Doc# NSCS-M-P-7093-02-11
Title: Trench System
Issue Dt: 10/27/1997
Revision Dt:11/02/2018 Review Interval:12
Cat: Quality Doc Type: SOP
Auth:
Desc: Trench System
Loc: Midwest - Utilities-Midwest - Plant Maintenance-Midwest-Gary Works

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PURPOSE: The chrome pipeline containment trench (trench) originates at the Chrome and Tin Lines. There is a branch from the sulfuric acid tank that merges with the main trench that flows to the Trench Sump at the Chrome Treatment Plant. The trench is constructed of concrete with an epoxy coating and covered with steel plates. The trench is designed to direct any stormwater and leaked fluids into the Trench Sump.

STEPS	PROCEDURES
Sump pump operation	All liquids collected in the Trench Sump are pumped to the 60,000 gallon Equalization Tank at the inlet to the Chrome Treatment Plant. The submersible pumps are controlled by level.
High Level Alarm	If the level of the sump rises above the high-level set point, an alarm will be delivered through the plant alert/alarm system. The operator will immediately begin an investigation.
Conductivity Alarm	The Trench Sump conductivity meter will initiate an alarm if a high value is recorded. This may indicate the presence of a source other than uncontaminated stormwater. The operator will immediately begin an investigation.
Hex Chrome Sampling	Perform a daily hexavalent chromium test on a sample from the Trench Sump. See SOP # NSCS-M-P-7093-02-32 for instructions on how to perform the test. If the hexavalent chromium concentration exceeds 0.05 mg/L, the operator will immediately begin an investigation.
Pipeline Flowmeters	Flowmeters have been installed at the delivery (effluent) and entry (influent) of the chrome pipeline. These values are compared to assist in the detection of significant pipeline leakage during an investigation.

Conducting an Investigation

If the daily hexavalent chromium test was the first trigger of an incident:

Confirmation of Hexavalent Chromium Test	If the chrome is higher than 0.05 mg/L in the sump immediately obtain a second sample. If the second sample is also above 0.05 mg/L, immediately notify the Chrome and Tin Lines to shutdown. If the second sample is below 0.05 mg/L, obtain a third sample to confirm. If 2 of the 3 samples are above 0.05 mg/L, the lines will be immediately shutdown. Also notify Utilities Maintenance to begin an investigation of the trench

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system. See SOP # NSCS-M-P-7093-02-32 for instructions on how to perform the chrome concentration test.

Note: The Hach meter test provides a quick analysis response time, but if a more accurate detection level is needed, contact the QA/QC onsite laboratory for analysis. Follow the laboratory's instructions for obtaining and delivering the sample.

If a trench sump alarm was the first trigger of an incident:

Confirm the Alarm	Visually inspect the sump and evaluate pump operations, the conductivity probe position, if the level float is stuck, and if the water volume is due to a recent storm event or other flow from the trench system into the sump. If the cause of the alarm is due to an instrument or pump failure contact instrument repair or Utilities Maintenance as appropriate to correct the problem.
Alarm Confirmed	For any other cause(s), the operator should immediately initiate a Hach test for hexavalent chromium from the trench sump. See the Confirmation of Hexavalent Chromium Test section above for a response procedure.
- Low chrome concentration	**If the chrome concentration in the Trench Sump is not elevated**, a controlled investigation of the trench system should be initiated. Contact Utilities Maintenance.
- High conductivity	**If the conductivity is high** the source may be a leak of sulfuric or chrome wastewater. In this event, an operator should check the pH of the material using a portable meter. See SOP #NSCS-M-P-7093-02-08 for instructions on how to perform a pH analysis.
Investigation of Trench System	Utility Maintenance will utilize the access ports to inspect sections of the trench and pipelines. If areas are identified where flow is present the trench covers in those sections will be removed to identify the source and repairs required. Utility Maintenance will contact the Chrome Plant Operator and Op Services Management detailing the investigation findings and repair requirements.

Reporting

Record the areas inspected, findings and tests performed on the Log Sheet 7093-03.