loss costs between minimum of $266,010.97 and maximum of $266,274.27
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.30 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 6.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.6 and maximum of 9.6 meters.
        4. Product Loss costs between minimum of $66,902.85 and maximum of $66,969.07
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
268. "PENN WEST 10-29 LATERAL NPS 4
     1. Total Cumulative Length (m): 96.5
        1. IC Method 1 : 96.5
     2. Likelihood of failure distributed between minimum of 9.018e-01 and maximum of 9.082e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.24 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.37 and maximum of 2.37 meters.
        4. Product Loss costs between minimum of $1,877.17 and maximum of $1,879.39
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.48 and maximum of $0.48 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 17.33 and maximum of 17.33 meters.
        4. Product Loss costs between minimum of $245,242.59 and maximum of $245,532.79
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 4.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.25 and maximum of 9.25 meters.
        4. Product Loss costs between minimum of $61,679.52 and maximum of $61,752.51
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
269. "STRATHCONA AOSPL CONNECTION NPS 12
     1. Total Cumulative Length (m): 78.6
        1. IC Method 1 : 78.6
     2. Likelihood of failure distributed between minimum of 9.028e-01 and maximum of 9.061e-01.
     3. Consequence of failure distributed between minimum of $0.98 and maximum of $1.01 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.99 and maximum of $1.01 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.47 and maximum of 2.47 meters.
        4. Product Loss costs between minimum of $2,057.56 and maximum of $2,058.77
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $3.17 and maximum of $3.17 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 46.6 and maximum of 46.6 meters.
        4. Product Loss costs between minimum of $2,157,946.29 and maximum of $2,159,210.24
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.05 and maximum of $1.08 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.64 and maximum of 9.64 meters.
        4. Product Loss costs between minimum of $67,606.80 and maximum of $67,646.40
     7. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
270. "STRATHCONA INTERPIPE CONNECTION NPS 12
     1. Total Cumulative Length (m): 64.93
        1. IC Method 1 : 64.93
     2. Likelihood of failure distributed between minimum of 9.035e-01 and maximum of 9.090e-01.
     3. Consequence of failure distributed between minimum of $1.03 and maximum of $1.10 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.99 and maximum of $1.01 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.35 and maximum of 2.35 meters.
        4. Product Loss costs between minimum of $1,855.48 and maximum of $1,856.97
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $23.31 and maximum of $23.31 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $20,374,375.00 and maximum of $20,374,375.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 44.47 and maximum of 44.47 meters.
        4. Product Loss costs between minimum of $1,946,005.91 and maximum of $1,947,573.44
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.05 and maximum of $1.07 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.2 and maximum of 9.2 meters.
        4. Product Loss costs between minimum of $60,966.87 and maximum of $61,015.98
     7. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
271. "SUNDRE TO HARTELL NPS 12
     1. Total Cumulative Length (m): 59.99
        1. RES : 59.99
     2. Likelihood of failure distributed between minimum of 9.137e-01 and maximum of 9.560e-01.
     3. Consequence of failure distributed between minimum of $0.85 and maximum of $0.85 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.85 and maximum of $0.85 Millions of dollars
        2. No. of intersections with structures is 2697.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.26 and maximum of 2.47 meters.
        4. Product Loss costs between minimum of $2,037.76 and maximum of $2,326.93
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.89 and maximum of $0.92 Millions of dollars
        2. No. of intersections with structures is 293.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 42.7 and maximum of 46.6 meters.
        4. Product Loss costs between minimum of $50,665.86 and maximum of $80,793.56
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.91 and maximum of $0.92 Millions of dollars
        2. No. of intersections with structures is 752.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 8.83 and maximum of 9.64 meters.
        4. Product Loss costs between minimum of $66,956.11 and maximum of $76,457.76
     7. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
272. "CACTUS LAKE TO KERROBERT NPS 10
     1. Total Cumulative Length (m): 59.99
        1. SCC Method 1b : 59.99
     2. Likelihood of failure distributed between minimum of 9.090e-01 and maximum of 9.475e-01.
     3. Consequence of failure distributed between minimum of $0.23 and maximum of $0.23 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.22 Millions of dollars
        2. No. of intersections with structures is 38.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.47 and maximum of 2.47 meters.
        4. Product Loss costs between minimum of $2,459.75 and maximum of $2,473.01
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.23 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 19.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 39.9 and maximum of 39.9 meters.
        4. Product Loss costs between minimum of $17,997.90 and maximum of $23,570.51
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.30 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 46.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 9.64 and maximum of 9.64 meters.
        4. Product Loss costs between minimum of $80,821.68 and maximum of $81,257.42
     7. Repair costs between minimum of $17,000.00 and maximum of $17,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
273. "NPS8 Empress to Laporte from 5-12-20-1W4 to 4-2-27-26W3
     1. Total Cumulative Length (m): 59.98
        1. SCC Method 1b : 59.98
     2. Likelihood of failure distributed between minimum of 1.048e-02 and maximum of 3.694e-02.
     3. Consequence of failure distributed between minimum of $11.27 and maximum of $12.70 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.28 and maximum of $0.31 Millions of dollars
        2. No. of intersections with structures is 7.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.45 and maximum of 2.45 meters.
        4. Product Loss costs between minimum of $60,855.70 and maximum of $60,855.70
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $29.42 and maximum of $29.46 Millions of dollars
        2. No. of intersections with structures is 11.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 90.91 and maximum of 90.91 meters.
        4. Product Loss costs between minimum of $29,206,998.79 and maximum of $29,206,998.79
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.21 and maximum of $2.25 Millions of dollars
        2. No. of intersections with structures is 13.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 34.62 and maximum of 34.62 meters.
        4. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23
     7. Repair costs between minimum of $14,500.00 and maximum of $50,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
274. "BATCH TRANSFER LINE NPS 24
     1. Total Cumulative Length (m): 46.37
        1. CSCC Method 1a : 46.37
     2. Likelihood of failure distributed between minimum of 1.440e-02 and maximum of 2.416e-02.
     3. Consequence of failure distributed between minimum of $23.25 and maximum of $23.53 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $23.15 and maximum of $23.15 Millions of dollars
        2. No. of intersections with structures is 32.0, with minimum of $20,349,375.00 and maximum of $20,349,375.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.74 and maximum of 1.74 meters.
        4. Product Loss costs between minimum of $943.45 and maximum of $948.67
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $29.37 and maximum of $29.39 Millions of dollars
        2. No. of intersections with structures is 16.0, with minimum of $23,062,625.00 and maximum of $23,062,625.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 58.13 and maximum of 58.13 meters.
        4. Product Loss costs between minimum of $3,505,983.01 and maximum of $3,525,381.06
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $23.18 and maximum of $23.18 Millions of dollars
        2. No. of intersections with structures is 34.0, with minimum of $20,349,375.00 and maximum of $20,349,375.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 6.76 and maximum of 6.76 meters.
        4. Product Loss costs between minimum of $30,999.70 and maximum of $31,171.21
     7. Repair costs between minimum of $404,000.00 and maximum of $404,000.00.
     8. Outage losses between minimum of $2,400,000.00 and maximum of $2,400,000.00.
     9. Product type is Crude Oil."
275. "SL-104 NPS 4
     1. Total Cumulative Length (m): 44.02
        1. IC Method 1 : 44.02
     2. Likelihood of failure distributed between minimum of 9.009e-01 and maximum of 9.012e-01.
     3. Consequence of failure distributed between minimum of $0.21 and maximum of $0.21 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.21 and maximum of $0.21 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.3 and maximum of 2.3 meters.
        4. Product Loss costs between minimum of $1,757.60 and maximum of $1,758.61
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.44 and maximum of $0.44 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 16.82 and maximum of 16.82 meters.
        4. Product Loss costs between minimum of $229,621.28 and maximum of $229,753.66
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.27 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 8.97 and maximum of 8.97 meters.
        4. Product Loss costs between minimum of $57,750.70 and maximum of $57,783.99
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
276. "UL-93 NPS 6
     1. Total Cumulative Length (m): 41.05
        1. IC Method 1 : 41.05
     2. Likelihood of failure distributed between minimum of 9.034e-01 and maximum of 9.048e-01.
     3. Consequence of failure distributed between minimum of $0.24 and maximum of $0.24 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.24 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.3 and maximum of 2.3 meters.
        4. Product Loss costs between minimum of $1,757.60 and maximum of $1,758.54
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.73 and maximum of $0.73 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 23.91 and maximum of 23.91 meters.
        4. Product Loss costs between minimum of $497,689.95 and maximum of $497,957.52
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.29 and maximum of $0.29 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 8.97 and maximum of 8.97 meters.
        4. Product Loss costs between minimum of $57,750.70 and maximum of $57,781.74
     7. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
277. "SS-18 NPS 4
     1. Total Cumulative Length (m): 40.19
        1. IC Method 1 : 40.19
     2. Likelihood of failure distributed between minimum of 9.053e-01 and maximum of 9.095e-01.
     3. Consequence of failure distributed between minimum of $0.23 and maximum of $0.23 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.24 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.15 and maximum of 2.15 meters.
        4. Product Loss costs between minimum of $1,514.06 and maximum of $1,514.98
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.46 and maximum of $0.46 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $50,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 15.71 and maximum of 15.71 meters.
        4. Product Loss costs between minimum of $197,803.64 and maximum of $197,924.50
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.28 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 8.39 and maximum of 8.39 meters.
        4. Product Loss costs between minimum of $49,748.43 and maximum of $49,778.82
     7. Repair costs between minimum of $9,000.00 and maximum of $9,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
278. "NPS8 Condensate to Enbridge From 03-05-053-23W4 To 02-05-053-23W4
     1. Total Cumulative Length (m): 33.89
        1. EC Method 1 : 33.89
     2. Likelihood of failure distributed between minimum of 1.348e-01 and maximum of 1.434e-01.
     3. Consequence of failure distributed between minimum of $3.00 and maximum of $3.01 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $2.94 and maximum of $2.94 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 6.61 and maximum of 6.61 meters.
        4. Product Loss costs between minimum of $1,838.32 and maximum of $1,838.76
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $4.09 and maximum of $4.09 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $2,957,075.00 and maximum of $2,957,075.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 75.57 and maximum of 75.57 meters.
        4. Product Loss costs between minimum of $882,282.41 and maximum of $882,493.55
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $3.00 and maximum of $3.00 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 26.56 and maximum of 26.56 meters.
        4. Product Loss costs between minimum of $60,403.14 and maximum of $60,417.60
     7. Repair costs between minimum of $50,000.00 and maximum of $50,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Condensate."
279. "NPS8 Rainbow P/L to Tirmoil From 11-15-77-14W5 to 15-29-81-9W5
     1. Total Cumulative Length (m): 30.0
        1. SCC Method 1b : 30.0
     2. Likelihood of failure distributed between minimum of 9.984e-01 and maximum of 9.984e-01.
     3. Consequence of failure distributed between minimum of $0.73 and maximum of $0.73 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.22 Millions of dollars
        2. No. of intersections with structures is 207.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.37 and maximum of 2.37 meters.
        4. Product Loss costs between minimum of $2,269.06 and maximum of $2,271.42
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $1.30 and maximum of $1.30 Millions of dollars
        2. No. of intersections with structures is 109.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 31.32 and maximum of 31.32 meters.
        4. Product Loss costs between minimum of $1,089,011.02 and maximum of $1,090,142.82
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.29 and maximum of $0.29 Millions of dollars
        2. No. of intersections with structures is 228.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 9.25 and maximum of 9.25 meters.
        4. Product Loss costs between minimum of $74,556.27 and maximum of $74,633.76
     7. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
280. "WEST PEMBINA TO BRAZEAU NPS 3
     1. Total Cumulative Length (m): 30.0
        1. EC Method 2 : 30.0
     2. Likelihood of failure distributed between minimum of 8.286e-01 and maximum of 8.286e-01.
     3. Consequence of failure distributed between minimum of $1.03 and maximum of $1.03 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.27 Millions of dollars
        2. No. of intersections with structures is 24.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.45 and maximum of 2.45 meters.
        4. Product Loss costs between minimum of $60,855.70 and maximum of $60,855.70
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $5.02 and maximum of $5.02 Millions of dollars
        2. No. of intersections with structures is 53.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 47.49 and maximum of 47.49 meters.
        4. Product Loss costs between minimum of $4,809,554.10 and maximum of $4,809,554.10
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.21 and maximum of $2.21 Millions of dollars
        2. No. of intersections with structures is 50.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 34.62 and maximum of 34.62 meters.
        4. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23
     7. Repair costs between minimum of $6,000.00 and maximum of $6,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
281. "SECT 8 RAPID CITY TO PORTAGE NPS 6
     1. Total Cumulative Length (m): 30.0
        1. EC Method 2 : 30.0
     2. Likelihood of failure distributed between minimum of 3.856e-01 and maximum of 3.856e-01.
     3. Consequence of failure distributed between minimum of $1.01 and maximum of $1.01 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.27 Millions of dollars
        2. No. of intersections with structures is 22.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.48 and maximum of 2.48 meters.
        4. Product Loss costs between minimum of $62,251.66 and maximum of $62,251.66
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $17.84 and maximum of $17.84 Millions of dollars
        2. No. of intersections with structures is 75.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 75.8 and maximum of 75.8 meters.
        4. Product Loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.26 and maximum of $2.26 Millions of dollars
        2. No. of intersections with structures is 45.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 34.91 and maximum of 34.91 meters.
        4. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13
     7. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
282. "ZAMA TO RAINBOW STATION NPS 20
     1. Total Cumulative Length (m): 29.99
        1. RES : 29.99
     2. Likelihood of failure distributed between minimum of 1.000e+00 and maximum of 1.000e+00.
     3. Consequence of failure distributed between minimum of $0.86 and maximum of $0.86 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.86 and maximum of $0.86 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.17 and maximum of 2.17 meters.
        4. Product Loss costs between minimum of $1,569.88 and maximum of $1,569.88
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.89 and maximum of $0.89 Millions of dollars
        2. No. of intersections with structures is 13.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 61.75 and maximum of 61.75 meters.
        4. Product Loss costs between minimum of $29,172.30 and maximum of $29,172.30
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.91 and maximum of $0.91 Millions of dollars
        2. No. of intersections with structures is 7.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 8.48 and maximum of 8.48 meters.
        4. Product Loss costs between minimum of $51,582.78 and maximum of $51,582.78
     7. Repair costs between minimum of $57,000.00 and maximum of $57,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
283. "NPS8 Laporte to Kerrobert from 4-2-27-26W3 to 4-34-33-22W3
     1. Total Cumulative Length (m): 29.99
        1. SCC Method 1b : 29.99
     2. Likelihood of failure distributed between minimum of 1.747e-02 and maximum of 1.747e-02.
     3. Consequence of failure distributed between minimum of $12.08 and maximum of $12.08 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.31 and maximum of $0.31 Millions of dollars
        2. No. of intersections with structures is 5.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.45 and maximum of 2.45 meters.
        4. Product Loss costs between minimum of $60,855.70 and maximum of $60,855.70
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $29.46 and maximum of $29.46 Millions of dollars
        2. No. of intersections with structures is 21.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 90.91 and maximum of 90.91 meters.
        4. Product Loss costs between minimum of $29,206,998.79 and maximum of $29,206,998.79
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.25 and maximum of $2.25 Millions of dollars
        2. No. of intersections with structures is 14.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 34.62 and maximum of 34.62 meters.
        4. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23
     7. Repair costs between minimum of $50,000.00 and maximum of $50,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
284. "NPS12 Medicine River Jct to Sundre From 9-27-39-3-W5 To 16-8-34-5-W5
     1. Total Cumulative Length (m): 29.99
        1. RES : 29.99
     2. Likelihood of failure distributed between minimum of 1.000e+00 and maximum of 1.000e+00.
     3. Consequence of failure distributed between minimum of $0.85 and maximum of $0.85 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.85 and maximum of $0.85 Millions of dollars
        2. No. of intersections with structures is 55.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.37 and maximum of 2.37 meters.
        4. Product Loss costs between minimum of $2,122.56 and maximum of $2,124.75
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.91 and maximum of $0.91 Millions of dollars
        2. No. of intersections with structures is 97.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 44.7 and maximum of 44.7 meters.
        4. Product Loss costs between minimum of $68,380.81 and maximum of $68,380.81
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.91 and maximum of $0.91 Millions of dollars
        2. No. of intersections with structures is 80.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 9.25 and maximum of 9.25 meters.
        4. Product Loss costs between minimum of $69,742.62 and maximum of $69,814.48
     7. Repair costs between minimum of $44,000.00 and maximum of $44,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
285. "PINCHER CREEK TO CARWAY NPS 12
     1. Total Cumulative Length (m): 29.99
        1. MD Method 2 : 29.99
     2. Likelihood of failure distributed between minimum of 2.539e-01 and maximum of 2.539e-01.
     3. Consequence of failure distributed between minimum of $1.00 and maximum of $1.00 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.99 and maximum of $0.99 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.41 and maximum of 2.41 meters.
        4. Product Loss costs between minimum of $2,232.03 and maximum of $2,232.03
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $1.06 and maximum of $1.06 Millions of dollars
        2. No. of intersections with structures is 21.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 45.47 and maximum of 45.47 meters.
        4. Product Loss costs between minimum of $68,498.32 and maximum of $68,498.32
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.06 and maximum of $1.06 Millions of dollars
        2. No. of intersections with structures is 2.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 9.4 and maximum of 9.4 meters.
        4. Product Loss costs between minimum of $73,339.44 and maximum of $73,339.44
     7. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
286. "SECT 9 PORTAGE TO FORT WHYTE TERMINAL NPS 6
     1. Total Cumulative Length (m): 29.99
        1. TPD : 29.99
     2. Likelihood of failure distributed between minimum of 1.002e-02 and maximum of 1.002e-02.
     3. Consequence of failure distributed between minimum of $22.83 and maximum of $22.83 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.27 and maximum of $0.27 Millions of dollars
        2. No. of intersections with structures is 13.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.48 and maximum of 2.48 meters.
        4. Product Loss costs between minimum of $62,251.66 and maximum of $62,251.66
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $38.19 and maximum of $38.19 Millions of dollars
        2. No. of intersections with structures is 55.0, with minimum of $20,349,375.00 and maximum of $20,349,375.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 75.8 and maximum of 75.8 meters.
        4. Product Loss costs between minimum of $17,627,475.77 and maximum of $17,627,475.77
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $22.61 and maximum of $22.61 Millions of dollars
        2. No. of intersections with structures is 47.0, with minimum of $20,349,375.00 and maximum of $20,349,375.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 34.91 and maximum of 34.91 meters.
        4. Product Loss costs between minimum of $2,045,448.13 and maximum of $2,045,448.13
     7. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
287. "EMPRESS TO LAPORTE NPS 10
     1. Total Cumulative Length (m): 29.99
        1. SCC Method 1b : 29.99
     2. Likelihood of failure distributed between minimum of 4.197e-01 and maximum of 4.197e-01.
     3. Consequence of failure distributed between minimum of $20.16 and maximum of $20.16 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.28 and maximum of $0.28 Millions of dollars
        2. No. of intersections with structures is 4.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.45 and maximum of 2.45 meters.
        4. Product Loss costs between minimum of $60,855.70 and maximum of $60,855.70
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $45.59 and maximum of $45.59 Millions of dollars
        2. No. of intersections with structures is 14.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 106.53 and maximum of 106.53 meters.
        4. Product Loss costs between minimum of $45,371,762.88 and maximum of $45,371,762.88
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.22 and maximum of $2.22 Millions of dollars
        2. No. of intersections with structures is 10.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 34.62 and maximum of 34.62 meters.
        4. Product Loss costs between minimum of $1,999,580.23 and maximum of $1,999,580.23
     7. Repair costs between minimum of $17,000.00 and maximum of $17,000.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is NGL."
288. "SILVER SPRINGS TO BRETON NPS 8
     1. Total Cumulative Length (m): 29.99
        1. MD Method 2 : 29.99
     2. Likelihood of failure distributed between minimum of 9.239e-01 and maximum of 9.239e-01.
     3. Consequence of failure distributed between minimum of $0.22 and maximum of $0.22 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.22 Millions of dollars
        2. No. of intersections with structures is 15.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 7.14 and maximum of 7.14 meters.
        4. Product Loss costs between minimum of $2,489.94 and maximum of $2,489.94
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.24 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 50.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 80.9 and maximum of 80.9 meters.
        4. Product Loss costs between minimum of $28,567.86 and maximum of $28,567.86
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.30 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 36.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 28.43 and maximum of 28.43 meters.
        4. Product Loss costs between minimum of $81,813.85 and maximum of $81,813.85
     7. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Condensate."
289. "FORT SASKATCHEWAN TO EST (YO-YO) NPS 16
     1. Total Cumulative Length (m): 29.98
        1. MD Method 2 : 29.98
     2. Likelihood of failure distributed between minimum of 3.389e-02 and maximum of 3.389e-02.
     3. Consequence of failure distributed between minimum of $10.69 and maximum of $10.69 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $1.02 and maximum of $1.02 Millions of dollars
        2. No. of intersections with structures is 32.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 1.86 and maximum of 1.86 meters.
        4. Product Loss costs between minimum of $35,177.42 and maximum of $35,177.42
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $59.16 and maximum of $59.16 Millions of dollars
        2. No. of intersections with structures is 73.0, with minimum of $75,000.00 and maximum of $75,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 116.45 and maximum of 116.45 meters.
        4. Product Loss costs between minimum of $58,099,358.13 and maximum of $58,099,358.13
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.14 and maximum of $2.14 Millions of dollars
        2. No. of intersections with structures is 92.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 28.42 and maximum of 28.42 meters.
        4. Product Loss costs between minimum of $1,155,850.00 and maximum of $1,155,850.00
     7. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is HVP Product."
290. "ELLERSLIE TO STRATHCONA NPS 12
     1. Total Cumulative Length (m): 29.98
        1. SCC Method 1b : 29.98
     2. Likelihood of failure distributed between minimum of 2.416e-01 and maximum of 2.416e-01.
     3. Consequence of failure distributed between minimum of $1.01 and maximum of $1.01 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.99 and maximum of $0.99 Millions of dollars
        2. No. of intersections with structures is 90.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.3 and maximum of 2.3 meters.
        4. Product Loss costs between minimum of $1,961.82 and maximum of $1,962.69
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $1.04 and maximum of $1.04 Millions of dollars
        2. No. of intersections with structures is 163.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 43.41 and maximum of 43.41 meters.
        4. Product Loss costs between minimum of $52,615.55 and maximum of $52,615.55
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.05 and maximum of $1.05 Millions of dollars
        2. No. of intersections with structures is 187.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 8.98 and maximum of 8.98 meters.
        4. Product Loss costs between minimum of $64,460.96 and maximum of $64,489.51
     7. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
291. "SS-03 NPS 6
     1. Total Cumulative Length (m): 29.07
        1. SCC Method 1b : 29.07
     2. Likelihood of failure distributed between minimum of 9.522e-01 and maximum of 9.522e-01.
     3. Consequence of failure distributed between minimum of $0.49 and maximum of $0.49 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.24 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 18.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.39 and maximum of 2.39 meters.
        4. Product Loss costs between minimum of $2,014.88 and maximum of $2,014.88
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.81 and maximum of $0.81 Millions of dollars
        2. No. of intersections with structures is 13.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 24.84 and maximum of 24.84 meters.
        4. Product Loss costs between minimum of $570,544.27 and maximum of $570,544.27
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.30 and maximum of $0.30 Millions of dollars
        2. No. of intersections with structures is 20.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.32 and maximum of 9.32 meters.
        4. Product Loss costs between minimum of $66,204.53 and maximum of $66,204.53
     7. Repair costs between minimum of $11,500.00 and maximum of $11,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
292. "SUNDRE TO BENTLEY NPS 8
     1. Total Cumulative Length (m): 27.68
        1. SCC Method 1b : 27.68
     2. Likelihood of failure distributed between minimum of 9.801e-01 and maximum of 9.801e-01.
     3. Consequence of failure distributed between minimum of $0.27 and maximum of $0.27 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.22 and maximum of $0.22 Millions of dollars
        2. No. of intersections with structures is 40.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 12.02 and maximum of 12.02 meters.
        4. Product Loss costs between minimum of $3,288.49 and maximum of $3,412.35
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $0.34 and maximum of $0.34 Millions of dollars
        2. No. of intersections with structures is 132.0, with minimum of $50,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 75.54 and maximum of 75.54 meters.
        4. Product Loss costs between minimum of $79,995.78 and maximum of $79,995.78
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.35 and maximum of $0.35 Millions of dollars
        2. No. of intersections with structures is 98.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 24.17 and maximum of 24.17 meters.
        4. Product Loss costs between minimum of $108,052.30 and maximum of $112,122.10
     7. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Butane/Condensate."
293. "CROMER DELIVERY LATERAL NPS 8
     1. Total Cumulative Length (m): 27.36
        1. EC Method 1 : 27.36
     2. Likelihood of failure distributed between minimum of 9.931e-01 and maximum of 9.931e-01.
     3. Consequence of failure distributed between minimum of $0.32 and maximum of $0.32 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.24 and maximum of $0.24 Millions of dollars
        2. No. of intersections with structures is 4.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.47 and maximum of 2.47 meters.
        4. Product Loss costs between minimum of $2,059.48 and maximum of $2,062.00
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $1.25 and maximum of $1.25 Millions of dollars
        2. No. of intersections with structures is 3.0, with minimum of $50,000.00 and maximum of $50,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 32.65 and maximum of 32.65 meters.
        4. Product Loss costs between minimum of $988,422.27 and maximum of $989,631.37
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $0.31 and maximum of $0.31 Millions of dollars
        2. No. of intersections with structures is 6.0, with minimum of $25,000.00 and maximum of $25,000.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 9.64 and maximum of 9.64 meters.
        4. Product Loss costs between minimum of $67,669.73 and maximum of $67,752.51
     7. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Crude Oil."
294. "ROCKY MOUNTAIN HOUSE TO SILVER SPRINGS NPS 8
     1. Total Cumulative Length (m): 18.63
        1. MD Method 2 : 18.63
     2. Likelihood of failure distributed between minimum of 1.979e-01 and maximum of 1.979e-01.
     3. Consequence of failure distributed between minimum of $2.91 and maximum of $2.91 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $2.90 and maximum of $2.90 Millions of dollars
        2. No. of intersections with structures is 1.0, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted.
        3. Damage radius distributed between minimum of 6.81 and maximum of 6.81 meters.
        4. Product Loss costs between minimum of $1,977.31 and maximum of $1,980.62
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $2.94 and maximum of $2.94 Millions of dollars
        2. No. of intersections with structures is 40.0, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 77.56 and maximum of 77.56 meters.
        4. Product Loss costs between minimum of $34,062.51 and maximum of $34,062.51
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $2.97 and maximum of $2.97 Millions of dollars
        2. No. of intersections with structures is 19.0, with minimum of $2,688,250.00 and maximum of $2,688,250.00 in cost of structures impacted
        3. Damage radius distributed between minimum of 27.26 and maximum of 27.26 meters.
        4. Product Loss costs between minimum of $64,969.87 and maximum of $65,078.75
     7. Repair costs between minimum of $14,500.00 and maximum of $14,500.00.
     8. Outage losses between minimum of $200,000.00 and maximum of $200,000.00.
     9. Product type is Condensate."
295. "WASCANA MAINLINE NPS 12
     1. Total Cumulative Length (m): 7.84
        1. MD Method 2 : 7.84
     2. Likelihood of failure distributed between minimum of 2.810e-01 and maximum of 2.810e-01.
     3. Consequence of failure distributed between minimum of $1.03 and maximum of $1.03 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.99 and maximum of $0.99 Millions of dollars
        2. No. of intersections with structures is 9.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 2.29 and maximum of 2.29 meters.
        4. Product Loss costs between minimum of $2,231.01 and maximum of $2,231.01
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $1.25 and maximum of $1.25 Millions of dollars
        2. No. of intersections with structures is 34.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 43.32 and maximum of 43.32 meters.
        4. Product Loss costs between minimum of $263,285.43 and maximum of $263,285.43
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.06 and maximum of $1.06 Millions of dollars
        2. No. of intersections with structures is 18.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 8.96 and maximum of 8.96 meters.
        4. Product Loss costs between minimum of $73,305.89 and maximum of $73,305.89
     7. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude Oil."
296. "NPS12 Carway to border From 6-3-1-26W4 To 1-3-1-26W4
     1. Total Cumulative Length (m): 2.47
        1. MD Method 1 : 2.47
     2. Likelihood of failure distributed between minimum of 1.016e-01 and maximum of 1.016e-01.
     3. Consequence of failure distributed between minimum of $1.00 and maximum of $1.00 Millions of dollars
     4. Leak scenario:
        1. Economic Loss cost between minimum of $0.99 and maximum of $0.99 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted.
        3. Damage radius distributed between minimum of 5.65 and maximum of 5.65 meters.
        4. Product Loss costs between minimum of $1,728.13 and maximum of $1,728.37
     5. Rupture scenario:
        1. Economic Loss cost between minimum of $1.07 and maximum of $1.07 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 77.22 and maximum of 77.22 meters.
        4. Product Loss costs between minimum of $76,484.97 and maximum of $76,484.97
     6. Puncture scenario:
        1. Economic Loss cost between minimum of $1.04 and maximum of $1.04 Millions of dollars
        2. No. of intersections with structures is 0.0, with minimum of $nan and maximum of $nan in cost of structures impacted
        3. Damage radius distributed between minimum of 20.71 and maximum of 20.71 meters.
        4. Product Loss costs between minimum of $56,782.50 and maximum of $56,790.38
     7. Repair costs between minimum of $187,000.00 and maximum of $187,000.00.
     8. Outage losses between minimum of $800,000.00 and maximum of $800,000.00.
     9. Product type is Crude / Butane Batch."

1. Qualitative risk model – A risk model utilizing a method of scoring which may in incorporate some quantitative elements however presents threat and consequence factors on a relative scale from low to high. Pipeline segments can be evaluated relative to one another; however, risk values have no meaning when taken out of context. [↑](#footnote-ref-1)
2. Quantitative risk model – A risk model utilizing a method of assessment which identifies threat and consequence factors based upon a quantitative scale, for instance, by assessing failure frequency in terms of failures per km-year, and consequence in terms of cost. [↑](#footnote-ref-2)
3. Semi-quantitative risk model - A risk model utilizing a quantitative methodology for assessing failure frequency and a qualitative methodology for scoring consequence. [↑](#footnote-ref-3)
4. The risk matrix has estimated likelihood levels (Unlikely, Remote, Occasional, Probable, and Frequent) as rows and estimated consequence levels (Minor, Moderate, Problematic, Critical, and Catastrophic) as columns. Each box in the matrix has the number of segments or pipelines with likelihood levels at the corresponding row, and consequence levels at the corresponding column. It also includes the representative length percentage for segments residing in the box. [↑](#footnote-ref-4)
5. A dynamic segment is a length of pipe in which a number of variables are consistent along this length. The purpose of creating this granularity is to establish a discrete risk value for each of these “dynamic segments” or “segments” in order to more accurately identify sections of pipe that have elevated levels of risk. [↑](#footnote-ref-5)
6. RiskAnalyst is the software application within the Dynamic Risk IRAS software suite which provides for the calculation of risk values for pipeline assets and comparison of one pipeline asset to another. [↑](#footnote-ref-6)
7. CSA Z662-15, “Oil and Gas Pipeline Systems”, Annex H “Pipeline Failure Records”. [↑](#footnote-ref-7)
8. API 1160, “Managing System Integrity for Hazardous Liquid Pipelines”. [↑](#footnote-ref-8)
9. Risk results at the pipeline level are obtained using a “length average” method which sums up the product of risk values and segment lengths at the dynamic segment level for every dynamic segment within the pipeline divided by the total pipeline length. [↑](#footnote-ref-9)
10. USCD tools utilize ultrasound pulses emitted by the tool to locate and measure cracks. [↑](#footnote-ref-10)
11. EMAT tools are transducers for non-contact sound generation and reception which utilize electromagnetic mechanisms to locate and measure cracks. [↑](#footnote-ref-11)
12. Failure pressures for crack-like anomalies were calculated and compared to the Maximum Operating Pressure (MOP) of the pipeline. Failure pressures that were close to the MOP of the pipeline resulted in increased likelihood scores. This method of calculating likelihood scores is conservative.  Quantifying likelihood based on actual operating pressure will enable more accurate risk predictions (future risk algorithm action item). [↑](#footnote-ref-12)
13. The failure statistics are derived from the PHMSA Hazardous Liquids Incident Data from January 2002 to December 2009. The mileage is the summation of all the onshore steel hazardous liquids pipelines from the 2005 mileage database. [↑](#footnote-ref-13)
14. Deng, C., Zuczek, P., Mihell, J., and Adams, K., 2008, “An Integrated Outflow-Spill Modeling Approach for Risk- Based Valve Placement of Liquid Transmission Pipelines,” IPC2008-64092. [↑](#footnote-ref-14)
15. For simplicity, this model considers a leak to be detected by the first method when the instantaneous leak rate is above a pre-defined fraction of the total flow rate. [↑](#footnote-ref-15)