

***TRIMP Direct Examination***

***This form is used to assess steel pipelines.***

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| **Section 1** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| DE Location ID | | | | | | | | | CAD\_2013\_RS-01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | HCA Name | | | | | | | | | | | | | | | | | | | SHCA0042\_12042009\_012 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Examination Number | | | | | | | | | | | | | | | | CAD\_2013\_RS-01 "A" | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Work Request No. | | | | | | | | | | | | | | | | | | | | | | 1740061 | | | | | | | | | | | | | | | | | | | | | | | |
| Division | |  | | | | | | | | | | | | | | | | | | | District Number | | | | | | | | | | | | | | | | | | | | | | | | | | 0042 | | | | | | | | | | | Town or County | | | | | | | | | | | | | | | | | | | | | | | | | | Phoenix | | | | | | | | | | | | | | | | | | | | | | | | | | State | | | | | |  |
| Tile Number | | | | | | | x444y886 | | | | | | | | | | | | | | | | | Address and/or Location | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Sherman St. R/W (in Park) approx 129 ft. W/O C/L 19th Ave. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Inspection Company | | | | | | | | | | | | | | Southwest Gas Corporation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Date GPS Synchronized | | | | | | | | | | | | | | | | | | | | | | | 08/13/2013 | | | | | | | | | | | | |
| Field Location (from Top of Pipe) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Start: GPS X | | | | | | | | | | | | | | | | | | | | | | 643943.0 | | | | | | | | | | | | | | | | | | | Y | | | | | 887816.9 | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | |
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| GPS File Name | | | | | | | | | | CAD\_2013\_RS-01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Region | | | | | | | | |  | | | | | |
| Planned Examination Length | | | | | | | | | | | | | | | | | | | | | | | | | 10 ft. | | | | | | | | | | | | | | | | | | | Actual Examination Length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 16 ft. | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | |
| **Section 2** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Foreign Pipe in Excavation  No  Yes; | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Size | | | | | | | | | |  | | | | | | | | | | Material | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | Foreign Current  Yes  No | | | | | | | | | | | | | | | | | | | | | | | | |
| Bond Present  Yes  No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | If Current Flow, To:  SWG  Foreign From:  SWG  Foreign | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CP Present  Yes  No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Anode Present  Yes  No % consumed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  |
| Environmental Conditions: | | | | | | | | | | | | | | | | | | | | | | | Temp | | | | | | | | | | | | 90° F | | | | | | | | | | | | | Time 24-hr | | | | | | | | | | | | | 0730 | | | | | | | | | | | | | | | | | | Weather Conditions | | | | | | | | | | | | | | | | | | | | | | | | Sunny/Clear | | | | | | | | | | | | | |
| Soil Conditions:  Dry  Moist | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bedding/Shading Type | | | | | | | | | | | | | | | | | | | | | | | | | | Native | | | | | | | | | | | | | | | | | | | | | | | Rockshield Used  Yes  No | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Soil Type:  Clay  Loam  Sand  Gravel  Caliche  Rocky  Solid Rock | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Flowable Backfill (Slurry) | | | | | | | | | | | | | | | | | | | | | | | | | | | Other | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Depth of Cover | | | | | | | | | | | | | | | 48 in. | | | |
| Pipe Data (as found in EMRS): | | | | | | | | | | | | | | | | | | | | | | | | | | | | Nominal Size | | | | | | | | | | | | | | | | | | | | | | 12 | | | | | | | | | | | | | | | | | | | InDiam | | | | | | | | | | | 12.312 | | | | | | | | | | | | | | | | | | | Wthick | | | | | | | | | | 0.219 | | | | | | | |
| Grade | Unk | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Yield | | | | | | | | | | | | 24,000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | WkReqNo | | | | | | | | | | | | | Unk | | | | | | | | | | | | | | | | | | | | |
| Installation Month | | | | | | | | | | | Unk | | | | | | | | | | | Installation Year | | | | | | | | | | | | | | | | | | | | | | | | | | 1950 | | | | | | | | OpsSysName | | | | | | | | | | | | | | | | | | | | | 0042H\_SYSTEM\_RUN\_6 / HSYS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Weld Seam:  ERW  Seamless  Spiral  Unknown  Other | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |
| Coating Types:  Bare  Powercrete  Coal Tar  Asphalt Tar  Pritec  Fusion Bonded Epoxy | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tape Wrap  Field Applied Shrink Sleeve  Extruded PE or PP  Other | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |
| Coating Condition:  Poor  Fair  Good  Excellent | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Holiday Detection Volt Setting | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 12,500 | | | | | | | | | | |
| Type of Coating Damage | | | | | | | | | | | | | | | | | | | | | | | | | | % Damage | | | | | | | | | | | | | | | | | | |  | | | | O’clock/Position | | | | | | | | | | | | | | | | | | | Ground Cover Found:  Native  Pavement | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Non-Corrosive Disbondment | | | | | | | | | | | | | | | | | | | | | | | | | | n/a | | | | | | | | | | | | | | | | | | |  | | | | n/a | | | | | | | | | | | | | | | | | | | Concrete  Body of Water | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blistering Due to Corrosion | | | | | | | | | | | | | | | | | | | | | | | | | | n/a | | | | | | | | | | | | | | | | | | |  | | | | n/a | | | | | | | | | | | | | | | | | | | pH of Fluid in Blisters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | n/a | | | | | | | | | | | | | | | | | | | |
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| I have reviewed the procedures performed and have found them:  Adequate  **\***Inadequate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***\*If Inadequate, send comments and copy of WMS-WR to Engineering and Project Support Staff, LVA-581*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Inspected By | | | | | | | | Robert L. Parks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Inspection Date | | | | | | | | | | | | | | | | | 08/13/2013 | | | | | | | | | |
|  | | | | | | | | *Print or type name* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reviewed By | | | | | | | | Roger Ragoonanan | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Date Reviewed | | | | | | | | | | | | | | | | 9/19/2013 | | | | | | | | | |
|  | | | | | | | | *Print or type name* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **Section 3** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Soil pH at Pipe Depth | | | | | | | | | | | | | | | 6.5 | | | | | | | | | | | | | | | | | | | (using Antimony half cell) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Soil Resistivity at Pipe Depth | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1,000 | | | | | | | | | | | | | | cm | |
| Soil Chemistry Performed  Yes  No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | Method used -  Collins probe  4 pin method | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Results: | | | | | Chlorides | | | | | | | | | | | | | 50 | | | | | | | | | | | | | | | ppm | | | | | | | | | | | | | Nitrates | | | | | | | | | | | 2.5 | | | | | | | | | | | | | | | | | ppm | | | | | | | | | | | | Sulfates | | | | | | | | | | | 98 | | | | | | | | | | | ppm | | | | | |  | | |
| Pipe to Soil from Start of Excavation: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 6 O’clock | | | | | | | | | | | | | | | | -1.013 | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | |
| Bacterial Samples Taken  Yes  No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | If yes, see Section 6 | | | | | | | | | | | | | | | | | | | | | | | | | | Asphalt and/or Tar Wrap samples taken  Yes  No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Section 4** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Defects:**  **None Found** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| All external defects shall be identified and quantified below. The beginning of each will be referenced to a dig start. The upstream end of the dig is considered the “zero point” for measurements. The “defect number” identified below shall be used to reference the location on the field sketch. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Number | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| Type of Defect (excludes Coating) | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| Distance from Zero Point (feet) | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| O’clock Position | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| Length (Axial) (inch) | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| Length (Circumferential) (inch) | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| Maximum Depth (inch) | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| Repair Category \* | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| Corrosion Interactivity | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
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| Type of Defect (excludes Coating) | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| Distance from Zero Point (feet) | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
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| Length (Axial) (inch) | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
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| Maximum Depth (inch) | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| Repair Category \* | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| Corrosion Interactivity | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | |  | | | | | | | | | |
| \* *See Remediation Design for determination of Repair Category.* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **Section 5** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **Section 6** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **Culture Results** | | | | | | | | | | | | | **BTI Products, MICkit 5 Diagnostic Field Test Kit** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Location of samples | | | | | | | | | | | | | CAD\_2013\_RS-01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Collected by | | | | | | | | | | | | | Robert L. Parks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Date collected | | | | | | | | | | | | | | | | | | 8/13/2013 | | | | |
| 7th day | | | Interpreted by | | | | | | | | | | | | | | | | | Robert L. Parks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Date of reading | | | | | | | | | | | | | | | | | | | | | 8/24/2013 | | | | | | | | | | | | | | | | | | | |
| 14th day | | | Interpreted by | | | | | | | | | | | | | | | | | Robert L. Parks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Date of reading | | | | | | | | | | | | | | | | | | | | | 8/31/2013 | | | | | | | | | | | | | | | | | | | |
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| Cap Color | | | | | | Bottle # | | | | | | | | | | | Results  Week 1 | | | | | | | | | | | | | | | | | | | Results  Week 2 | | | | | | | | | | | | | | | Comments | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Low-Nutrient Bacteria (LNB)**  A positive reaction results in a cloudy appearance or the formation of slime, which appears as sheets or clumps. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Purple | | | | | | 1 | | | | | | | | | | | **+** | | | | | | | | | | | | | | | | | | | **+** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Purple | | | | | | 2 | | | | | | | | | | | **+** | | | | | | | | | | | | | | | | | | | **+** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Purple | | | | | | 3 | | | | | | | | | | | **+** | | | | | | | | | | | | | | | | | | | **+** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Purple | | | | | | 4 | | | | | | | | | | | **-** | | | | | | | | | | | | | | | | | | | **-** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Iron Related Bacteria (IRB)**  A positive reaction is indicated when the solution turns rust-colored or green-black, either with or without the formation of deposits. Deposits may be rust, white, black, or green. A cloudy appearance or slime DO NOT constitute a positive reaction. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| White | | | | | | 1 | | | | | | | | | | | **+** | | | | | | | | | | | | | | | | | | | **+** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| White | | | | | | 2 | | | | | | | | | | | **+** | | | | | | | | | | | | | | | | | | | **+** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| White | | | | | | 3 | | | | | | | | | | | **-** | | | | | | | | | | | | | | | | | | | **-** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| White | | | | | | 4 | | | | | | | | | | | **-** | | | | | | | | | | | | | | | | | | | **-** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Anaerobic or Facultatively Anaerobic (ANA)**  A positive reaction results in cloudy appearance. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blue | | | | | | 1 | | | | | | | | | | | **+** | | | | | | | | | | | | | | | | | | | **+** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blue | | | | | | 2 | | | | | | | | | | | **+** | | | | | | | | | | | | | | | | | | | **+** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blue | | | | | | 3 | | | | | | | | | | | **+** | | | | | | | | | | | | | | | | | | | **+** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Blue | | | | | | 4 | | | | | | | | | | | **-** | | | | | | | | | | | | | | | | | | | **-** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Acid Producing Bacteria (APB)**  A positive reaction will turn media from red to cloudy orange or cloudy yellow. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Red | | | | | | 1 | | | | | | | | | | | **+** | | | | | | | | | | | | | | | | | | | **+** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Red | | | | | | 2 | | | | | | | | | | | **-** | | | | | | | | | | | | | | | | | | | **-** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Red | | | | | | 3 | | | | | | | | | | | **-** | | | | | | | | | | | | | | | | | | | **-** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Red | | | | | | 4 | | | | | | | | | | | **-** | | | | | | | | | | | | | | | | | | | **-** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Sulfate Reducing Bacteria (SRB)**  If positive, bottles will turn black or have black slime associated with the iron nail in the bottom of the bottle. The presence of black or gray flecks does not constitute a positive reaction. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Green | | | | | | 1 | | | | | | | | | | | **-** | | | | | | | | | | | | | | | | | | | **-** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Green | | | | | | 2 | | | | | | | | | | | **-** | | | | | | | | | | | | | | | | | | | **-** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Green | | | | | | 3 | | | | | | | | | | | **-** | | | | | | | | | | | | | | | | | | | **-** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Green | | | | | | 4 | | | | | | | | | | | **-** | | | | | | | | | | | | | | | | | | | **-** | | | | | | | | | | | | | | |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **Section 7** | | |  | | |  | | | |  | |  |
|  | | |  | | |  | | | |  | |  |
| **In-Process Evaluation** | | | | | |  | | | |  | |  |
| **7A – Indirect Inspection vs. Direct Examination** | | | | | | | | | |  | |  |
| **Field Work:** | | | | | | | | | | | | |
| 1. Severity of Coating Anomaly Suspected  A  B  C  NI | | | | | | | | | |  | | |
| 2a. Severity of Coating Anomaly Found  A  B  C  NI | | | | | | | | |  | | | |
| 2b. Severity of DE Defect Found on Pipe  A  B  C  NI | | | | | | | | |  | | | |
| 3. Severity of the coating anomaly found was **more / less** severe than originally prioritized? | | | | | | | | | | | | |
| a. More than expected  b. Equal to or less than expected | | | | | | | | | | | | |
| 4. Is this the initial assessment of this covered segment?  a. Yes  b. No | | | | | | | | | | | | |
| 5. If both 3a & 4b, then should the criteria in the Severity Classification Table be adjusted?  Yes  No  N/A | | | | | | | | | | | | |
| 6. Was corrosion found?  Yes  No | | | | | | | | | | | | |
| 7. Was this a B or C priority in which the corrosion found was deeper than 20% of the original wall thickness? | | | | | | | | | | | | |
| Yes  No  N/A | | | | | | | | | | | | |
| 8. Was this corrosion deeper or more severe than corrosion found on any A-priority examination in this same region? | | | | | | | | | | | | |
| Yes  No  N/A | | | | | | | | | | | | |
| NOTE: If 4a, 7 and 8 are all true, then two additional direct examinations are required. If 4b, 7 & 8 are true, then one | | | | | | | | | | | | |
| additional direct examination is required. | | | | | | | | | | | | |
| **Office Work:** | | | | | | | | | | | | |
| If corrosion activity was more than expected, then the criteria must be assessed for adjustment. | | | | | | | | | | | | |
| 9. Was the Severity Classification Table assessed for adjustments? Yes  No  N/A | | | | | | | | | | | | |
| 10. Were changes made to the Severity Classification Table?  Yes  No  N/A | | | | | | | | | | | | |
| If Yes, document on MOC. If No, explain why not. | | | | | | |  | | | | | |
| 11. Are additional indirect inspection surveys needed on this segment?  Yes  No  N/A | | | | | | | | | | | | |
| **7B – Root Cause (based on data on-hand at the present time)** | | | | | | | | | | | | |
| **Field Work:** | | | | | | | | | | | | |
| 1. Is the corrosion considered significant?  Yes  No  N/A | | | | | | | | | | | | |
| *Only if Yes, proceed to 2, otherwise go to 4. Note: Immediate repairs for corrosion are deemed significant.* | | | | | | | | | | | | |
| 2. Check the most likely root cause | | | | | | | | | | | | |
|  | Root Cause | | | | | | | For this HCA exam (mark only one) | | | Of other exams on this HCA  (all occurring) | |
| A | Inadequate CP current | | | | | | |  | | |  | |
| B | No CP for a known period of time | | | | | | |  | | |  | |
| C | No CP with dissimilar metal couplings | | | | | | |  | | |  | |
| D | Previously unidentified source of interference | | | | | | |  | | |  | |
| E | Shielding occurred by disbonded coating | | | | | | |  | | |  | |
| F | MIC or Biological corrosion | | | | | | |  | | |  | |
| G | Other (Specify): | | | | | | |  | | |  | |
| Explanation for Other: | | | |  | | | | | | | | |
|  | | | | | | | | | | | | |
|  | | | | | | | | | | | | |
| **Office Work:** | | | | | | | | | | | | |
| 3. If a root cause of 2E or 2F is determined, then conduct a review to consider if alternative methods of assessing the | | | | | | | | | | | | |
| pipeline must be implemented. | | | | | | | | | | | | |
| a. Was the review conducted?  Yes  No  N/A | | | | | | | | | | | | |
| b. Do alternative methods need to be implemented?  Yes  No  N/A | | | | | | | | | | | | |
| **Field Work:** | | | | | | | | | | | | |
| 4. For this HCA, has corrosion been found and a root cause determined at other locations? | | | | | | | | | | | | |
| Yes  No  N/A Only if Yes, proceed. | | | | | | | | | | | | |
| 5. For this HCA, are similar occurrences of the root cause being determined at other locations?  Yes  No  N/A | | | | | | | | | | | | |
| **7C - Remaining Strength Calculation** | | | | | | | | | | | | |
| **Field Work:** | | | | | | | | | | | | |
| If corrosion exists, document the category of remaining strength using the Corrosion Remediation Timeline (CRT) | | | | | | | | | | | | |
| spreadsheet. | | Date calculation completed: | | |  | | | | | N/A | |  |

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| **Section 8**  Inspector’s Comments: Complete section of exposed pipe coating jeeped with Holiday Detector. Crew removed all existing pipe coating in excavation and cleaned pipe with a power brush. Found butt weld 7 ft. 5 in. from Dig Start Position. Weld meets current SWG Operations Manual Steel Welding Procedures. Visually inspected entire section of pipe from bank to bank and no visual signs of corrosion or pitting was observed. Pipe in good condition. Crew recoated entire exposed section of bare pipe with primer and polyken tape.  Validated calibration of Ultrasonic Meter and Collins Bridge | | |
| **Section 9** | | |
| Remediation Action Required?  Yes  No | Reference Work Request No. |  |
| *Check one:* Repair was:  done at convenience of the Company, or was by definition an:  Immediate or  Scheduled | | |
| Remediation Comments: | | |
| **Section 10** | | |
|  | | |
| **ANOMALY SKETCH**  Sketch the exposed section of piping with all anomalies below. Identify the direction you are looking down the pipe with a N/S/E/W indicator. The 6 o’clock position is the bottom dead center of the pipe. Identify individual anomalies and areas of joined anomalies per a standard numbering system starting from the upstream reference GPS stationing. If applicable, show view of top and/or bottom of pipe. | | |

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| **No Anomalies Found**  **On Pipe** |

**Section 11**

**Photos**

Attach or embed in this report. Note location, date, and orientation of photo.

Note **North** on photo.









