Risk Analysis of Flowlines

Isabella Chittumuri

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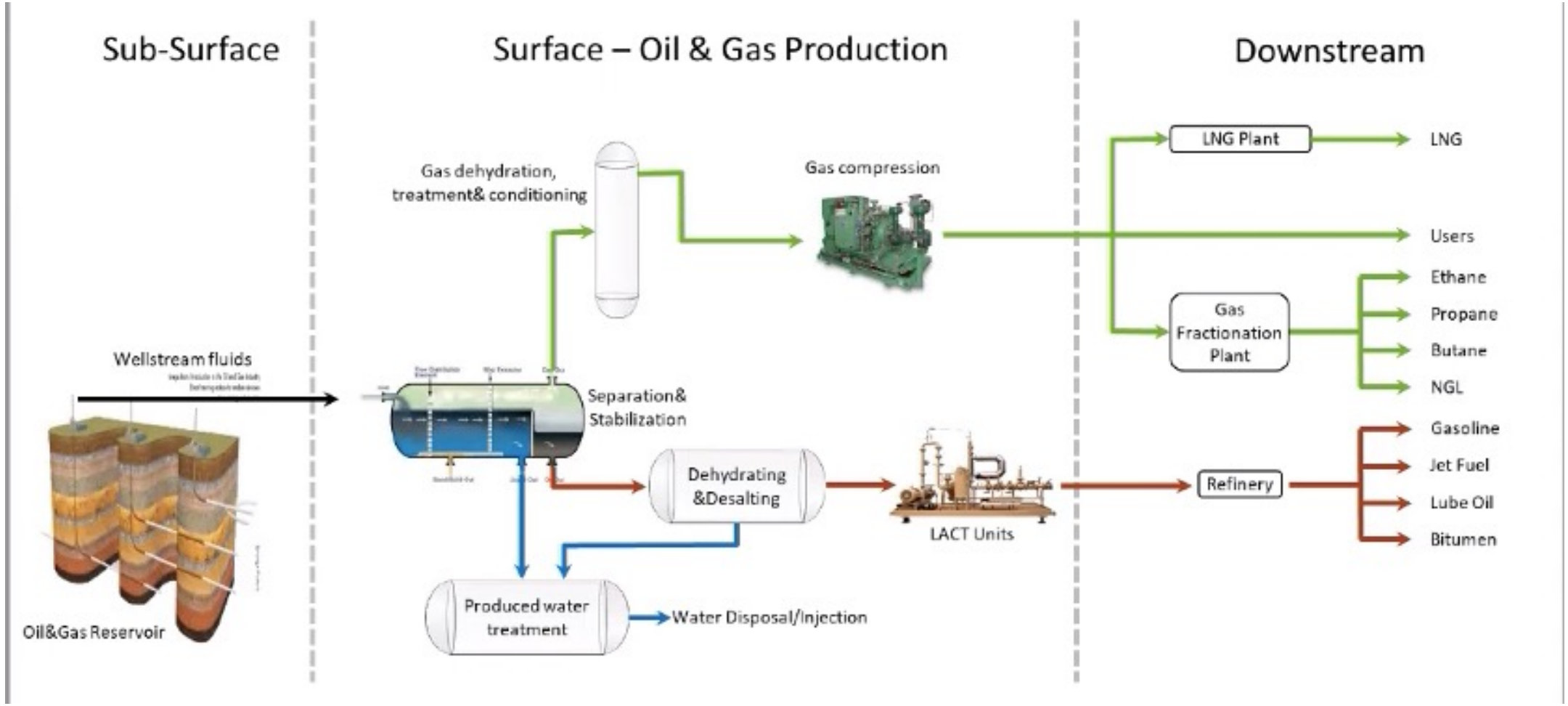
Agenda

1. Background
2. Partner
3. Research Goals
4. Progress Made
5. Future Work

Background


Sub-Surface
Surface – Oil & Gas Production
Downstream
Gas dehydration, treatment& conditioning
Gas compression
LNG Plant
LNG
Users
Ethane
Propane
Butane
NGL
Gas Fractionation Plant
Wellstream fluids
Separation& Stabilization
Dehydrating &Desalting
LACT Units
Refinery
Gasoline
Jet Fuel
Lube Oil
Bitumen
Produced water treatment
Water Disposal/Injection
Oil&Gas Reservoir

Partner

- Colorado Energy and Carbon Management Commission (ECMC)
- Regulate Colorado's oil and gas resources
- Ensure protection of public health, safety, and environment.
- Implement regulations to minimize environmental and public impacts

Research Goals

- Innovative use of GIS and machine learning for risk analysis
- Aim to mitigate environmental impacts and prevent casualties
- Critical need for more detailed flowline failure data

Progress Made

- Literature Review
- Short internal report on data needed
- Data cleaning and exploratory data analysis

Pipeline Spill Report

Dashboard

Explore

Select Date

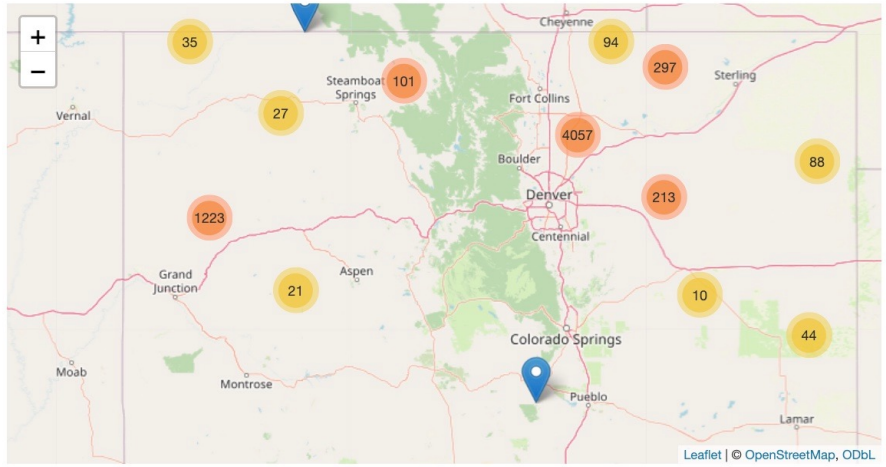
All Time

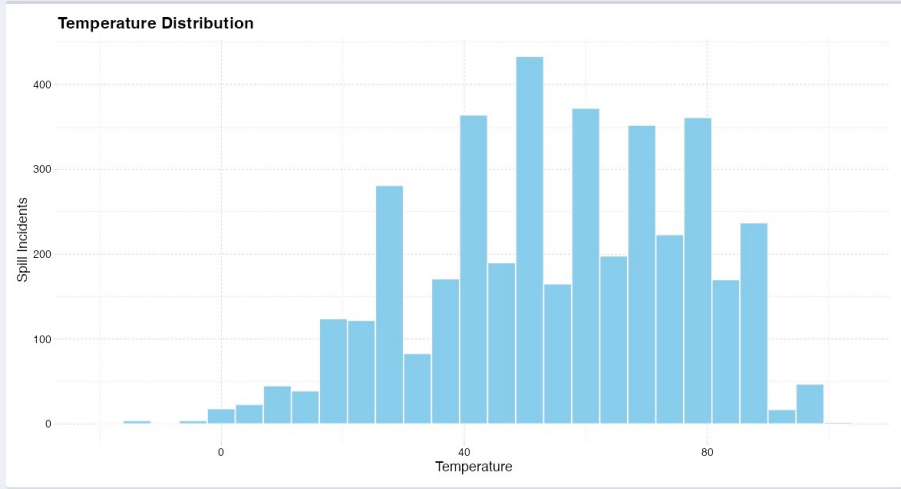
6461
Average Spill Surface Area(ft squared)

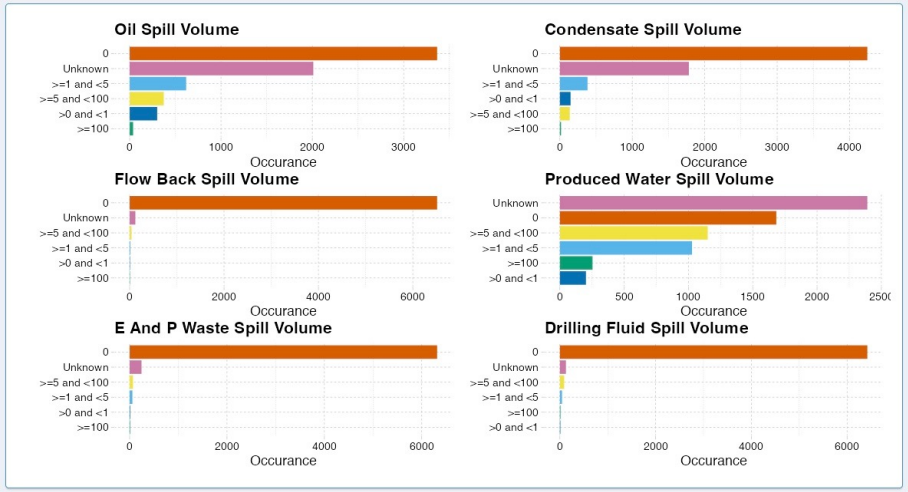
1353
Average Distance to Nearby Building(ft)

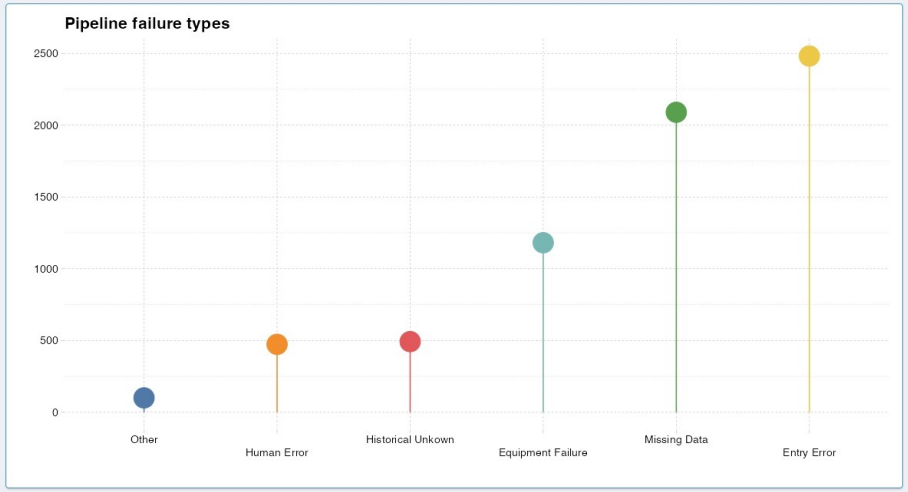
8
Average Water Wells in Area

93
Average Depth to GroundWater









Future Work

- START MODELING (finally)
- Methodology: Logistic Regression, Support Vector Machine (SVM), K Nearest Neighbors (K-NN), Gradient Boosting Decision Trees, AdaBoost, Random Forests