Anacortes Refinery

Tesoro Refining & Marketing Company LLC

P.O. Box 700
Anacortes, WA 98221

March 31, 2023

Sarah Penfield
Environmental Engineer
Solid Waste Management, Industrial Section
PO Box 47600
Olympia, WA 98504-7600

Subject: Oily Water Sewer Annual Progress Report - 2022

Dear Ms. Penfield,

Enclosed is the Oily Water Sewer Investigation annual progress report for the calendar year 2022. This progress report has been prepared in accordance with the requirements in Section VII.C of Agreed Order No DE 16299 (AO). This report describes the 2022 inspection findings, ongoing site characterization efforts, and sewer repair.

The Investigation and Response Plan (IRP) was not deviated during the sewer investigation in 2022 and no areas were inaccessible for video examination. The sewer line investigation extended along F Street from Fourteenth Street at the southern end of the refinery property to the intersection of F Street and Tenth Street. This included sections of sewer between manholes 1 through 9. Tenth Street is north of manhole 9, and although video footage extended from manholes 9 to 10, per the IRP for the segment of sewer to be investigated in 2022, only that portion of the sewer extending beyond manhole 9 to Tenth street was evaluated in this 2022 report.

The sewer inspection revealed an area of piping between manholes 4 and 5 with sewer defects and the potential for oily water deposits. As per the IRP, initial soil investigations will be performed near the area of integrity issues during the dry season in 2023. If a release is confirmed during the initial soil investigations, an evaluation of the nature and extent of the soil contamination will be performed.

If you have questions on this information, please contact me at (360) 299-1712.

Sincerely,

Shannon Logan, P.G.
Environmental Supervisor
Tesoro Refining & Marketing Company LLC

enclosure

MOTT MACDONALD

2022 Annual Progress Report Oily Water Sewer Investigation

Marathon Anacortes Refinery

March 31, 2023

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2022 Annual Progress Report Oily Water Sewer Investigation

Marathon Anacortes Refinery

March 31, 2023

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1 Introduction

This annual progress report has been prepared in accordance with the requirements in Section VII.C. of Agreed Order No DE 16299 (AO). The AO was entered into by the Washington State Department of Ecology (Ecology) and Tesoro Refining & Marketing Company LLC Marathon Anacortes Refinery (Marathon Anacortes Refinery) on November 1st, 2021. The objective of the AO is to investigate and conduct remedial actions for the Marathon Anacortes Refinery's oily water sewer (OWS) system, also referred to as Solid Waste Management Unit 12 (SWMU12) under the Resource Conservation and Recovery Act (RCRA) Facility Investigation.

Per the AO, an Investigation and Response Plan (IRP) was prepared as a framework to investigate the integrity of the OWS and respond to any potential releases of contamination to soil and/or groundwater (Mott MacDonald 2022). The IRP outlined the procedures and methods to inspect the internal integrity of the OWS over the next 10 years from 2022 through November 1, 2031.

This annual progress report has been prepared in accordance with the requirements in the AO. This report describes the 2022 inspection findings and ongoing site characterization efforts and sewer repair.

1.1 General Site Information

Marathon Anacortes Refinery operates an oil refinery on the northern portion of March Point Road in Anacortes, Skagit County, Washington. A site location map is provided as Figure 1. The OWS runs the length and width of the refinery. In the southern part of the refinery, the land surface generally slopes north, though there are east and west facing slopes since the ridge of the central refinery hill roughly coincides with "F"-Street (Figure 1). No natural drainages occur in the Tank Farm as surface runoff is routed to the refinery wastewater treatment plant.

Contact information for the Ecology site manager, project consultant and property/facility manager are included below.

- Ecology Site Manager: James DeMay
  - Address: PO Box 47600, Olympia, WA 98504-7600
  - Phone: 360-628-1739
  - Email: james.demay@ecy.wa.gov
- Project Consultant: Mott MacDonald, LLC
  - Address: 1601 5th Ave, Suite 800, Seattle, WA 98101
  - Contact: Janet Knox
  - Phone: 206-375-5432
  - Email: janet.knox@mottmac.com
- Property Owner/Facility Operator: Marathon Anacortes Refinery
  - Address: 10200 March's Point Road, Anacortes, WA 98221
  - Contact: Shannon Logan
  - Phone: 360-299-1712
  - Email: Slogan2@marathonpetroleum.com

2 Oily Water Sewer Inspection

This section describes the inspection findings including general conditions of sewer components and identified potential release locations where further investigation is recommended.

2.1 Deviations from the IRP

There were no deviations from the IRP.

2.2 2022 Sewer Inspection

In August 2022, BAI Environmental Services (BAI) conducted the video inspection of the 2022 segment of the OWS that is located in the southern end of the refinery, in accordance with the AO and IRP. A map of the OWS segment inspected in 2022 is provided as Figure 2.

To prepare the OWS trunk lines for the video inspection, BAI first thoroughly shut off the sewers and cleaned the OWS segments. Sewer cleaning involves using detergents, high pressure water or other methods to flush solids from the sewer lines. The solids are then removed using vacuum trucks. BAI then performed the OWS inspections using closed-circuit television (CCTV) equipment. The inspection videos were submitted to Marathon Petroleum Corporation for assessment using the National Association of Sewer Service Companies (NASSCO) rating system. BAI identified defects (e.g., cracking, fracturing, offset joints, structural defects, and potential release points) using NASSCO's Pipeline Assessment Certification Program (PACP).

BAI documented the Phase 1 OWS video inspection findings in a report titled *Clean and Camera Survey 2,584' of Oily Water Sewer in the Tank Farm from North of Gate 10, Proceeding North Along "F" Street to Near Tank 171* dated August 2022. The report includes the assessment of OWS and the location of identified problems.

The videos and NASSCO report were reviewed by Mott MacDonald for quality and completeness. Mott MacDonald's review and findings from BAI's report are provided in Table 1.

2.3 2022 Site Visit

Mott MacDonald conducted a site visit on October 13th, 2022, to document latitude and longitude coordinates of manholes and ground markings left by BAI Environmental Services. BAI's spray-painted ground markings indicated a potential sewer defect. The condition of manholes and any visible above ground damage or release points were noted. Mott MacDonald collected global positioning coordinates (GPS) for manholes along the 2022 segment of the OWS and spray-painted markers left by BAI using the Trimble 7x series LBATT GPS Unit.

Mott MacDonald had full access to all areas of the 2022 segment and observed that manholes were in good condition with no visible releases or cracking. BAI's yellow spray-painted markings left were distinguishable and in good condition from the August 2022 inspection.

2.4 OWS 2022 Inspection Findings

Synthesizing the BAI Report and review of videos, Mott MacDonald assigned each defect an approximate environmental rating (ER) based on the potential for a release. The ER system is based on a 1-5 scale. The scale indicates the level of prioritization for follow-up actions. For example, and ER = 5 would indicate a significant structural defect with a confirmed release, whereas an ER = 1 would be a minor structural defect with low potential for a release. Table 2

provides approximate ERs for each of the areas of potential OWS defects. The definition of each ER category can be found in Table 3. Marathon OWS Environmental Rating System.

Table 3 identifies one area with four sewer defects with ER 4, four areas with ER 3, nine areas with ER 2, one area with ER 1, and one area with a potential oily deposit/obstruction (ER 1).

Per the rating system used, defects rated ER 4 were considered significant structural defects with a potential for release. There is one area with four locations with ER 4 between MH-4 and MH-5. Locations rated ER = 4 include:

- Segment between MH-4 and MH-5, from 311 ft to 321 ft
- Segment between MH-4 and MH-5, from 305 ft to 307 ft
- Segment between MH-4 and MH-5, from 292 ft to 302 ft
- Segment between MH-4 and MH-5, from 279 to 288 ft

It is recommended that locations with an ER of 4 be excavated and repaired according to the Refinery maintenance schedule and repair methods such as sleeved or replaced.

3 2023 Plans For Site Characterization

Per the IRP, the site characterization of potential release locations will be initiated in 2023 based on the 2022 inspection findings. According to NASSCO, potential release locations occur where an ER of 4 sewer defect was observed.

3.1 Existing Groundwater Monitoring Data Review

Mott MacDonald reviewed existing groundwater monitoring data from the past 5 years to investigate evidence of a release or contamination. Groundwater wells selected for review include 94-1, 82-27, 82-26, 82-25, and 82-24, which are located downgradient from the OWS (Figure 2).

Wells 94-1, 82-25, 82-24, and 82-26 are located parallel to the “F”-Street trunk line, between MH-3 through MH-9. Well 82-27 is located within 150 feet of the “E”-Street trunk line at the intersection of Tenth Street.

Wells 94-1, 82-27, and 82-25 are sampled quarterly for Benzene, Diesel Range Organics, Ethylbenzene, Gasoline, Motor Oil, o-Xylene, Toluene, and Xylene Isomers M+P.

Wells 82-26 and 82-24 are sampled quarterly for Benzene, Ethylbenzene, Gasoline, o-Xylene, Toluene, and Xylene Isomers m+p. Review of groundwater data for the wells discussed above found no detections of the chemical constituents listed or evidence of release to the environment.

3.2 Initial Soil Investigation

Based on the 2022 inspection findings, an initial soil investigation is recommended for one area where OWS integrity issues (ER 4) has been identified as shown in Figure 2 (orange rectangle). The soil samples will be collected via either vacuum truck holes or backhoe test pits. The soil samples will be screened for the presence of petroleum hydrocarbons using photoionization detector (PID), organic vapor analyzer (OVA), or similar technology, and visual and olfactory evidence.

If field screening suggests that a release has occurred, then a sample of soil will be collected from the most concentrated area for laboratory analysis to verify the field screening results. If the analytical results from the screening sample exceed MTCA Method A industrial and/or Method C soil clean-up levels for one or more contaminants, then additional soil sampling will be conducted to evaluate nature and extent and the data will be uploaded to the Environmental Information Management system (EIM). If soil cleanup levels are not exceeded, no additional sampling will be pursued, and reporting will occur.

3.2 OWS Repairs

OWS initial soil investigations are planned to begin in summer of 2023.

4 Recommendations

As part of the Phase I OWS investigation, sewer inspections have been completed for year 2022. The OWS inspections revealed one area with four sewer defects (ER 4), four areas with ER 3, nine areas with ER 2, one area with ER 1, and one area with a potential oily deposit/obstruction (ER 1). For all areas, we recommend documentation in Refinery records. As repairs are planned, Mott MacDonald will be onsite to field screen soil during OWS repairs to assess whether releases have occurred from the damage.

An initial soil investigation is recommended between MH-4 and MH-5 where defects were rated as ER 4 in close, safe proximity (as allowed by site conditions) to identify potential release locations. Positively identified releases will be reported to Ecology within 90 days of discovery (review of analytical results).

Site investigation activities will be conducted in accordance with WAC 173-340 and Ecology's Guidance for Remediation of Petroleum Contaminated Sites (Publication 10-09- 057).

5 References

BAI Environmental Services, 2022. Clean and Camera Survey 2,584' of Oily Water Sewer in the Tank Farm from North of Gate 10, Proceeding North Along "F" Street to Near Tank 171. August 2022.

Mott MacDonald, 2022. Marathon Anacortes Refinery Oily Water Sewer Investigation and Response Plan, Anacortes, Washington. May 2022.

Washington State Department of Ecology (Ecology), 2021. Agreed Order for Interim Action – Oily Water Sewer (SWMU-12). No. DE 16299.

Washington State Department of Ecology (Ecology), 2017. Workbook Tools for Calculating Soil and Groundwater Cleanup Levels under the Model Toxics Control Act Cleanup Regulation, User's Guidance for MTCATPH 11.1 & MTCASGL 11.0. Publication No. 01-09-073. December 2007.

Washington State Department of Ecology (Ecology), 2013. Model Toxics Control Act Cleanup Regulation Chapter 173-340 WAC. Publication No. 94-06.

Table 1: Mott MacDonald Findings from BAI Video Survey

Pipe Segment	Findings from Video Survey Review
MH-1 to MH-2	• 357 ft oily sludge deposits. • 201 ft broken pipe wall. • 22 ft cracking around joint. • 20 ft spiral crack.
MH-2 to MH-3	• 219 ft to 221 ft oily sludge deposit/obstruction. • 207 ft fibers hanging from joint above flowline. • 177 ft oily deposit build-up. • 128 ft inflow pipe with oily buildup, fibers hanging from joint above flow line. • 65 ft oily sludge deposit. • 22 spiral crack.
MH-3 to MH-4	• 0 ft oily deposits. • -3 ft cracking along top of pipe. • -31 ft pipe wall chipping. • -48 ft oily deposit buildup. • -69 ft pipe wall chipping. • -128 ft fibrous material hanging from joint of pipe. • -129 ft surface spalling and pipe wall chipping. • -175 ft oily deposits.
MH-4 to MH-5	• Cracking and structural defects extending from 311 ft to 321 ft. Pipe wall damage but no visible leakage/release. • Cracking and structural defects from 305 ft to 307 ft. Pipe wall damage but no visible leakage/release. • Cracking and structural defect from 292 ft to 302 ft. Pipe wall damage but no visible leakage/release. • Cracking and structural defect extending from 279 ft to 288 ft. Pipe wall damage but no visible leakage/release. • Pipe wall damage at 275 ft with cracking extending from 272 ft. • 146 ft damage and cracking to the inflow pipe on right side wall. • 109 ft infiltrating groundwater from bottom of pipe. • 77 ft to 80 ft pipe wall damage and cracking. • 2 ft cracking to top of pipe. No visible leakage.
MH-5 to MH-6	• 217 ft oily sludge deposit. • 150 ft longitudinal crack. • 144 ft fibers hanging from joint, oily sludge buildup to pipe walls, infiltrating groundwater. • 113 ft to 117 ft pipe wall chipping, cracking, and damage. • 1 ft cracking to pipe wall, infiltrating groundwater.
MH-6 to MH-7	• 211 ft defective joint due to large offset that restricts flow. • 194 ft cracking around joint. No visible leakage. • 62 ft circumferential crack along top of pipe.
MH-7 to MH-8	• No visible leaks or significant cracks/damage. • 226 ft broken pipe wall, small piece missing at top portion of joint. • 6 ft circumferential crack on pipe wall.
MH-8 to MH-9	• 289 ft longitudinal fractures along top of pipe wall. • 224 ft multiple cracks along top of pipe wall. • 116 ft spiral cracks and fractures at joint.
MH-9 to MH-10	• 1 ft spiral cracks and fractures along pipe wall.

Note: Additional video survey was completed for the segment between MH-9 to MH-10. It will be reviewed and included in the 2023 OWS survey and annual report.

Table 2: Approximate Environmental Ratings (ER)

Proposed sampling and OWS repair locations	Description of Damage	Approximate Environmental Rating (ER)	Recommended Action and Documentation
MH-1 to MH-2	Cracking and deterioration of pipe wall at 201 ft	2	Document in Refinery record.
MH-1 to MH-2	Cracking and deterioration of pipe wall at 20 ft	2	Document in Refinery record.
MH-2 to MH-3	Oily sludge deposit/obstruction from 219 ft to 221 ft.	1	Document in Refinery record. Reinspect to monitor defect condition.
MH-2 to MH-3	Fibers hanging from joint above flow line at 128 ft.	2	Document in Refinery record.
MH-2 to MH-3	Fibers hanging from joint above flow line at 207 ft.	2	Document in Refinery record.
MH-4 to MH-5 (BAI marked location 1)	Cracking and deterioration of pipe wall material from 77 ft to 80 ft.	2	Document in Refinery record.
MH-4 to MH-5	Cracking and deterioration to pipe wall. Groundwater infiltration at defect at 110 ft.	3	Document in the Refinery record. Schedule for low priority mitigation effort (primarily repair based on Refinery operational needs and accessibility or reinspection to monitor defect condition).
MH-4 to MH-5 (BAI Marked locations 2-5; possible sewer repair locations)	Structural defects such as fractures, collapsed pipe sections, and pipe cracking. Potential for release or structural failure. Pipe wall fractures and cracking from 311 feet to 321 feet, from 305 to 307 feet, from 292 feet to 302 feet, and from 279 feet to 288 feet.	4	Conduct initial release investigation involving the collection of soil and/or shallow groundwater sample(s). Groundwater samples will be collected only if the potential release occurred at or below the shallow groundwater table elevation. Increase to ER=5 if soil or groundwater concentrations exceed cleanup levels specified in Section 2.1 of IRP. Schedule for moderate priority mitigation effort (primarily repair based on Refinery operational needs and accessibility or reinspection to monitor defect condition).
MH-5 to MH-6	Cracking and deterioration to pipe wall. Groundwater infiltration at defect at 144 ft.	3	Document in the Refinery record. Schedule for low priority mitigation effort (primarily repair based on Refinery operational needs and accessibility or reinspection to monitor defect condition).

MH-5 to MH-6 (Area North of MH-5)	Cracking and deterioration of pipe wall. Groundwater infiltration at defect at 1 ft.	3	Document in the Refinery record. Schedule for low priority mitigation effort (primarily repair based on Refinery operational needs and accessibility or reinspection to monitor defect condition).
MH-5 to MH-6 (BAI marked location 6)	Cracking and deterioration of pipe wall material from 113 ft to 117 ft.	2	Document in Refinery record.
MH-6 to MH-7	Large offset joint that restricts flow at 211 ft.	3	Document in the Refinery record. Schedule for low priority mitigation effort (primarily repair based on Refinery operational needs and accessibility or reinspection to monitor defect condition).
MH-6 to MH-7	Cracking and deterioration of pipe wall material at 62 ft.	2	Document in Refinery record.
MH-7 to MH-8 (BAI Marked Location 7)	Hairline cracking, minor deterioration, and chipping of pipe wall material.	1	Document in Refinery record.
MH-8 to MH-9	Cracking and deterioration of pipe wall material.	2	Document in Refinery record.
MH-9 to MH-10	Cracking and deterioration of pipe wall material at 1 ft.	2	Document in Refinery record.

Note: Additional video survey was completed for the segment between MH-9 to MH-10. It will be reviewed and included in the 2023 OWS survey and annual report.

Table 3: Marathon OWS Environmental Rating System

Environmental Rating (ER)	Characteristic / Example	Action and Documentation
5	Significant structural defect with confirmed release. Examples: Large holes at or below the segment/manhole flow line and above groundwater table; completely separated joints with exposed surrounding soil above groundwater table; collapsed pipe sections.	Initial investigation confirmed soil or groundwater exceedance of cleanup levels specified in section 2.1 of IRP. Confirmed release from OWS will be reported to Ecology 90 days after discovery. Conduct site characterization and schedule for high priority mitigation effort (repair, ongoing monitoring for inaccessible sewers, etc.) If soil surrounding significant defect appears impacted due to a potential release from the OWS, then immediate response action will be initiated to stop the source of the potential release and begin clean-up activities.
4	Significant structural defect with potential for release. Examples: Same as ER = 5	Conduct initial release investigation involving the collection of soil and/or shallow groundwater sample(s). Groundwater samples will be collected only if the potential release occurred at or below the shallow groundwater table elevation. Increase to ER=5 if soil or groundwater concentrations exceed cleanup levels specified in Section 2.1 of IRP. Schedule for moderate priority mitigation effort (primarily repair based on Refinery operational needs and accessibility or reinspection to monitor defect condition).
3	Moderate structural defect. Examples: Significant fractures/cracks at or below the pipe/manhole flow line; groundwater infiltration at defect; significant corrosion. Defects that both higher risk for future potential release or structural failure.	Document in the Refinery record. Schedule for low priority mitigation effort (primarily repair based on Refinery operational needs and accessibility or reinspection to monitor defect condition).
2	Small to moderate structural defect. Examples: Moderate fractures/cracks above the pipe/manhole flow line; joint improperly seated; pipe reinforcement visible, moderate corrosion in pipe.	Document in Refinery Record.
1	Small structural defect. Examples: Hairline cracks; minor corrosion/deterioration of pipe/manhole material; visible aggregate; small offset joint; missing sealing rings.	Document in Refinery Record.

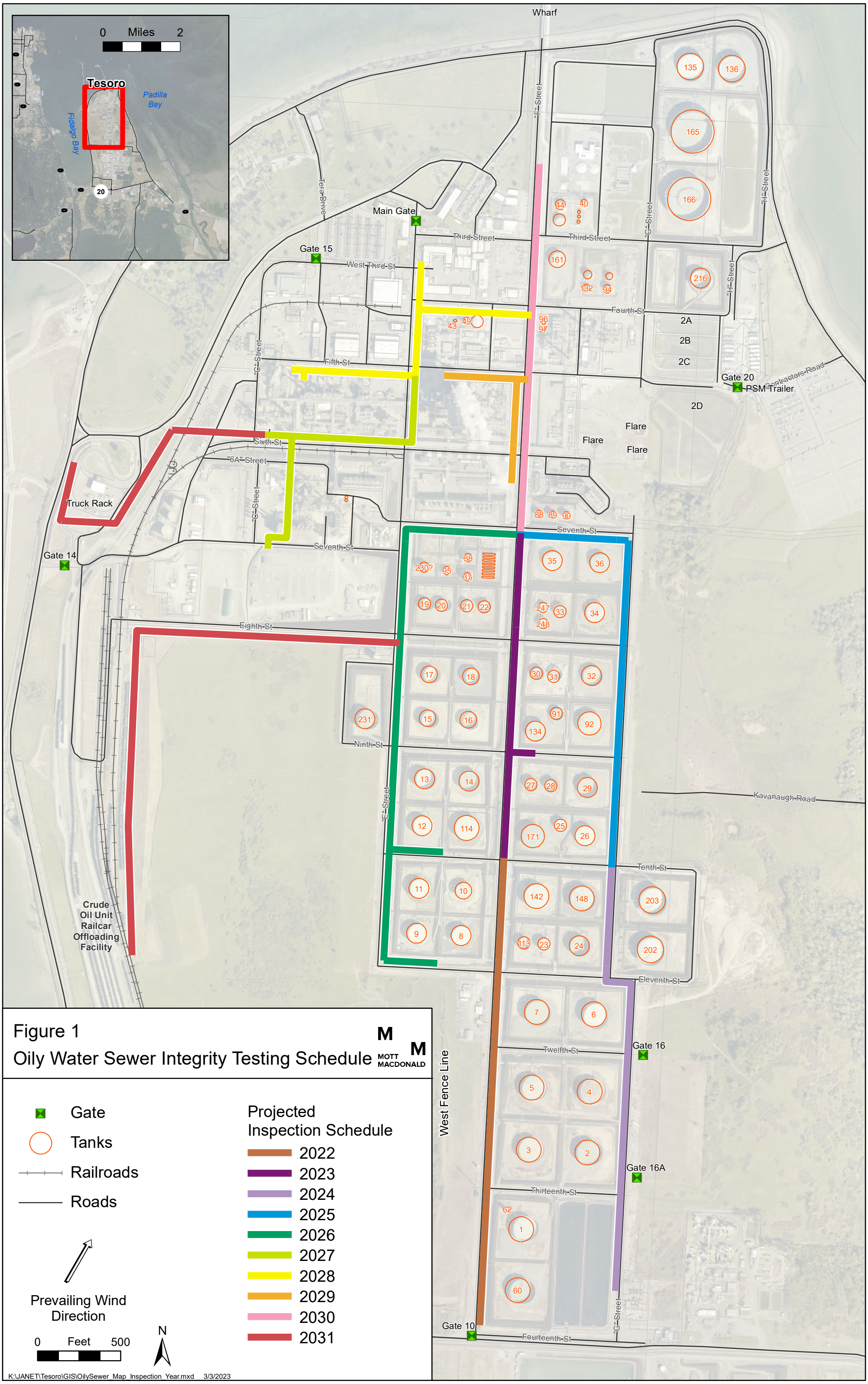

Figure 1

Oily Water Sewer Integrity Testing Schedule

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Gate

Tanks

Railroads

Roads

Projected Inspection Schedule

- 2022
- 2023
- 2024
- 2025
- 2026
- 2027
- 2028
- 2029
- 2030
- 2031

Prevailing Wind Direction

0 Feet 500

N

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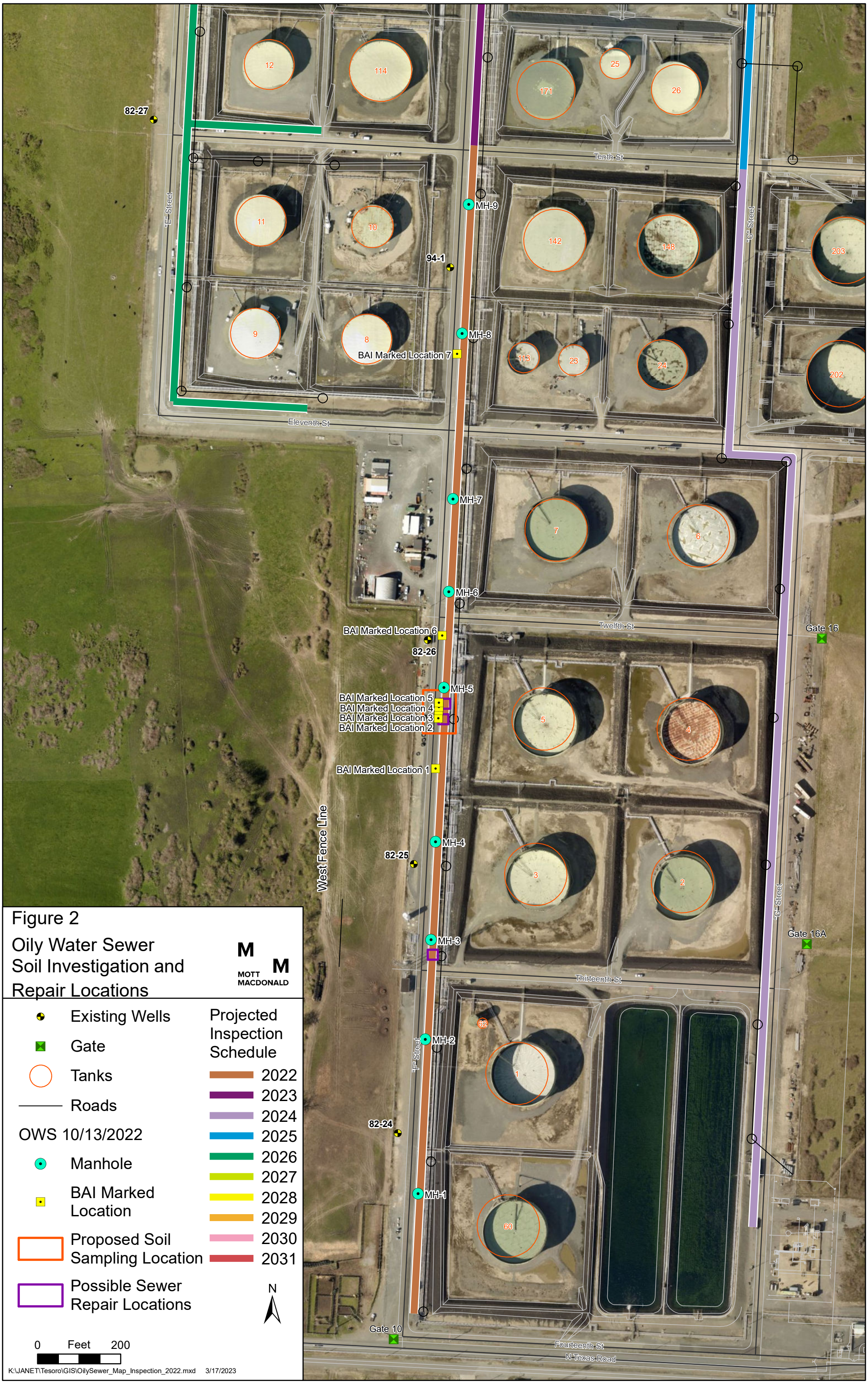
12
114
171
25
26
82-27
Tenth St
"E" Street
MH-9
11
10
142
148
"G" Street
203
94-1
9
8
MH-8
BAI Marked Location 7
113
23
24
202
Eleventh St
MH-7
7
6
MH-6
Twelfth St
Gate 16
BAI Marked Location 6
82-26
MH-5
BAI Marked Location 5
BAI Marked Location 4
BAI Marked Location 3
BAI Marked Location 2
5
4
BAI Marked Location 1
West Fence Line
MH-4
82-25
3
2
Gate 16A
MH-3
Thirteenth St
62
MH-2
"F" Street
1
82-24
MH-1
60
Gate 10
Fourteenth St
N Texas Road
Figure 2
Oily Water Sewer
Soil Investigation and
Repair Locations
MOTT MACDONALD
Existing Wells
Gate
Tanks
Roads
OWS 10/13/2022
Manhole
BAI Marked Location
Proposed Soil Sampling Location
Possible Sewer Repair Locations
Projected Inspection Schedule
2022
2023
2024
2025
2026
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2031
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