



Final

May 14, 2019

2019 Land Use Control Inspection Technical Memorandum

Fleet Logistics Center Puget Sound Manchester Fuel Depot

Manchester, Washington

Department of the Navy

Naval Facilities Engineering Command Northwest

1101 Tautog Circle

Silverdale, WA 98315

Contract No. N44255-14-D-9013, Delivery Order No. N4425519F4017



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FINAL
2019 LAND USE CONTROL INSPECTION TECHNICAL MEMORANDUM
FLEET LOGISTICS CENTER PUGET SOUND
MANCHESTER FUEL DEPOT
MANCHESTER, WASHINGTON

Prepared by
Battelle
Columbus, Ohio

Prepared for
Naval Facilities Engineering Command Northwest
Silverdale, Washington

Contract No. N44255-14-D-9013
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ACRONYMS AND ABBREVIATIONS

Ecology	Washington State Department of Ecology
EPA	Environmental Protection Agency
LUC	land use control
MFD	Manchester Fuel Depot
MTCA	Model Toxic Control Act
NAVFAC	Naval Facilities Engineering Command
NFA	no further action
PCB	polychlorinated biphenyl
PVC	polyvinyl chloride
RPM	Remedial Project Manager
UST	underground storage tank

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EXECUTIVE SUMMARY

This Land Use Control (LUC) Inspection Technical Memorandum describes the observations and subsequent recommendations from the LUC inspections conducted in March 2019 at specified sites of Fleet Logistics Center Puget Sound Manchester Fuel Depot (MFD), Manchester, Washington.

LUCs are required at several sites of MFD due to remaining contaminated soil and/or groundwater that prevent unlimited use and unrestricted exposures, as detailed in the *Land Use Control Plan for Sites 302, 303, 304 and Tank 50, Naval Base Kitsap Manchester, Manchester, Washington* (Battelle, 2016b). These sites include:

- Site 302 – Polychlorinated Biphenyl (PCB) Site
- Site 303 – D-Tunnel Tanks
- Site 304 – Industrial Area
- Tank 50 – Underground Storage Tank (UST) Release Site

The purpose of the LUC inspections is to:

1. ensure the effectiveness of the LUCs in the protection of human health and the environment; and
2. assist in identifying recommendations for corrective/additional action(s) to ensure that the LUCs continue to be effective at MFD.

This technical memorandum: 1) provides documentation that the LUCs have not been modified or terminated or land use has not been modified (without regulatory approval) at any site; and 2) communicates the status of the LUCs to the project stakeholders (i.e., Washington State Department of Ecology [Ecology], Environmental Protection Agency [EPA], and Suquamish Tribe).

The LUC inspections of Sites 302, 303, 304 and Tank 50 at MFD were conducted on March 4 and 5, 2019 and in accordance with the procedures detailed in the *Land Use Control Plan for Sites 302, 303, 304 and Tank 50, Naval Base Kitsap Manchester, Manchester, Washington* (Battelle, 2016b). The annual LUC inspections include a field inspection, determination of the current land use, document review (e.g., administrative and institutional controls in place), and condition assessment of engineering controls such as fencing, gates, signage, monitoring wells, and soil covers. Table ES-1 summarizes the observations/findings from the 2019 LUC inspections, subsequent recommendations, and any comments regarding the recommendation.

Overall, the LUC requirements at Sites 302, 303, 304 and Tank 50 of MFD remain effective in the protection of human health and the environment. The 2019 LUC inspections were the third inspections conducted at the sites since issuance of the *Land Use Control Plan for Sites 302, 303, 304 and Tank 50, Naval Base Kitsap Manchester, Manchester, Washington* (Battelle, 2016b). Based on discussions with the NAVFAC Northwest Remedial Project Manager (RPM) and MFD personnel, plans are in place to execute some recommendations at these sites in the near future; therefore, it is recommended that the LUC inspections continue on an annual basis. Continuing the LUC inspections on an annual basis will allow for a timely evaluation before and after completion of these actions. Once these recommendations are executed and documented in the subsequent LUC Technical Memorandum, then the LUC inspection frequency may be decreased to potentially every five years, coinciding with the five-year review for MFD.

Table ES-1. Summary of Findings and Recommendations from the 2019 LUC Inspections

Findings	Recommendations	Comment
Site 302 - PCB Site		
There is no LUC signage on the primary gate/entrance on the south side of the site.	No action necessary at this time.	There is a total of six (6) “Restricted Area/Keep Out” signs along the southern border fencing of the site. Same finding from 2017 and 2018 LUC inspections.
The central portion of the site is covered with large, older stockpiles of soil and debris.	Properly characterize the excess soil placed in the central portion of the site. If the soil meets Model Toxic Control Act (MTCA) Method A levels, then use to regrade site and develop vegetative cover—with concurrence from Ecology. If the soil exceeds MTCA Method A levels, then properly transport and dispose of soil offsite, place clean topsoil cap, and develop vegetative cover as recommended in the <i>Third Five-Year Review</i> (NAVFAC Northwest, 2015).	Based on recent discussions with the NAVFAC Northwest RPM and MFD personnel, there are plans in place to properly characterize the excess soil in 2019. Same finding from 2017 and 2018 LUC inspections.
The gated entrance on the north side of the site has no lock or LUC signage.	Secure gate with lock and place LUC signage.	The entrance is in a relatively remote location of MFD, where personnel would not typically access the site from this location. Same finding from 2017 and 2018 LUC inspections.
Approximately 60 linear feet of chain-link fencing has collapsed on the northwest side of the site, likely due to incursion of vegetation.	Repair chain-link fencing.	The vertical posts remain in good condition, but the chain-linked fencing requires replacement. The northwest side is in a relatively remote location of MFD, and vegetative overgrowth serve as natural barricades for any persons accessing the site from this location. Same finding from 2016 Baseline Condition Assessment (Battelle, 2016c).
Site 303 - D-Tunnel Tanks		
An unmarked stockpile of soil covered by black poly sheeting in the northwest corner of the construction laydown area southwest of Tank 24.	Confirm soil stockpile is authorized reusable material and is located in an approved staging area.	Same finding from 2017 and 2018 LUC inspections.

Table ES-1. Summary of Findings and Recommendations from the 2019 LUC Inspections (continued)

Findings	Recommendations	Comment
Old stockpile of soil on a tarp and surrounded by absorbent wattles in the laydown area north of Tank 29.	Properly characterize, transport, and dispose of (off site) the soil.	Same finding from 2017 and 2018 LUC inspections.
Monitoring wells MW-1 south of Tank 24 and MW-3 north of Tank 30 need casing to be lowered to fit cap under lid and minor maintenance/repairs.	Lower casing and perform needed minor maintenance/repairs on monitoring wells MW-1 and MW-3.	Monitoring well MW-1 south of Tank 24 is located along the southern boundary of the facility adjacent to a residential area. Therefore, the location of this well may provide useful information during future monitoring/investigations. Monitoring well MW-3 north of Tank 30 is already part of the monitoring network (Battelle, 2017a).
Site 304 - Industrial Area		
The LUC signage for Site 304 is located at the northern corner of Building 178, outside and north of the Site 304 LUC boundary.	Move the LUC signage to the corner of Cedar Avenue and Olympic Drive E to be consistent with the actual site boundary.	This is the primary entry/access point to the site; therefore, moving the LUC signage to this location would accurately inform staff, contractors, and visitors of the area with LUC restrictions. Same finding from 2018 LUC inspections.
Monitoring wells MW-1 and MW-2 do not have identification and the expansion caps are broken. In addition, one monument ear is broken on MW-1.	Perform needed minor maintenance/repairs on monitoring wells MW-1 and MW-2.	Per the Well Rehabilitation and Decommissioning Study (Battelle, 2017a), these two (2) monitoring wells are to remain in the monitoring network. Same finding from 2018 LUC inspections.
Tank 50 - UST Release Site		
There is no LUC signage at the primary entry way to Tank 50.	Add LUC signage on the northern access road to Tank 50 (i.e., the primary entry way to the site), as it is noted in the <i>Well Installation and Sampling and Analysis Tank No. 50 Fuel Hydrocarbon Leak Assessment, Manchester Fleet and Industrial Supply Center, Manchester, Washington</i> (Hart Crowser, 1998).	Same finding from 2017 and 2018 LUC inspections.
Monitoring well MW-1 has no exterior well identification and no lock on lid.	Perform needed minor maintenance/repairs on monitoring well MW-1.	Per the Well Rehabilitation and Decommissioning Study (Battelle, 2017a), this monitoring well is to remain in the monitoring network. Same finding from 2018 LUC inspections.

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1.0 INTRODUCTION

This Land Use Control (LUC) Inspection Technical Memorandum describes the observations and subsequent recommendations from the LUC inspections conducted in March 2019 at specified sites of Fleet Logistics Center Puget Sound Manchester Fuel Depot (MFD), Manchester, Washington. This report was prepared by Battelle for Naval Facilities Engineering Command (NAVFAC) Northwest under Contract No. N44255-14-D-9013, Delivery Order No. N4425519F4017.

LUCs are required at several sites of MFD due to remaining contaminated soil and/or groundwater that prevent unlimited use and unrestricted exposures, as detailed in the *Land Use Control Plan for Sites 302, 303, 304 and Tank 50, Naval Base Kitsap Manchester, Manchester, Washington* (Battelle, 2016b). These sites include:

- Site 302 – Polychlorinated Biphenyl (PCB) Site
- Site 303 – D-Tunnel Tanks
- Site 304 – Industrial Area
- Tank 50 – Underground Storage Tank (UST) Release Site

The 2019 LUC inspections are the third annual inspections to occur since issuance of the *Land Use Control Plan for Sites 302, 303, 304 and Tank 50, Naval Base Kitsap Manchester, Manchester, Washington* (Battelle, 2016b) and were conducted in accordance with the document. The LUC inspection procedures provide a means to verify that the LUC requirements ensure protection of human health and the environment.

1.1 Purpose

The purpose of the LUC inspections are to:

1. ensure the effectiveness of the LUCs in the protection of human health and the environment; and
2. assist in identifying recommendations for corrective/additional action(s) to ensure that the LUCs continue to be effective at MFD.

This technical memorandum: 1) provides documentation that the LUCs have not been modified or terminated or land use has not been modified (without regulatory approval) at any site; and 2) communicates the status of the LUCs to the project stakeholders (i.e., Washington State Department of Ecology [Ecology], Environmental Protection Agency [EPA], and Suquamish Tribe).

1.2 Facility Description

1.2.1 Location

MFD is located less than 1 mile southwest of Bainbridge Island, approximately 3.5 miles northeast of the town of Port Orchard, and less than 1 mile north of the town of Manchester. The facility is situated on a small peninsula on the larger Kitsap Peninsula. This peninsula is located on the eastern edge of the larger Kitsap Peninsula and adjacent to Puget Sound to the east and Clam Bay to the north. MFD is divided into an eastern and western side of the facility by Little Clam Bay with these sides of the facility being connected by a 100-ft wide causeway. Figure 1 depicts the vicinity map for MFD.

1.2.2 Current Use

In the early 1940s (at the beginning of World War II), MFD was developed into a key fuel depot and remains a fuel depot for the Navy. The majority of the facility is currently used for fuel storage, including underground and aboveground petroleum storage tanks, associated pipelines, and a fuel pier. The remainder of the facility is dedicated to an industrial area with support and administrative buildings located adjacent to the fuel pier. Fuel products that have been or are currently stored at the fuel depot include Navy Special Fuel (No. 6 fuel oil [Bunker C]), marine diesel fuel, jet fuel, lubricant oil, and aviation gasoline.

Several areas of the facility have been impacted by past releases of petroleum products which have required remedial investigations and corrective actions. These areas include Site 302 (i.e., PCB Site, which has also been a dumping ground for various industrial wastes), Site 303 (i.e., D-Tunnel Tanks), Site 304 (i.e., Industrial Area), and Tank 50 (i.e., UST Release Site) and are further described in the *Land Use Control Plan for Sites 302, 303, 304 and Tank 50, Naval Base Kitsap Manchester, Manchester, Washington* (Battelle, 2016b). A site plan of MFD depicting the fuel storage, industrial area, and locations of these specific areas is shown in Figure 2. Sites 302, 303, 304 and Tank 50 have received no further action (NFA) status and the resulting letters from Ecology state that the sites are “either properly remediated or do not pose a risk to human health or the environment” based on the current and future land use (Ecology, 1998, 2000, and 2001). However, LUC requirements are identified or referred to in the NFA letters to ensure continued protection of human health and the environment.

1.3 Technical Memorandum Organization and Content

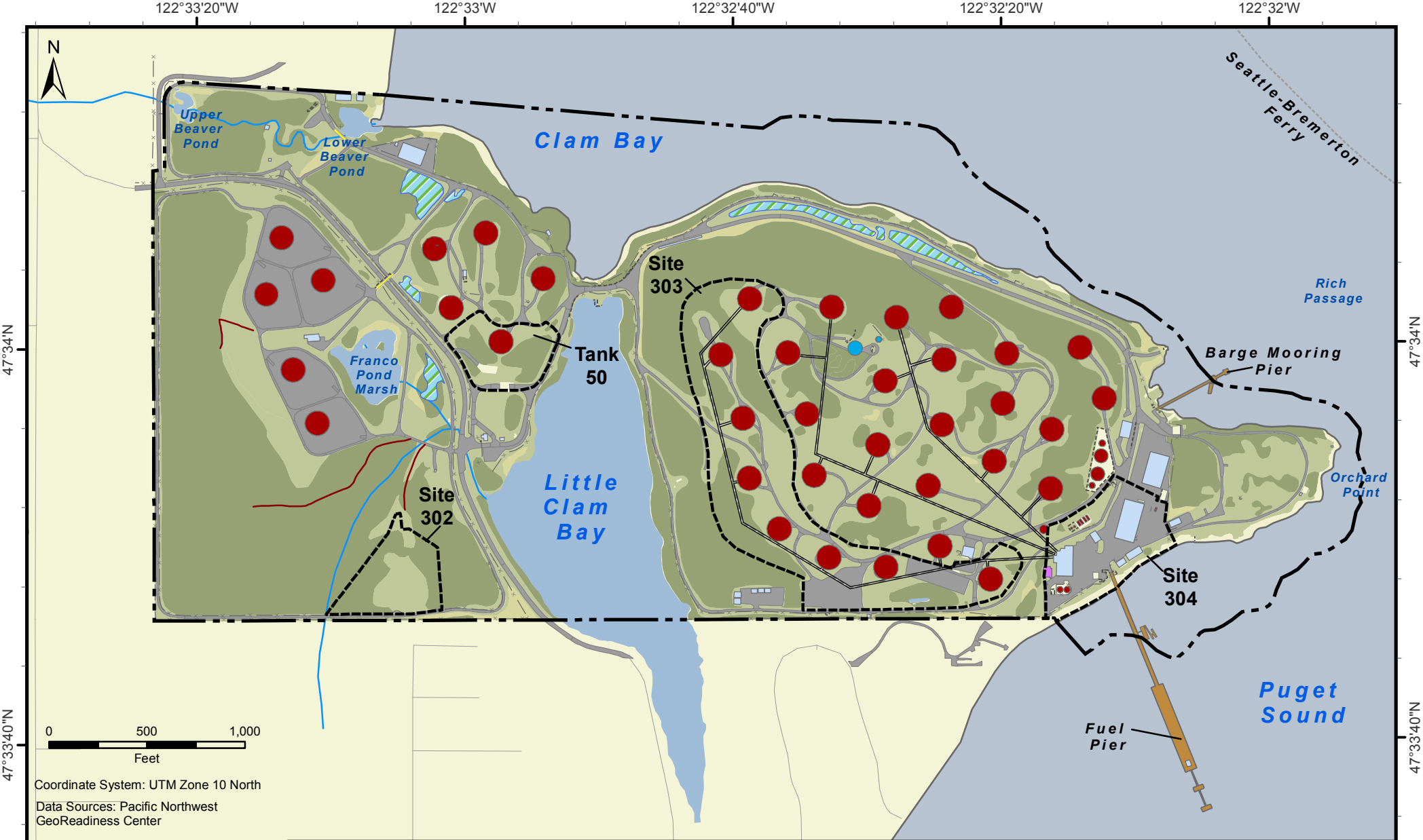
This technical memorandum includes the following sections:

- Section 1.0 Introduction: presents the purpose of the technical memorandum and the facility description, including location and current use.
- Section 2.0 LUC Inspection Approach and Findings: describes the approach to the LUC inspections and findings/observations from the LUC inspections at MFD.
- Section 3.0 Conclusions and Recommendations: presents a summary of findings/observations, conclusions, and subsequent recommendations for MFD.
- Section 4.0 References: provides a full and complete list of documents cited within this technical memorandum.

The following appendices to this technical memorandum provide additional documentation of the completed 2019 LUC inspections:

- Appendix A – LUC Inspection Checklists
- Appendix B – Monitoring Well Inspection Checklists
- Appendix C – Field Notes
- Appendix D – Photographic Log






Coordinate System: UTM Zone 10 North
Data Sources: Pacific Northwest
GeoReadiness Center



Legend

	Site Boundary		Unknown Tank		Water Body		Stream		Highway Ferry
	Installation Area		Oil Water Separator		Wetland		Wall		Trail
	Buildings		Docks/Wharfs		Brush		Fence		
	Fuel Tank		Road Bridge		Grass				
	Water Tank		Tunnel		Other				
			RoadSection		Tree				

DESIGNED BY	 Naval Facilities Engineering Command		
AP			
DRAWN BY	Figure 2. Manchester Fuel Depot Site Plan		
JEH/VJS			
CHECKED BY	MANCHESTER, WA		
AP	100103629-X034NW31	MA Fuel Depot*.mxd	DATE 07/18

2.0 LUC INSPECTION APPROACH AND FINDINGS

This section presents: 1) the approach for the LUC inspections and 2) the findings/observations from the LUC inspections of Sites 302, 303, 304 and Tank 50 at MFD.

2.1 LUC Inspection Approach

The LUC inspections of Sites 302, 303, 304 and Tank 50 at MFD were conducted on March 4 and 5, 2019 in accordance with the procedures detailed in the *Land Use Control Plan for Sites 302, 303, 304 and Tank 50, Naval Base Kitsap Manchester, Manchester, Washington* (Battelle, 2016b). The annual LUC inspections include a field inspection, determination of the current land use, document review (e.g., administrative and institutional controls in place), and condition assessment of engineering controls such as fencing, gates, signage, monitoring wells, and soil covers.

Based on the findings of the *Well Rehabilitation and Decommissioning Study, Fleet Logistics Center Puget Sound Manchester Fuel Depot, Manchester, Washington* (Battelle, 2017a), only four (4) monitoring wells remain in the monitoring network: MW-3 north of Tank 30; MW-1 and MW-2 at Site 304; and MW-1 at Tank 50. The remaining groundwater and vapor monitoring wells at MFD are recommended for decommissioning because of their poor/moderate general condition; location; intended purpose (i.e., vapor monitoring); and/or the fact that the well will be damaged or destroyed during planned construction activities. Therefore, the *2017 Land Use Control Inspection Technical Memorandum, Fleet Logistics Center Puget Sound Manchester Fuel Depot, Manchester, Washington* (Battelle, 2017b) recommended that these monitoring wells no longer be inspected for general condition. A general condition assessment and depth to water measurement (and depth to product measurement, if present) will be collected immediately prior to properly decommissioning each of these monitoring wells. As such, monitoring wells MW-1 at Site 303; MW-3 north of Tank 30; MW-1 and MW-2 at Site 304; and MW-1 at Tank 50 were inspected during the 2019 LUC inspections. Only the presence of the other monitoring wells was checked/confirmed during the 2019 LUC inspections.

Site-specific LUC Inspection Checklists were completed (see Appendix A) and Monitoring Well Inspection Checklists were completed for the wells to remain in the monitoring network (see Appendix B) and used as tools to guide the annual LUC inspections. In addition, field notes were taken and a photographic log was developed to document the findings/observations of the field inspection. The field notes and photographic log are presented as Appendices C and D, respectively.

2.2 LUC Inspection Findings

2.2.1 Site 302 – PCB Site

Site 302 is a 1.4-acre area located in the southwest portion of MFD (see Figures 2 and 3). The site was used as a dumping area for ship bilge waste, transformer oil, and other petroleum waste from local naval facilities from about 1955 through 1976. No estimate of the volume of waste disposed at the site is available. PCBs were identified as a contaminant of concern at Site 302. On March 4, 2019, Site 302 was inspected with respect to its site-specific LUCs (Battelle, 2016b):

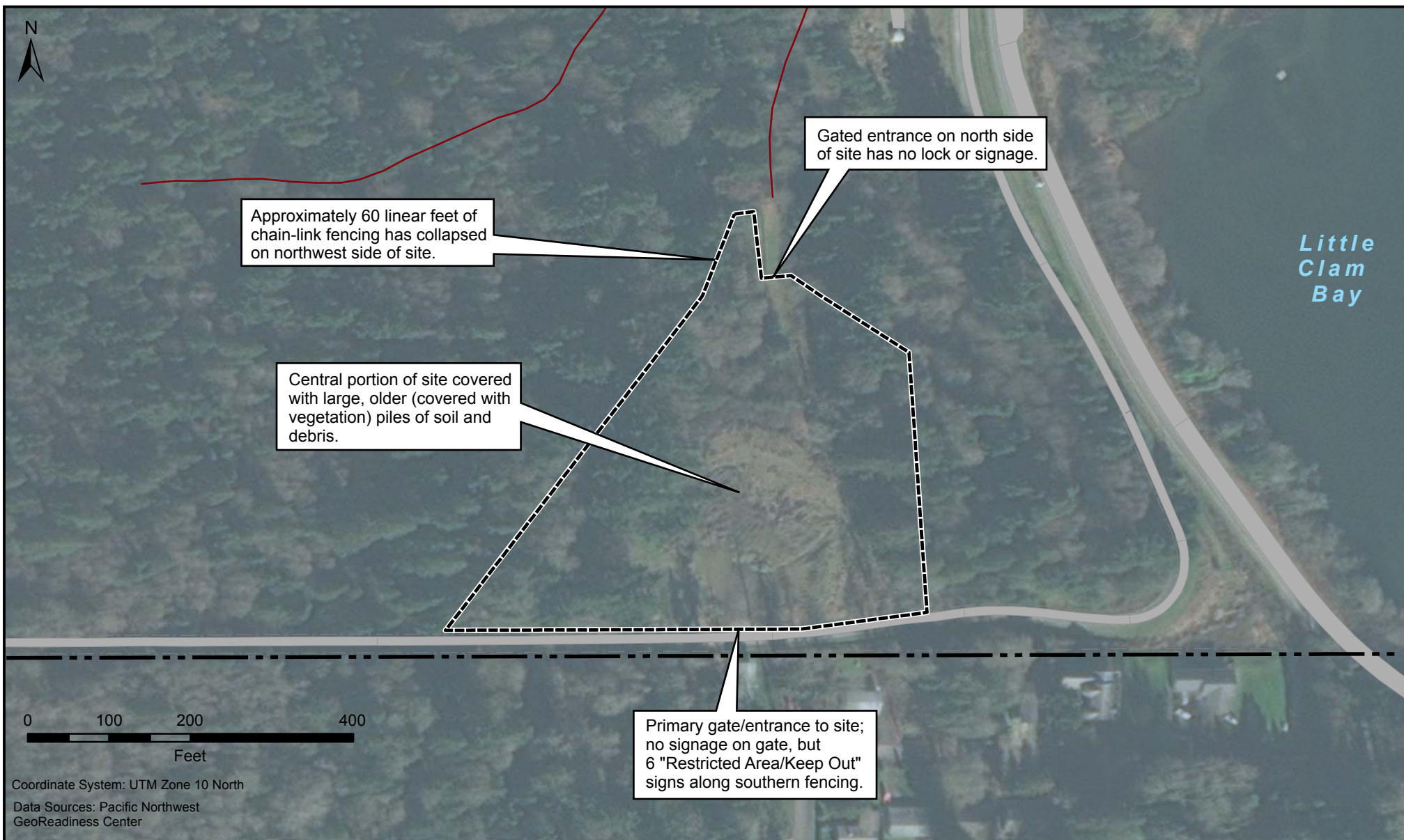
- Ensure that site signage is readable and adequate.
- Ensure that land use remains for industrial purposes.

- Ensure that there has been no unauthorized soil excavation or disturbance.
- Ensure that there has been no unauthorized placement of excess soil from another location.
- Ensure integrity of the soil cover vegetation, so that any excavation or improper disposal is apparent.
- Ensure that any soil excavated from the site is properly characterized and disposed offsite and that on-site workers are protected during such activities.
- Ensure that site fencing is intact and that gates are secured and locked.

During the 2019 LUC inspections, it was determined that land use remains for industrial purposes. In addition, there has been no unauthorized soil excavation or disturbance and no new unauthorized placement of excess soil from another location. Similar to previous site inspections, the most salient findings from the 2019 LUC inspections were:


1. There is no LUC signage on the primary gate/entrance on the south side of the site. However, there is a total of six (6) “Restricted Area/Keep Out” signs along the southern border fencing of the site.
2. The central portion of the site is covered with large, older stockpiles of soil and debris. Based on recent discussions with the NAVFAC Northwest Remedial Project Manager (RPM) and MFD personnel, there are plans in place to properly characterize the excess soil in 2019. If the soil meets Model Toxic Control Act (MTCA) Method A levels, then it will be used to regrade the site and then develop a vegetative cover—dependent on concurrence from Ecology. If the soil exceeds MTCA Method A levels, then it will be properly transported and disposed of offsite, a clean topsoil cap will be laid down, and a vegetative cover will be developed as recommended in the *Third Five-Year Review* (NAVFAC Northwest, 2015).
3. The gated entrance on the north side of the site does not have a lock or LUC signage.
4. Approximately 60 linear feet of chain-link fencing has collapsed on the northwest side of the site, likely due to incursion of vegetation. The vertical posts remain in good condition, but the chain-linked fencing requires replacement. The northwest side is in a relatively remote location of MFD, and vegetative overgrowth serve as natural barricades for any persons accessing the site from this location.

The locations of these findings are depicted in Figure 3. The LUC inspection checklist for Site 302 was completed based on these findings/observations and is provided in Appendix A. The field notes and photographs from Site 302 are provided in Appendices C and D, respectively.



Legend

- Site Boundary
- Installation Area
- RoadSection
- Highway Ferry
- Wall
- Trail
- Fence

DESIGNED BY			
JH			
DRAWN BY	Figure 3. Site 302 – PCB Site LUC Inspection Findings		
JEH/VS			
CHECKED BY	MFD, MANCHESTER, WA		
AP	100126487-X064NW41	SITE302_LUC03.CDR	DATE 04/19

2.2.2 Site 303 – D-Tunnel Tanks

Site 303 consists of eight 20,000 to 50,000-barrel (840,000 to 2,100,000 gallons) concrete USTs used to store marine diesel fuel (see Figures 2 and 4). The current Naval fuel stored and dispensed at MFD is designated as F-76. The USTs are located adjacent to the D-tunnel line, which extends from Tank 30 to Building 12 in the Industrial Area (i.e., Site 304) as shown on Figure 4. On March 5, 2019, Site 303 was inspected with respect to its site-specific LUCs (Battelle, 2016b):

- Ensure that land use remains for industrial purposes. Coordinate with Ecology prior to change in property ownership or land use concerning the need for remedial actions.
- Ensure that warnings are posted for workers to guard against exposure to residual petroleum contaminated soil.
- Identify remaining areas of concern on facility maps and specify in facility excavation permit instruction.
- Ensure no production wells are installed and groundwater is not used except for monitoring and/or remediation.
- Protect existing vapor monitoring wells until formally abandoned.
- Ensure that there has been no unauthorized soil excavation or disturbance.
- Confine authorized reusable material* to approved staging area.
- Ensure that any soil excavated from the site is properly characterized and disposed offsite and that on-site workers are protected during such activities.

*Those materials for which on-site placement has been coordinated with the Ecology Cleanup Project Manager and that have been characterized in collaboration with the Ecology Cleanup Project Manager.

During the LUC inspection, it was determined that land use remains for industrial purposes. In addition, warnings are posted for workers; remaining areas of concern are identified on facility maps and specified in facility permit instructions (i.e., as it was a recommended update for the Contractor Environmental and Safety Guide [Battelle, 2016a]); no production wells were installed and groundwater was not used (except for monitoring and/or remediation); and there has been no unauthorized soil excavation or disturbance. Similar to previous site inspections, the most salient site findings during the 2019 LUC inspections were:

1. An unmarked stockpile of soil covered by black poly sheeting in the northwest corner of the construction laydown area southwest of Tank 24. However, this soil stockpile appears to be part of the general stockpiled materials for activities at MFD.
2. An old stockpile of soil on a tarp and surrounded by absorbent wattles in the laydown area north of Tank 29.

It was also noted that the LUC signage for Tank 30 is located at the fork in the access road, not at the tank as with other LUC signage and their respective tank. The locations of these and other findings/observations are depicted in Figure 4. The LUC inspection checklist for Site 303 was completed based on these findings/observations and is provided in Appendix A. The field notes and photographs from Site 303 are provided in Appendices C and D, respectively.





Legend


	Groundwater Monitoring Well		Buildings		Tunnel
	Vapor Monitoring Well		Underground Fuel Tank		RoadSection
	Site Boundary		Water Tank		Water Body
	Installation Area		Unknown Tank		Wetland
			Oil Water Separator		Wall
			Docks/Wharfs		Trail
					Fence

DESIGNED BY			
JH			
DRAWN BY	Figure 4. Site 303 – D-Tunnel Tanks LUC Inspection Findings		
JEH/VS			
CHECKED BY	MFD, MANCHESTER, WA		
AP	100126487-X064NW41	SITE303_LUC03.CDR	DATE 04/19

As detailed in Section 2.1, monitoring well MW-3 north of Tank 30 was inspected for general condition in accordance with the Monitoring Well Inspection Checklists (see Appendix B). In addition, monitoring well MW-1 south of Tank 24 was able to be opened during the 2019 LUC inspections. Monitoring well MW-1 was inspected and found to be in overall operable condition; therefore, it should remain within the monitoring network for MFD (see Appendix B). Table 1 provides a summary of the inspection findings/observations at monitoring wells MW-1 south of Tank 24 and MW-3 north of Tank 30.

Table 1. Summary of Monitoring Well Condition Assessment at Site 303

Well ID	Northing	Easting	General Condition	Comments from 2019 Inspections
<i>South of Tank 24</i>				
MW-1	64015.29	371481.26		Casing needs to be lowered to fit cap; needed minor maintenance/repairs.
<i>North of Tank 30</i>				
MW-3	64625.80	371219.60		Casing needs to be lowered to fit cap; needed minor maintenance/repairs.

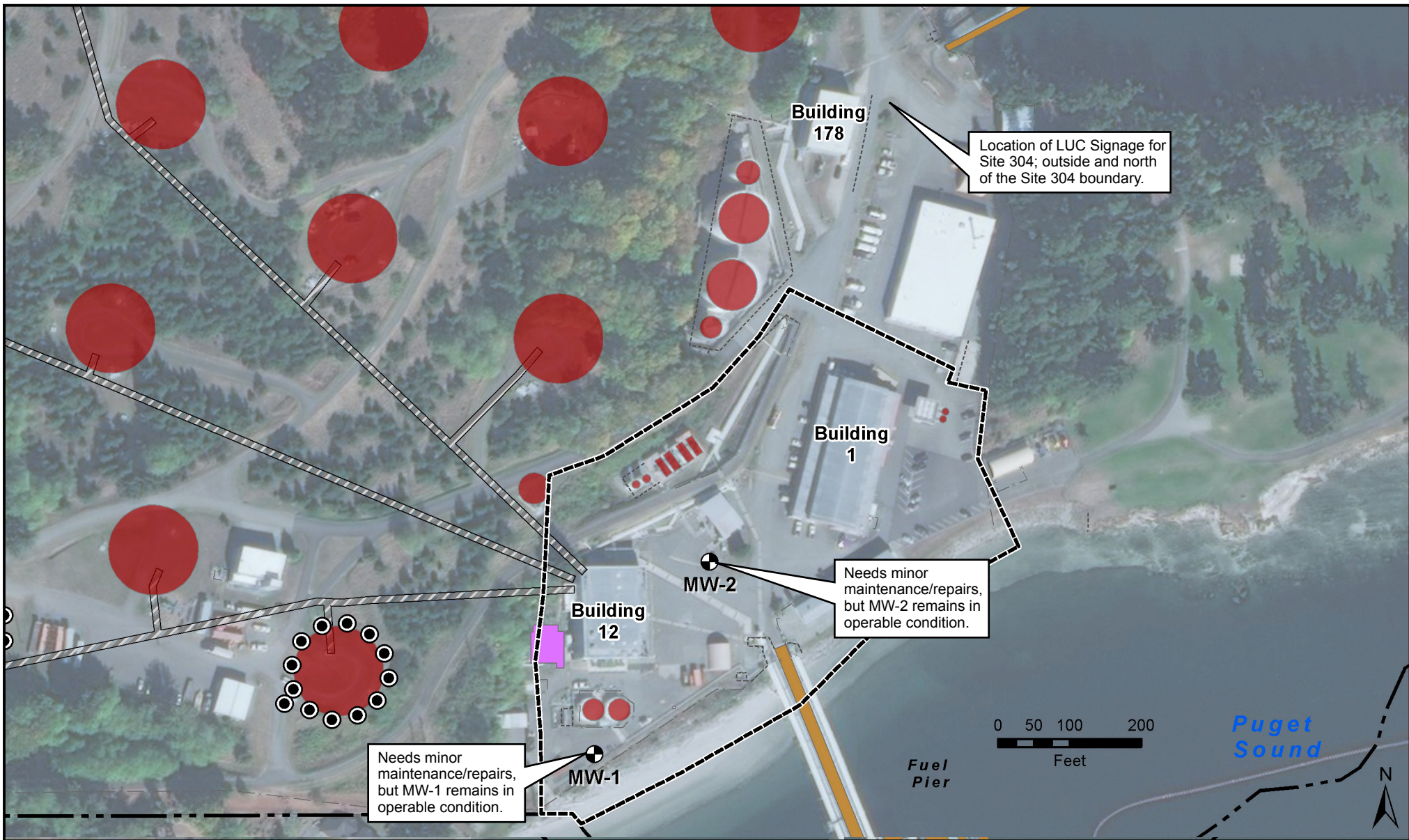
 = good condition; coordinate system is State Plan – Washington North (meters).

Other than minor maintenance/repairs, monitoring wells MW-1 south of Tank 24 and MW-3 north of Tank 30 remain in overall good, operable condition. In addition, the casing for both monitoring wells MW-1 south of Tank 24 and MW-3 north of Tank 30 are too tall for their flush-mount vaults and need to be lowered to be able to fit the cap under the well lid. During the 2019 LUC inspections, all other monitoring wells at Site 303 were found/located with the exception of: 1) MW-2 at Tank 25 which was previously in poor condition with only 2-inch polyvinyl chloride (PVC) piping exposed at the ground surface; and 2) OW-2 which was also previously in poor condition with only 2-inch PVC piping exposed at the ground surface and now potentially destroyed during installation of a new utility vault.


2.2.3 Site 304 – Industrial Area

Site 304 (Industrial Area) is located in the eastern portion of MFD as shown in Figures 2 and 5. It is comprised of maintenance, administration, fuel pumping, and water treatment buildings. Site 304 is the central transfer point for most of the petroleum products stored at MFD. Petroleum products (including marine diesel, jet fuels, aviation gasoline, and lube oil) are transported through a network of pipelines running from the fuel pier to storage tanks located throughout the facility. On March 4, 2019, Site 304 was inspected with respect to its site-specific LUCs (Battelle, 2016b):

- Ensure that land use remains for industrial purposes. Coordinate with Ecology prior to change in property ownership or land use concerning the need for remedial actions.
- Ensure that warnings are posted for workers to guard against exposure to residual petroleum contaminated soil.
- Identify remaining areas of concern on facility maps and specify in facility excavation permit instruction.
- Ensure no production wells are installed and groundwater is not used except for monitoring and/or remediation.



Legend		
● Groundwater Monitoring Well	■ Buildings	▨ Tunnel
⊙ Vapor Monitoring Well	● Underground Fuel Tank	▨ RoadSection
⊞ Site Boundary	● Water Tank	■ Water Body
⊞ Installation Area	■ Unknown Tank	▨ Wetland
	■ Oil Water Separator	--- Wall
	■ Docks/Wharfs	~ Trail
		× - × - Fence



DESIGNED BY			
JH			
DRAWN BY			
JEH/VS			
CHECKED BY			
AP			
	Figure 5. Site 304 – Industrial Area LUC Inspection Findings		
	MFD, MANCHESTER, WA		
	100126487-X064NW41	SITE304_LUC03CDR	DATE 04/19


- Protect existing monitoring wells until formally abandoned.
- Ensure that there has been no unauthorized soil excavation or disturbance.
- Ensure that any soil excavated from the site is properly characterized and disposed offsite and that on-site workers are protected during such activities.

During the 2019 LUC inspections, it was determined that land use remains for industrial purposes. In addition, remaining areas of concern are identified on facility maps and specified in facility permit instructions (i.e., as it was a recommended update for the Contractor Environmental and Safety Guide [Battelle, 2016a]); no production wells were installed and groundwater was not used (except for monitoring and/or remediation); monitoring wells have been protected; and there has been no unauthorized soil excavation or disturbance. Similar to the 2018 LUC inspections, the most salient finding during the 2019 LUC inspections was that the LUC signage for Site 304 is located at the northern corner of Building 178, outside and north of the Site 304 LUC boundary (see Figure 5). The LUC inspection checklist for Site 304 was completed based on this finding/observation and is provided in Appendix A. The field notes and photographs from Site 304 are provided in Appendices C and D, respectively.

As detailed in Section 2.1, monitoring wells MW-1 and MW-2 at Site 304 were inspected for general condition in accordance with the Monitoring Well Inspection Checklists (see Appendix B). Table 2 provides a summary of the inspection findings/observations at each monitoring well.

Table 2. Summary of Monitoring Well Condition Assessment at Site 304

Well ID	Northing	Easting	General Condition	Comments from 2019 Inspections
MW-1	64019.42	371750.40		No well identification; expansion cap is broken; and one ear broken from monument; casing needs to be lowered to fit well cap.
MW-2	64105.94	371803.60		No well identification and expansion cap is broken.

 = good condition; coordinate system is State Plan – Washington North (meters).

Other than minor needed maintenance/repairs, both groundwater monitoring wells MW-1 and MW-2 continue to be in operable condition.

2.2.4 Tank 50 – UST Release Site

Tank 50 is the southernmost of a set of four USTs built on the top of a small knoll located on the west side of Little Clam Bay (see Figures 2 and 6). The tank is believed to have been constructed in the early 1950s and is a steel cylinder approximately 100 feet in diameter and 22 feet tall with a capacity of approximately 27,000 barrels (1.1 million gallons). On March 4, 2019, Tank 50 was inspected with respect to its site-specific LUCs (Battelle, 2016b):


- Ensure that warnings are posted for workers to guard against exposure to residual petroleum contaminated soil.
- Identify remaining areas of concern on facility maps and specify in facility excavation permit instruction.


- Ensure that land use remains for industrial purposes. Coordinate with Ecology prior to change in property ownership or land use concerning the need for remedial actions.
- Ensure no production wells are installed and groundwater is not used except for monitoring and/or remediation.
- Protect existing monitoring wells until formally abandoned.
- Ensure that there has been no unauthorized soil excavation or disturbance.
- Ensure that any soil excavated from the site is properly characterized and disposed offsite and that on-site workers are protected during such activities.

During the 2019 LUC inspections, it was determined that land use remains for industrial purposes. In addition, remaining areas of concern are identified on facility maps and specified in facility permit instructions (i.e., as it was a recommended update for the Contractor Environmental and Safety Guide [Battelle, 2016a]); no production wells were installed and groundwater was not used (except for monitoring and/or remediation); monitoring wells have been protected; and there has been no unauthorized soil excavation or disturbance. Similar to the 2017 and 2018 LUC inspections, the most salient finding during the 2019 LUC inspections was that there is relatively new LUC signage adjacent to monitoring well MW-2 along the southwestern access road; however, there is no LUC signage on the northern access road – the primary entry way to Tank 50 (see Figure 6). The LUC inspection checklist for Tank 50 was completed based on this finding/observation and is provided in Appendix A. The field notes and photographs from Tank 50 are provided in Appendices C and D, respectively.

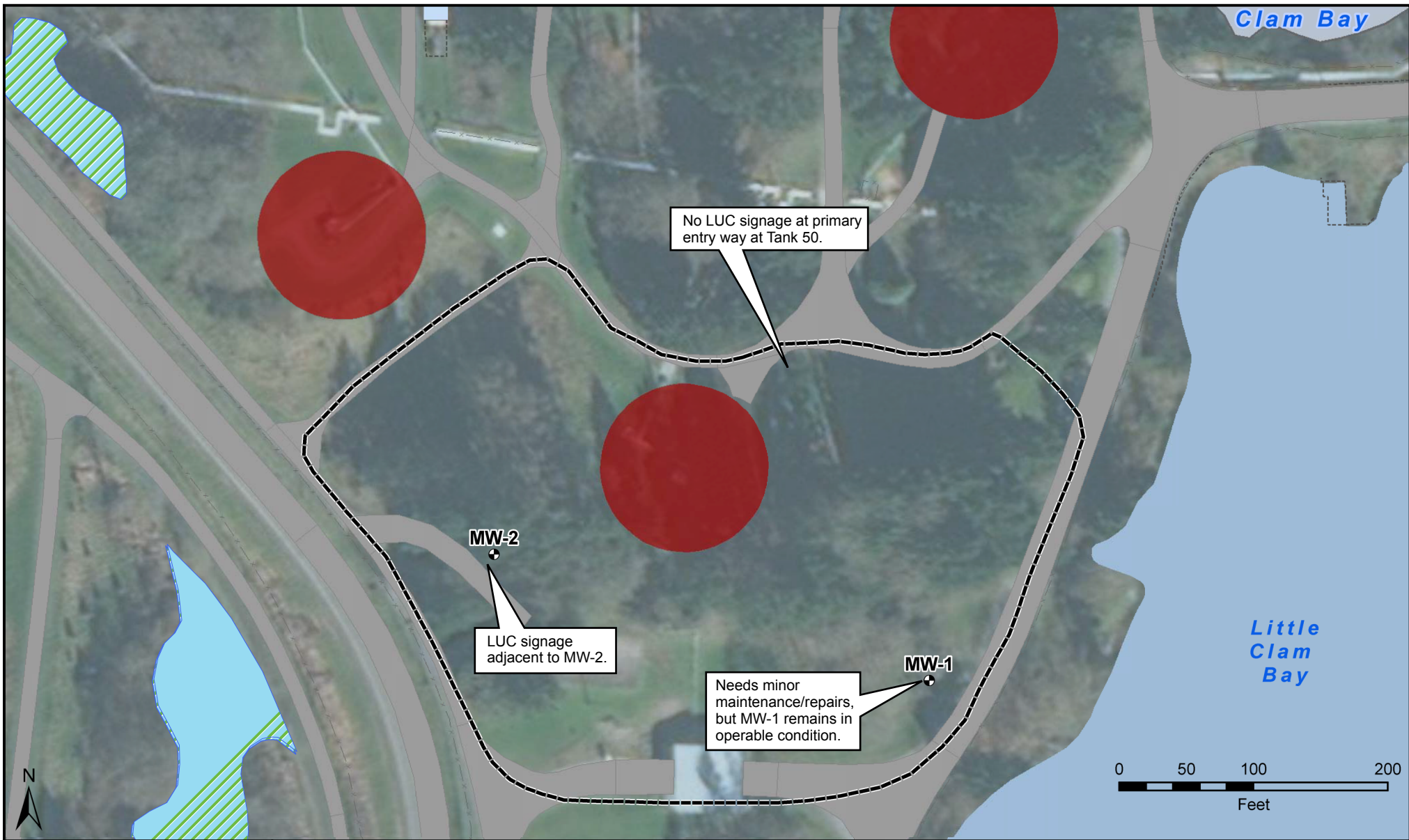
As detailed in Section 2.1, monitoring well MW-1 at Tank 50 was inspected for general condition in accordance with the Monitoring Well Inspection Checklists (see Appendix B). Table 3 provides a summary of the inspection findings/observations at monitoring well MW-1.

Table 3. Summary of Monitoring Well Condition Assessment at Tank 50


Well ID	Northing	Easting	General Condition	Comments from 2019 Inspections
MW-1	64406.94	370945.00		No exterior well identification and no lock on lid.

 = good condition; coordinate system is State Plan – Washington North (meters).

Other than minor maintenance/repairs, monitoring well MW-1 remains to be in operable condition. Monitoring well MW-2 was located and found to be in operable condition; however, it was not formally inspected during the 2019 LUC inspections (see Section 2.1).



Legend	
	Groundwater Monitoring Well
	Site Boundary
	Buildings
	Fuel Tank
	Road Section
	Water Body
	Wetland
	Wall
	Fence

DESIGNED BY			
JH			
DRAWN BY	Figure 6. Tank 50 Release Site LUC Inspection Findings		
JEH/VS			
CHECKED BY	MFD, MANCHESTER, WA		
AP	100126487-X064NW41	TANK50_LUC03.CDR	DATE 04/19

3.0 CONCLUSIONS AND RECOMMENDATIONS

This section provides a summary of findings, conclusions, and subsequent recommendations associated with the results of the 2019 LUC inspections at Sites 302, 303, 304 and Tank 50 of MFD.

On March 4 and 5, 2019, inspections were conducted to ensure the effectiveness of LUC requirements at Sites 302, 303, 304 and Tank 50 as detailed in the *Land Use Control Plan for Sites 302, 303, 304 and Tank 50, Naval Base Kitsap Manchester, Manchester, Washington* (Battelle, 2016b). A field inspection, determination of the current land use, document review, and condition assessment of engineering controls were conducted for each site to determine the conditions of the LUCs in place and verify that these LUCs remain protective of human health and the environment. Table 4 summarizes the observations/findings from the 2019 LUC inspections, subsequent recommendations, and any comments regarding the recommendation.

Overall, the LUCs in place at Sites 302, 303, 304 and Tank 50 of MFD remain effective in the protection of human health and the environment. The 2019 LUC inspections were the third inspections conducted at the sites since issuance of the *Land Use Control Plan for Sites 302, 303, 304 and Tank 50, Naval Base Kitsap Manchester, Manchester, Washington* (Battelle, 2016b). Based on discussions with the NAVFAC Northwest RPM and MFD personnel, plans are in place to execute some recommendations at these sites in the near future; therefore, it is recommended that the LUC inspections continue on an annual basis. Continuing the LUC inspections on an annual basis will allow for a timely evaluation before and after completion of these actions. Once these recommendations are executed and documented in the subsequent LUC Technical Memorandum, then the LUC inspection frequency may be decreased to potentially every five years, coinciding with the five-year review for MFD.

Table 4. Summary of Findings and Recommendations from the 2019 LUC Inspections

Findings	Recommendations	Comment
<i>Site 302 - PCB Site</i>		
There is no LUC signage on the primary gate/entrance on the south side of the site.	No action necessary at this time.	There is a total of six (6) “Restricted Area/Keep Out” signs along the southern border fencing of the site. Same finding from 2017 and 2018 LUC inspections.
The central portion of the site is covered with large, older stockpiles of soil and debris.	Properly characterize the excess soil placed in the central portion of the site. If the soil meets Model Toxic Control Act (MTCA) Method A levels, then use to regrade site and develop vegetative cover—with concurrence from Ecology. If the soil exceeds MTCA Method A levels, then properly transport and dispose of soil offsite, place clean topsoil cap, and develop vegetative cover as recommended in the <i>Third Five-Year Review</i> (NAVFAC Northwest, 2015).	Based on recent discussions with the NAVFAC Northwest RPM and MFD personnel, there are plans in place to properly characterize the excess soil in 2019. Same finding from 2017 and 2018 LUC inspections.
The gated entrance on the north side of the site has no lock or LUC signage.	Secure gate with lock and place LUC signage.	The entrance is in a relatively remote location of MFD, where personnel would not typically access the site from this location. Same finding from 2017 and 2018 LUC inspections.
Approximately 60 linear feet of chain-link fencing has collapsed on the northwest side of the site, likely due to incursion of vegetation.	Repair chain-link fencing.	The vertical posts remain in good condition, but the chain-linked fencing requires replacement. The northwest side is in a relatively remote location of MFD, and vegetative overgrowth serve as natural barricades for any persons accessing the site from this location. Same finding from 2016 Baseline Condition Assessment (Battelle, 2016c).
<i>Site 303 - D-Tunnel Tanks</i>		
An unmarked stockpile of soil covered by black poly sheeting in the northwest corner of the construction laydown area southwest of Tank 24.	Confirm soil stockpile is authorized reusable material and is located in an approved staging area.	Same finding from 2017 and 2018 LUC inspections.
Old stockpile of soil on a tarp and surrounded by absorbent wattles in the laydown area north of Tank 29.	Properly characterize, transport, and dispose of (off site) the soil.	Same finding from 2017 and 2018 LUC inspections.

Table 4. Summary of Findings and Recommendations from the 2019 LUC Inspections (continued)

Findings	Recommendations	Comment
Monitoring wells MW-1 south of Tank 24 and MW-3 north of Tank 30 need casing to be lowered to fit cap under lid and minor maintenance/repairs.	Lower casing and perform needed minor maintenance/repairs on monitoring wells MW-1 and MW-3.	Monitoring well MW-1 south of Tank 24 is located along the southern boundary of the facility adjacent to a residential area. Therefore, the location of this well may provide useful information during future monitoring/investigations. Monitoring well MW-3 north of Tank 30 is already part of the monitoring network (Battelle, 2017a).
Site 304 - Industrial Area		
The LUC signage for Site 304 is located at the northern corner of Building 178, outside and north of the Site 304 LUC boundary.	Move the LUC signage to the corner of Cedar Avenue and Olympic Drive E to be consistent with the actual site boundary.	This is the primary entry/access point to the site; therefore, moving the LUC signage to this location would accurately inform staff, contractors, and visitors of the area with LUC restrictions. Same finding from 2018 LUC inspections.
Monitoring wells MW-1 and MW-2 do not have identification and the expansion caps are broken. In addition, one monument ear is broken on MW-1.	Perform needed minor maintenance/repairs on monitoring wells MW-1 and MW-2.	Per the Well Rehabilitation and Decommissioning Study (Battelle, 2017a), these two (2) monitoring wells are to remain in the monitoring network. Same finding from 2018 LUC inspections.
Tank 50 - UST Release Site		
There is no LUC signage at the primary entry way to Tank 50.	Add LUC signage on the northern access road to Tank 50 (i.e., the primary entry way to the site), as it is noted in the <i>Well Installation and Sampling and Analysis Tank No. 50 Fuel Hydrocarbon Leak Assessment, Manchester Fleet and Industrial Supply Center, Manchester, Washington</i> (Hart Crowser, 1998).	Same finding from 2017 and 2018 LUC inspections.
Monitoring well MW-1 has no exterior well identification and no lock on lid.	Perform needed minor maintenance/repairs on monitoring well MW-1.	Per the Well Rehabilitation and Decommissioning Study (Battelle, 2017a), this monitoring well is to remain in the monitoring network. Same finding from 2018 LUC inspections.

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4.0 REFERENCES

- Battelle. 2016a. *Recommendations for the Contractor Environmental and Safety Guide, Naval Base Kitsap Manchester, Manchester, Washington*. September 21.
- Battelle. 2016b. *Land Use Control Plan for Sites 302, 303, 304 and Tank 50, Naval Base Kitsap Manchester, Manchester, Washington*. December 9.
- Battelle. 2016c. *Current Conditions at Sites 302, 303, and 304, Naval Base Kitsap Manchester, Manchester, Washington*. September 21.
- Battelle. 2017a. *Well Rehabilitation and Decommissioning Study, Fleet Logistics Center Puget Sound Manchester Fuel Depot, Manchester, Washington*. August 10.
- Battelle. 2017b. *2017 Land Use Control Inspection Technical Memorandum, Fleet Logistics Center Puget Sound Manchester Fuel Depot, Manchester, Washington*. October 9.
- Hart Crowser. 1998. *Well Installation and Sampling and Analysis, Tank No. 50 Fuel Hydrocarbon Leak Assessment, Manchester Fleet and Industrial Supply Center, Manchester, Washington*. Prepared for Department of the Navy Engineering Field Activity, Northwest Naval Facilities Engineering Command. January 21.
- Naval Facilities Engineering Command (NAVFAC) Northwest. 2015. *Third Five-Year Review for Sites 302, 303, and 304, Fleet Logistics Center Puget Sound (FLCPS), Naval Base Kitsap-Manchester, Washington*. January 6.
- Washington State Department of Ecology (Ecology). 1998. *Ecology Determination at Tank 50 Site, FISC Manchester*. December 3.
- Washington State Department of Ecology (Ecology). 2000. *No Further Action Determination at PCB Site Letter*. September 25.
- Washington State Department of Ecology (Ecology). 2001. *No Further Action Determination at Fleet and Industrial Supply Center Site 303/304 Letter*. January 17.

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APPENDIX A
LUC Inspection Checklists

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NBK Manchester
Site 302 - PCB Site
Naval Facilities Engineering Command Northwest

LAND USE CONTROLS (LUCs) INSPECTION CHECKLIST

DATE(S) (MM|DD|YY):

INSPECTOR(S):

COMPANY:

LUCs

- *ENSURE THAT SITE SIGNAGE IS READABLE AND ADEQUATE.*
- ENSURE THAT LAND USE REMAINS FOR INDUSTRIAL PURPOSES.
- ENSURE THAT THERE HAS BEEN NO UNAUTHORIZED SOIL EXCAVATION OR DISTURBANCE.
- ENSURE THAT THERE HAS BEEN NO UNAUTHORIZED PLACEMENT OF EXCESS SOIL FROM ANOTHER LOCATION.
- ENSURE INTEGRITY OF THE SOIL COVER VEGETATION, SO THAT ANY EXCAVATION OR IMPROPER DISPOSAL IS APPARENT.
- ENSURE THAT ANY SOIL EXCAVATED FROM THE SITE IS PROPERLY CHARACTERIZED AND DISPOSED OFF-SITE AND THAT ON-SITE WORKERS ARE PROTECTED DURING SUCH ACTIVITIES.
- ENSURE THAT SITE FENCING IS INTACT AND THAT GATES ARE SECURED AND LOCKED.

NOTE: LUCs THAT ARE ITALICIZED ARE REQUIRED LUCs FROM THE NFA LETTER.

LUCs INSPECTION ACTIONS

HAS SITE OR ADJACENT LAND USE CHANGED SINCE LAST INSPECTION?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF SOIL EXCAVATION OR DISTURBANCE?
IF SO, DETERMINE IF SITE APPROVAL PROCESS HAS BEEN FOLLOWED.

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF THE UNAUTHORIZED PLACEMENT OF EXCESS SOIL FROM ANOTHER LOCATION?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

HAS THE INTEGRITY OF THE VEGETATIVE COVER AT THE SITE BEEN MAINTAINED?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

HAS ACCESS CONTROL BEEN MAINTAINED?

☐ YES ☐ NO, EXPLAIN _____

SECURITY POC: _____

IS SIGNAGE READABLE AND ADEQUATE?

☐ YES ☐ NO ☐ NA

IS FENCING INTACT AND SECURE?

☐ YES ☐ NO ☐ NA

ARE BOTH THE NORTH AND SOUTH GATES SECURED AND LOCKED

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:



NBK Manchester
Site 302 - PCB Site
Naval Facilities Engineering Command Northwest

LUCs INSPECTION CHECKLIST (CONTINUED)

WERE PICTURES TAKEN? ☐ YES
☐ NO

PHOTO IDs _____

ADDITIONAL NOTES:

I CERTIFY THAT THE CONDITIONS OF THE AREA ON THE INSPECTION DATES(S) WERE AS REPORTED ABOVE.

INSPECTOR SIGNATURE:

DATE:



NBK Manchester
Site 303 - D-Tunnel Tanks
Naval Facilities Engineering Command Northwest

LAND USE CONTROLS (LUCs) INSPECTION CHECKLIST

DATE(S) (MM|DD|YY):

INSPECTOR(S):

COMPANY:

LUCs

- *ENSURE THAT LAND USE REMAINS FOR INDUSTRIAL PURPOSES. COORDINATE WITH ECOLOGY PRIOR TO CHANGE IN PROPERTY OWNERSHIP OR LAND USE CONCERNING THE NEED FOR REMEDIAL ACTIONS.*
- *ENSURE THAT WARNINGS ARE POSTED FOR WORKERS TO GUARD AGAINST EXPOSURE TO RESIDUAL PETROLEUM CONTAMINATED SOIL.*
- *IDENTIFY REMAINING AREAS OF CONCERN ON FACILITY MAPS AND SPECIFY IN FACILITY EXCAVATION PERMIT INSTRUCTION.*
- ENSURE NO PRODUCTION WELLS ARE INSTALLED AND GROUNDWATER IS NOT USED EXCEPT FOR MONITORING AND/OR REMEDIATION.
- PROTECT EXISTING VAPOR MONITORING WELLS UNTIL FORMALLY ABANDONED.
- ENSURE THAT THERE HAS BEEN NO UNAUTHORIZED SOIL EXCAVATION OR DISTURBANCE.
- CONFINE AUTHORIZED REUSABLE MATERIAL* TO APPROVED STAGING AREA.
- ENSURE THAT ANY SOIL EXCAVATED FROM THE SITE IS PROPERLY CHARACTERIZED AND DISPOSED OFF-SITE AND THAT ON-SITE WORKERS ARE PROTECTED DURING SUCH ACTIVITIES.

NOTE: LUCs THAT ARE ITALICIZED ARE REQUIRED LUCs FROM THE NFA LETTER.

*THOSE MATERIALS FOR WHICH ONSITE PLACEMENT HAS BEEN COORDINATED WITH THE ECOLOGY SITE MANAGER AND THAT HAVE BEEN CHARACTERIZED IN COLLABORATION WITH THE ECOLOGY SITE MANAGER.

LUC INSPECTION ACTION

HAS SITE OR ADJACENT LAND USE CHANGED SINCE LAST INSPECTION?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

DO FACILITY MAPS IDENTIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

DOES THE FACILITY EXCAVATION PERMIT INSTRUCTION SPECIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

IS THERE VISUAL EVIDENCE OF UNAUTHORIZED ON-SITE WELL INSTALLATION OR GROUNDWATER USE?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS

☐ OTHER _____

ARE ALL MONITORING WELLS IN GOOD CONDITION AND ACCESSIBLE? (REFER TO COMPLETED MONITORING WELL INSPECTION CHECKLISTS)

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS

☐ OTHER _____

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF SOIL EXCAVATION OR DISTURBANCE? IF SO, DETERMINE IF SITE APPROVAL PROCESS HAS BEEN FOLLOWED.

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
 (CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:



NBK Manchester
Site 303 - D-Tunnel Tanks
Naval Facilities Engineering Command Northwest

LUCs INSPECTION CHECKLIST (CONTINUED)

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF THE UNAUTHORIZED PLACEMENT
EXCESS SOIL, FILL, OR SEDIMENT FROM ANOTHER LOCATION?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS: _____

HAS ACCESS CONTROL BEEN MAINTAINED?

☐ YES ☐ NO, EXPLAIN _____

SECURITY POC: _____

IS SIGNAGE READABLE AND ADEQUATE?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS: _____

WERE PICTURES TAKEN? ☐ YES
☐ NO

PHOTO IDs _____

ADDITIONAL NOTES:

I CERTIFY THAT THE CONDITIONS OF THE AREA ON THE INSPECTION DATES(S) WERE AS REPORTED ABOVE.

INSPECTOR SIGNATURE:

DATE:



NBK Manchester
Site 304 - Industrial Area
Naval Facilities Engineering Command Northwest

LAND USE CONTROLS (LUCs) INSPECTION CHECKLIST

DATE(S) (MM|DD|YY):

INSPECTOR(S):

COMPANY:

LUCs

- *ENSURE THAT LAND USE REMAINS FOR INDUSTRIAL PURPOSES. COORDINATE WITH ECOLOGY PRIOR TO CHANGE IN PROPERTY OWNERSHIP OR LAND USE CONCERNING THE NEED FOR REMEDIAL ACTIONS.*
- *ENSURE THAT WARNINGS ARE POSTED FOR WORKERS TO GUARD AGAINST EXPOSURE TO RESIDUAL PETROLEUM CONTAMINATED SOIL.*
- *IDENTIFY REMAINING AREAS OF CONCERN ON FACILITY MAPS AND SPECIFY IN FACILITY EXCAVATION PERMIT INSTRUCTION.*
- *ENSURE NO PRODUCTION WELLS ARE INSTALLED AND GROUNDWATER IS NOT USED EXCEPT FOR MONITORING AND/OR REMEDIATION.*
- *PROTECT EXISTING MONITORING WELLS UNTIL FORMALLY ABANDONED.*
- *ENSURE THAT THERE HAS BEEN NO UNAUTHORIZED SOIL EXCAVATION OR DISTURBANCE.*
- *ENSURE THAT ANY SOIL EXCAVATED FROM THE SITE IS PROPERLY CHARACTERIZED AND DISPOSED OFF-SITE AND THAT ON-SITE WORKERS ARE PROTECTED DURING SUCH ACTIVITIES.*

NOTE: LUCs THAT ARE ITALICIZED ARE REQUIRED LUCs FROM THE NFA LETTER.

LUC INSPECTION ACTIONS

HAS SITE OR ADJACENT LAND USE CHANGED SINCE LAST INSPECTION?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

DO FACILITY MAPS IDENTIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

DOES THE FACILITY EXCAVATION PERMIT INSTRUCTION SPECIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

IS THERE VISUAL EVIDENCE OF UNAUTHORIZED ON-SITE WELL INSTALLATION OR GROUNDWATER USE?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS
☐ OTHER _____

ARE ALL MONITORING WELLS IN GOOD CONDITION AND ACCESSIBLE? (REFER TO COMPLETED MONITORING WELL INSPECTION CHECKLISTS)

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS
☐ OTHER _____

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF SOIL EXCAVATION OR DISTURBANCE? IF SO, DETERMINE IF SITE APPROVAL PROCESS HAS BEEN FOLLOWED.

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:



NBK Manchester
Site 304 - Industrial Area
Naval Facilities Engineering Command Northwest

LUCs INSPECTION CHECKLIST (CONTINUED)

HAS ACCESS CONTROL BEEN MAINTAINED?

☐ YES ☐ NO, EXPLAIN _____

SECURITY POC: _____

IS SIGNAGE READABLE AND ADEQUATE?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS: _____

WERE PICTURES TAKEN? ☐ YES
☐ NO

PHOTO IDs _____

ADDITIONAL NOTES:

I CERTIFY THAT THE CONDITIONS OF THE AREA ON THE INSPECTION DATES(S) WERE AS REPORTED ABOVE.

INSPECTOR SIGNATURE:

DATE:



NBK Manchester
Tank 50 Release Site
Naval Facilities Engineering Command Northwest

LAND USE CONTROLS (LUCs) INSPECTION CHECKLIST

DATE(S) (MM|DD|YY):

INSPECTOR(S):

COMPANY:

LUCs

- *ENSURE THAT WARNINGS ARE POSTED FOR WORKERS TO GUARD AGAINST EXPOSURE TO RESIDUAL PETROLEUM CONTAMINATED SOIL.*
- *IDENTIFY REMAINING AREAS OF CONCERN ON FACILITY MAPS AND SPECIFY IN FACILITY EXCAVATION PERMIT INSTRUCTION.*
- ENSURE THAT LAND USE REMAINS FOR INDUSTRIAL PURPOSES. COORDINATE WITH ECOLOGY PRIOR TO CHANGE IN PROPERTY OWNERSHIP OR LAND USE CONCERNING THE NEED FOR REMEDIAL ACTIONS.
- ENSURE NO PRODUCTION WELLS ARE INSTALLED AND GROUNDWATER IS NOT USED EXCEPT FOR MONITORING AND/OR REMEDIATION.
- PROTECT EXISTING MONITORING WELLS UNTIL FORMALLY ABANDONED.
- ENSURE THAT THERE HAS BEEN NO UNAUTHORIZED SOIL EXCAVATION OR DISTURBANCE.
- ENSURE THAT ANY SOIL EXCAVATED FROM THE SITE IS PROPERLY CHARACTERIZED AND DISPOSED OFF-SITE AND THAT ON-SITE WORKERS ARE PROTECTED DURING SUCH ACTIVITIES.

NOTE: LUCs THAT ARE ITALICIZED ARE REQUIRED LUCs FROM THE NFA LETTER.

LUC INSPECTION ACTION

HAS SITE OR ADJACENT LAND USE CHANGED SINCE LAST INSPECTION?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:

DO FACILITY MAPS IDENTIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

DOES THE FACILITY EXCAVATION PERMIT INSTRUCTION SPECIFY REMAINING AREAS OF CONCERN?

☐ YES ☐ NO

DESCRIBE:

IS THERE VISUAL EVIDENCE OF UNAUTHORIZED ON-SITE WELL INSTALLATION OR GROUNDWATER USE?

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS

☐ OTHER _____

ARE ALL MONITORING WELLS IN GOOD CONDITION AND ACCESSIBLE? (REFER TO COMPLETED MONITORING WELL INSPECTION CHECKLISTS)

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____
☐ WELL INSPECTIONS

FINDINGS:

☐ SEE WELL INSPECTION LOGS

☐ OTHER _____

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF SOIL EXCAVATION OR DISTURBANCE?
IF SO, DETERMINE IF SITE APPROVAL PROCESS HAS BEEN FOLLOWED.

☐ YES ☐ NO

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS:



**NBK Manchester
Tank 50 Release Site
Naval Facilities Engineering Command Northwest**

LUCs INSPECTION CHECKLIST (CONTINUED)

IS THERE VISUAL OR ADMINISTRATIVE EVIDENCE OF THE UNAUTHORIZED PLACEMENT
EXCESS SOIL, FILL, OR SEDIMENT FROM ANOTHER LOCATION?

☐ YES ☐ NO ☐ NA

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

FINDINGS: _____

HAS ACCESS CONTROL BEEN MAINTAINED?

☐ YES ☐ NO, EXPLAIN _____

IS SIGNAGE READABLE AND ADEQUATE?

INSPECTION PERFORMED? ☐ SITE WALK ☐ INTERVIEW W/ _____
(CHECK ALL THAT APPLY) ☐ SECURITY CHECK ☐ OTHER _____

SECURITY POC: _____

☐ YES ☐ NO ☐ NA

FINDINGS: _____

WERE PICTURES TAKEN? ☐ YES
☐ NO

PHOTO IDs _____

ADDITIONAL NOTES:

I CERTIFY THAT THE CONDITIONS OF THE AREA ON THE INSPECTION DATES(S) WERE AS REPORTED ABOVE.

INSPECTOR SIGNATURE:

DATE:

APPENDIX B
Monitoring Well Inspection Checklists

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NBK Manchester
Naval Facilities Engineering Command Northwest

MONITORING WELL CHECKLIST FOR LUC INSPECTION

DATE (MM DD YY): 03/05/19	TIME (HH:MM): 11:42	WEATHER/TEMPERATURE: Partly cloudy, high 49F, winds N 13mph
------------------------------	------------------------	--

INSPECTOR: A. Paolucci, S. Moore	COMPANY: Battelle
--	-----------------------------

SITE: Site 303	DESCRIPTION: D-Tunnel Tanks, South of Tank 24
--------------------------	---

WELL ID: MW-1	NORTHING: 64015.29	EASTING: 371481.26
-------------------------	------------------------------	------------------------------

INSPECTION CHECKLIST:

TYPE OF MONITORING WELL: ☒ GROUNDWATER
☐ SOIL VAPOR

MONITORING WELL LOCATED? ☒ YES ☐ NO

IS THE WELL CLEARLY LABELED? ☐ YES ☒ NO

IS THE MONUMENT IN GOOD CONDITION? ☒ YES ☐ NO

TYPE OF WELL CASING: ☐ STICK-UP ☒ FLUSH-MOUNT ☐ OTHER _____
SIZE & NUMBER OF BOLTS ON FLUSH-MOUNT LID: 3 of 3 bolts on well.

CASING DIAMETER ☒ 2" ☐ 4" ☐ 6" ☐ 8" ☐ OTHER _____

IS THE CASING IN GOOD CONDITION? ☒ YES ☐ NO

IS THERE A CAP ON THE MONITORING WELL? ☒ YES ☐ NO

TYPE OF CAP: ☐ PVC SLIP CAP
☒ J-PLUG
☐ EXPANSION
☐ PRODUCTION W/TUBING
☐ OTHER _____

IS THERE ANY EVIDENCE OF TAMPERING WITH THE WELL CASING OR CAP? ☐ YES ☒ NO

ARE THERE ANY ODORS? ☐ YES ☒ NO

IF YES, DESCRIBE ODOR: ☐ SOLVENT
☐ SULFIDE/ROTTEN EGGS
☐ PETROLEUM
☐ OTHER _____

WERE PICTURES TAKEN? ☒ YES ☐ NO
PHOTO IDs: See Appendix D

ADDITIONAL NOTES OR COMMENTS:	GENERAL CONDITION (CHECK ONE): <input checked="" type="checkbox"/> GOOD CONDITION <input type="checkbox"/> MODERATE CONDITION <input type="checkbox"/> POOR CONDITION
-------------------------------	--

Able to open well during 2019 inspections. PVC casing too high/tall to fit cap under well lid. Cap in well monument, not on casing. Well monument and lid rusty, but still competent/functional.



NBK Manchester
Naval Facilities Engineering Command Northwest

MONITORING WELL CHECKLIST FOR LUC INSPECTION

DATE (MM DD YY): 03/05/19	TIME (HH:MM): 13:46	WEATHER/TEMPERATURE: Partly cloudy high 49F, winds N 13mph
------------------------------	------------------------	---

INSPECTOR: A. Paolucci, S. Moore	COMPANY: Battelle
--	-----------------------------

SITE: Site 303	DESCRIPTION: D-Tunnel Tanks, North of Tank 30
--------------------------	---

WELL ID: MW-3	NORTHING: 64625.80	EASTING: 371219.60
-------------------------	------------------------------	------------------------------

INSPECTION CHECKLIST:

TYPE OF MONITORING WELL:

- ☒ GROUNDWATER
☐ SOIL VAPOR

MONITORING WELL LOCATED?

☒ YES ☐ NO

IS THE WELL CLEARLY LABELED?

☐ YES ☒ NO

IS THE MONUMENT IN GOOD CONDITION?

☒ YES ☐ NO

TYPE OF WELL CASING: ☐ STICK-UP ☒ FLUSH-MOUNT
☐ OTHER _____

SIZE & NUMBER OF BOLTS ON FLUSH-MOUNT LID:
2 of 2 bolts on well.

CASING DIAMETER ☐ 2" ☒ 4" ☐ 6" ☐ 8" ☐ OTHER _____

IS THE CASING IN GOOD CONDITION?

☒ YES ☐ NO

IS THERE A CAP ON THE MONITORING WELL?

☒ YES ☒ NO

TYPE OF CAP:

- ☐ PVC SLIP CAP
☐ J-PLUG
☐ EXPANSION
☐ PRODUCTION W/TUBING
☐ OTHER _____

IS THERE ANY EVIDENCE OF TAMPERING WITH THE WELL CASING OR CAP?

☐ YES ☒ NO

ARE THERE ANY ODORS?

☐ YES ☒ NO

IF YES, DESCRIBE ODOR: ☐ SOLVENT

☐ SULFIDE/ROTTEN EGGS

☐ PETROLEUM

☐ OTHER _____

WERE PICTURES TAKEN? ☒ YES

☐ NO

PHOTO IDs: See Appendix D

ADDITIONAL NOTES OR COMMENTS:

GENERAL CONDITION (CHECK ONE):

- ☒ GOOD CONDITION
☐ MODERATE CONDITION
☐ POOR CONDITION

No cap on casing; casing too tall to fit cap under well lid.



NBK Manchester
Naval Facilities Engineering Command Northwest

MONITORING WELL CHECKLIST FOR LUC INSPECTION

DATE (MM DD YY): 03/04/19	TIME (HH:MM): 14:30	WEATHER/TEMPERATURE: Sunny, high 46F, winds ENE 10mph
------------------------------	------------------------	--

INSPECTOR: A. Paolucci, S. Moore	COMPANY: Battelle
--	-----------------------------

SITE: Site 304	DESCRIPTION: Industrial Area
--------------------------	--

WELL ID: MW-1	NORTHING: 64019.42	EASTING: 371750.40
-------------------------	------------------------------	------------------------------

INSPECTION CHECKLIST:

TYPE OF MONITORING WELL: ☒ GROUNDWATER
☐ SOIL VAPOR

MONITORING WELL LOCATED? ☒ YES ☐ NO

IS THE WELL CLEARLY LABELED? ☐ YES ☒ NO

IS THE MONUMENT IN GOOD CONDITION? ☒ YES ☐ NO

TYPE OF WELL CASING: ☐ STICK-UP ☒ FLUSH-MOUNT ☐ OTHER _____
SIZE & NUMBER OF BOLTS ON FLUSH-MOUNT LID: 1 of 2 3/4" bolts on well.

CASING DIAMETER ☒ 2" ☐ 4" ☐ 6" ☐ 8" ☐ OTHER _____

IS THE CASING IN GOOD CONDITION? ☒ YES ☐ NO

IS THERE A CAP ON THE MONITORING WELL? ☒ YES ☐ NO

TYPE OF CAP: ☐ PVC SLIP CAP
☒ J-PLUG
☐ EXPANSION
☐ PRODUCTION W/TUBING
☐ OTHER _____

IS THERE ANY EVIDENCE OF TAMPERING WITH THE WELL CASING OR CAP? ☐ YES ☒ NO

ARE THERE ANY ODORS? ☐ YES ☒ NO

IF YES, DESCRIBE ODOR: ☐ SOLVENT
☐ SULFIDE/ROTTEN EGGS
☐ PETROLEUM
☐ OTHER _____

WERE PICTURES TAKEN? ☒ YES ☐ NO

PHOTO IDs: See Appendix D

ADDITIONAL NOTES OR COMMENTS:

GENERAL CONDITION (CHECK ONE):

☒ GOOD CONDITION
☐ MODERATE CONDITION
☐ POOR CONDITION

Well casing needs to be cut shorter and J-plug needs to be replaced. One ear of the flush-mount monument has broken off.



NBK Manchester
Naval Facilities Engineering Command Northwest

MONITORING WELL CHECKLIST FOR LUC INSPECTION

DATE (MM DD YY): 03/04/19	TIME (HH:MM): 14:42	WEATHER/TEMPERATURE: Sunny, high 46F, winds ENE 10mph
------------------------------	------------------------	--

INSPECTOR: A. Paolucci, S. Moore	COMPANY: Battelle
--	-----------------------------

SITE: Site 304	DESCRIPTION: Industrial Area
--------------------------	--

WELL ID: MW-2	NORTHING: 64105.94	EASTING: 371803.60
-------------------------	------------------------------	------------------------------

INSPECTION CHECKLIST:

TYPE OF MONITORING WELL: ☒ GROUNDWATER
☐ SOIL VAPOR

MONITORING WELL LOCATED? ☒ YES ☐ NO

IS THE WELL CLEARLY LABELED? ☐ YES ☒ NO

IS THE MONUMENT IN GOOD CONDITION? ☒ YES ☐ NO

TYPE OF WELL CASING: ☐ STICK-UP ☒ FLUSH-MOUNT ☐ OTHER _____
SIZE & NUMBER OF BOLTS ON FLUSH-MOUNT LID: 2 of 2 3/4" bolts on well.

CASING DIAMETER ☒ 2" ☐ 4" ☐ 6" ☐ 8" ☐ OTHER _____

IS THE CASING IN GOOD CONDITION? ☒ YES ☐ NO

IS THERE A CAP ON THE MONITORING WELL? ☒ YES ☐ NO

TYPE OF CAP: ☐ PVC SLIP CAP
☒ J-PLUG
☐ EXPANSION
☐ PRODUCTION W/TUBING
☐ OTHER _____

IS THERE ANY EVIDENCE OF TAMPERING WITH THE WELL CASING OR CAP? ☐ YES ☒ NO

ARE THERE ANY ODORS? ☐ YES ☒ NO

IF YES, DESCRIBE ODOR: ☐ SOLVENT
☐ SULFIDE/ROTTEN EGGS
☐ PETROLEUM
☐ OTHER _____

WERE PICTURES TAKEN? ☒ YES ☐ NO

PHOTO IDs: See Appendix D

ADDITIONAL NOTES OR COMMENTS:

GENERAL CONDITION (CHECK ONE):

☒ GOOD CONDITION
☐ MODERATE CONDITION
☐ POOR CONDITION

Well casing needs to be cut shorter and J-plug needs to be replaced.



NBK Manchester
Naval Facilities Engineering Command Northwest

MONITORING WELL CHECKLIST FOR LUC INSPECTION

DATE (MM DD YY): 03/04/19	TIME (HH:MM): 14:00	WEATHER/TEMPERATURE: Sunny, high 46F, winds ENE 10mph
------------------------------	------------------------	--

INSPECTOR: A. Paolucci, S. Moore	COMPANY: Battelle
--	-----------------------------

SITE: Tank 50	DESCRIPTION: Tank 50 Release Site
-------------------------	---

WELL ID: MW-1	NORTHING: 64406.94	EASTING: 370945.00
-------------------------	------------------------------	------------------------------

INSPECTION CHECKLIST:

TYPE OF MONITORING WELL:

- ☒ GROUNDWATER
☐ SOIL VAPOR

MONITORING WELL LOCATED?

☒ YES ☐ NO

IS THE WELL CLEARLY LABELED?

☐ YES ☒ NO

IS THE MONUMENT IN GOOD CONDITION?

☒ YES ☐ NO

TYPE OF WELL CASING: ☒ STICK-UP ☐ FLUSH-MOUNT
☐ OTHER _____

SIZE & NUMBER OF BOLTS ON FLUSH-MOUNT LID:

CASING DIAMETER ☒ 2" ☐ 4" ☐ 6" ☐ 8" ☐ OTHER _____

IS THE CASING IN GOOD CONDITION?

☒ YES ☐ NO

IS THERE A CAP ON THE MONITORING WELL?

☒ YES ☐ NO

TYPE OF CAP:

- ☐ PVC SLIP CAP
☒ J-PLUG
☐ EXPANSION
☐ PRODUCTION W/TUBING
☐ OTHER _____

IS THERE ANY EVIDENCE OF TAMPERING WITH THE WELL CASING OR CAP?

☐ YES ☒ NO

ARE THERE ANY ODORS?

☐ YES ☒ NO

IF YES, DESCRIBE ODOR: ☐ SOLVENT

☐ SULFIDE/ROTTEN EGGS

☐ PETROLEUM

☐ OTHER _____

WERE PICTURES TAKEN? ☒ YES

☐ NO

PHOTO IDs: See Appendix D

ADDITIONAL NOTES OR COMMENTS:

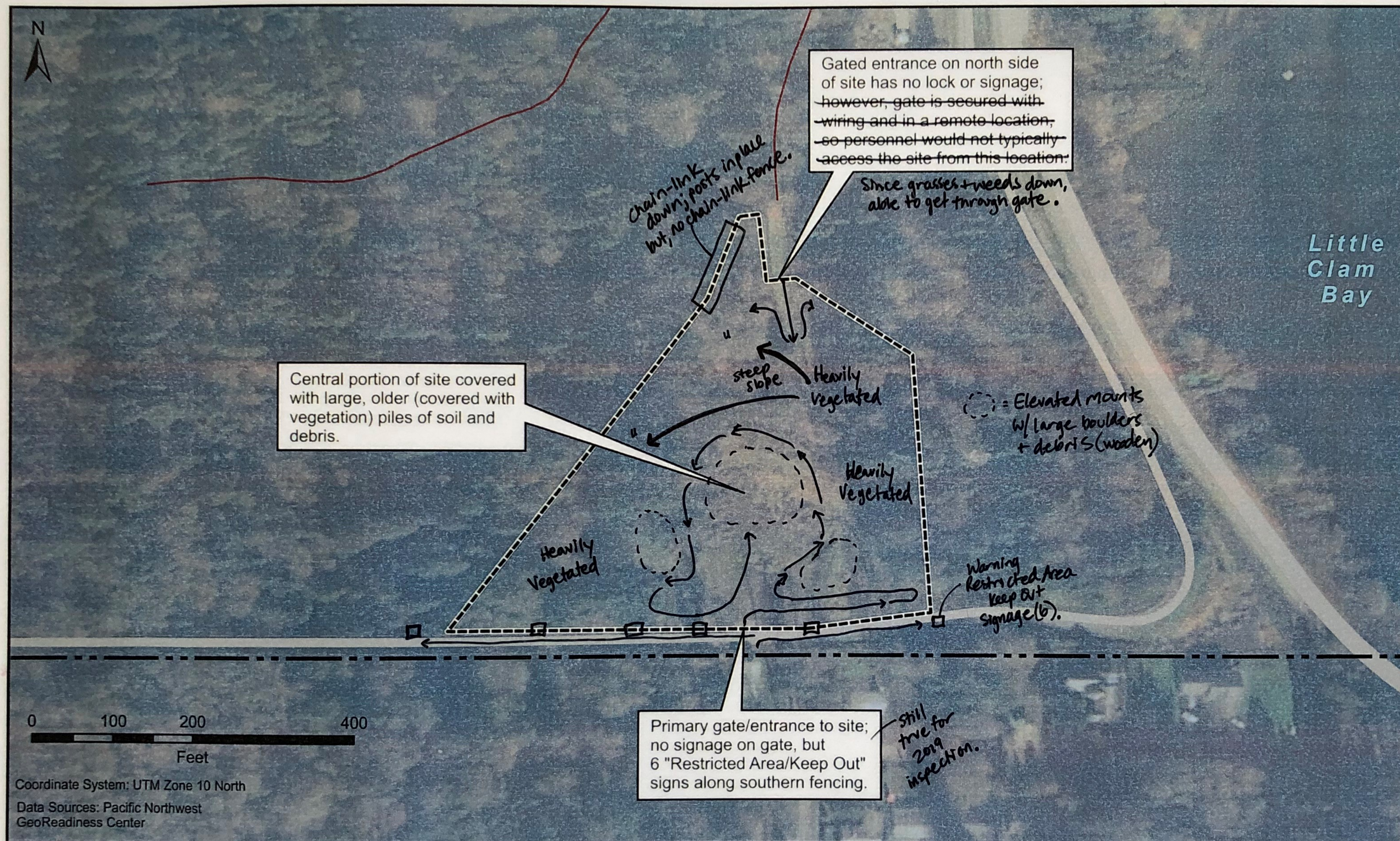
GENERAL CONDITION (CHECK ONE):


- ☒ GOOD CONDITION
☐ MODERATE CONDITION
☐ POOR CONDITION

No lock on lid or cap.

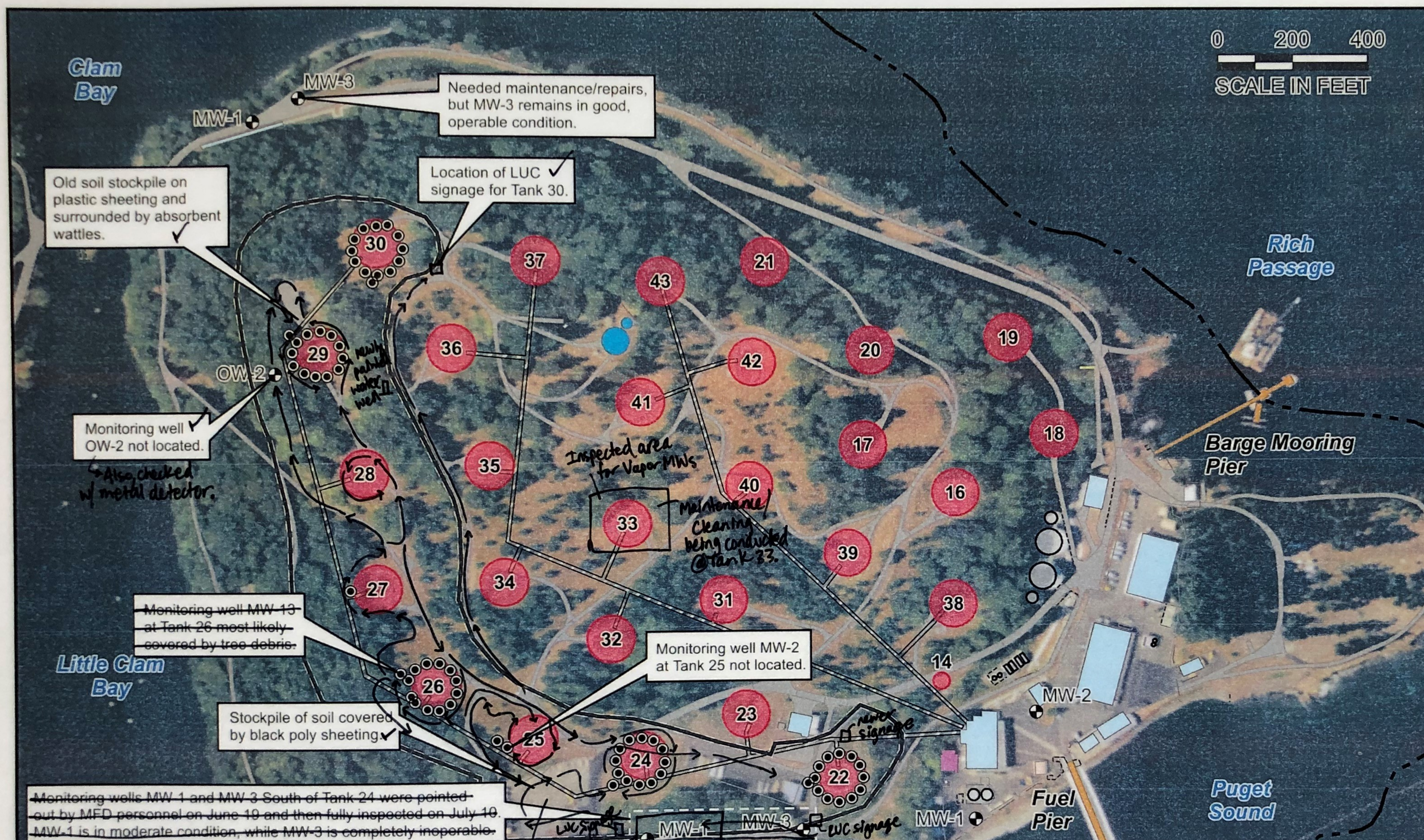
APPENDIX C
Field Notes

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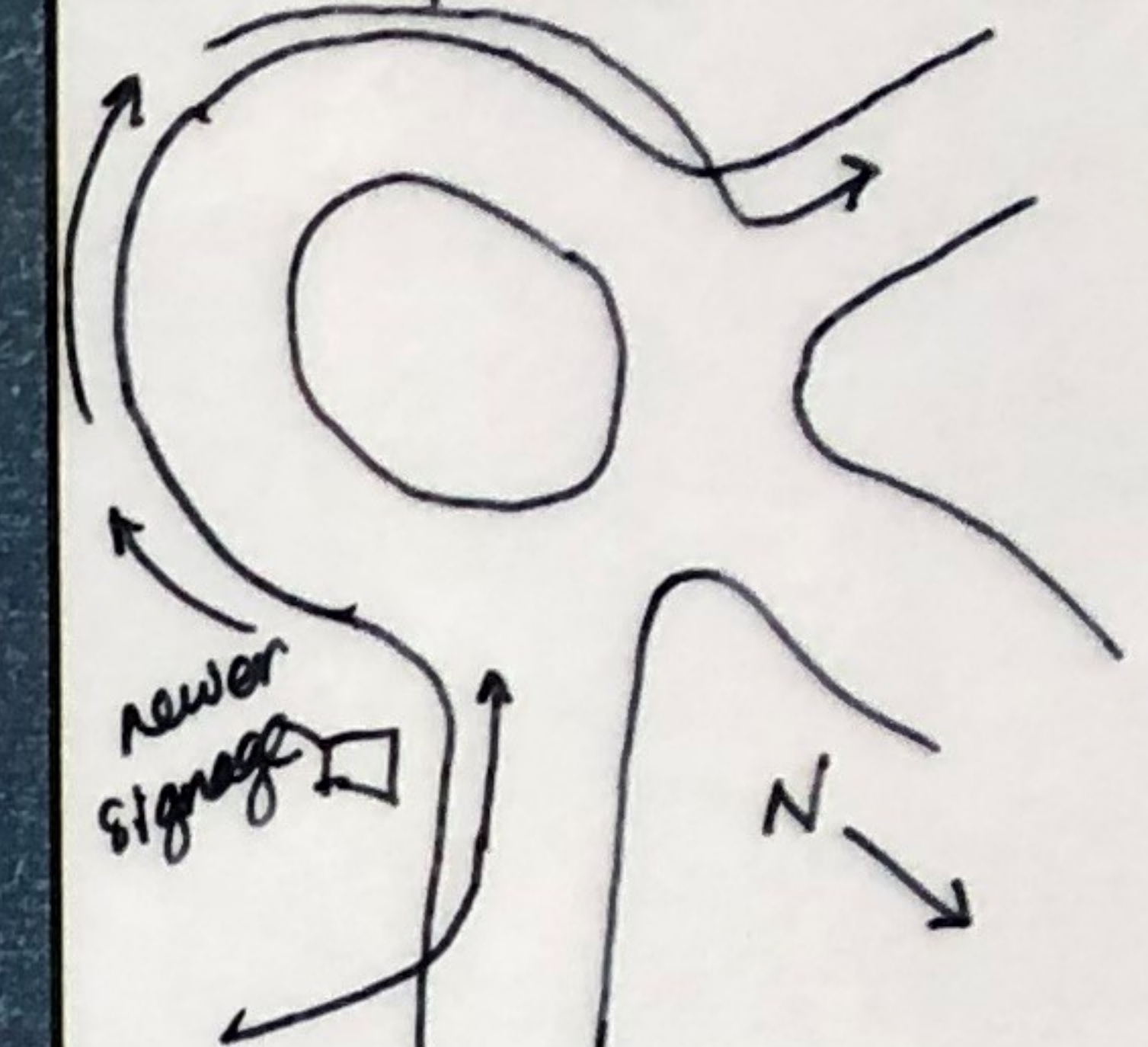


DESIGNED BY			
JH			
DRAWN BY	Figure 3. Site 302 – PCB Site LUC Inspection Findings		
JEH/VS			
CHECKED BY	MFD, MANCHESTER, WA		
AP	100103629-X034NW31	SITE302_LUC02.CDR	DATE 07/18

03/05/19 0826

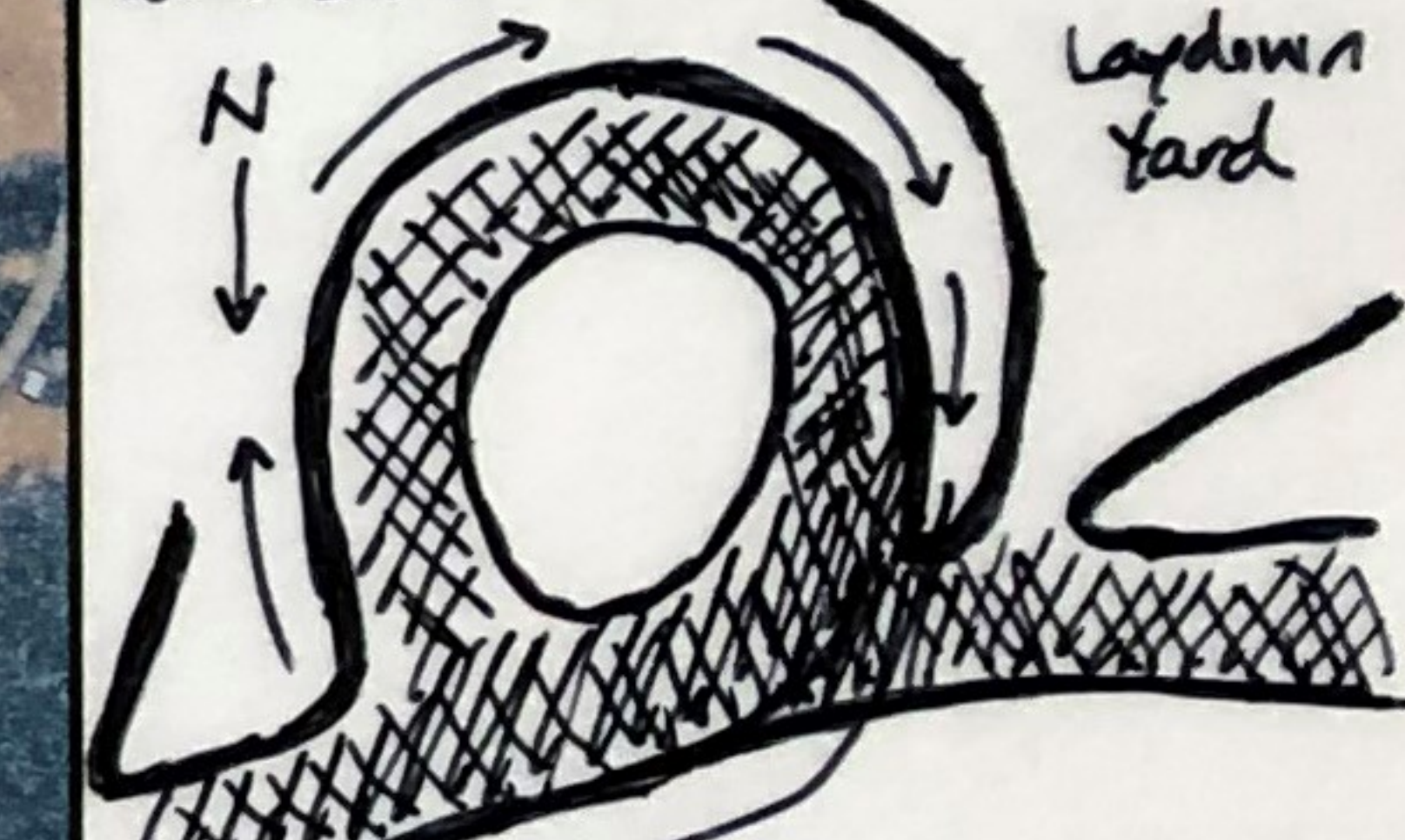


Tank 22 @ ~0830
All 13 Vapor MWs Found



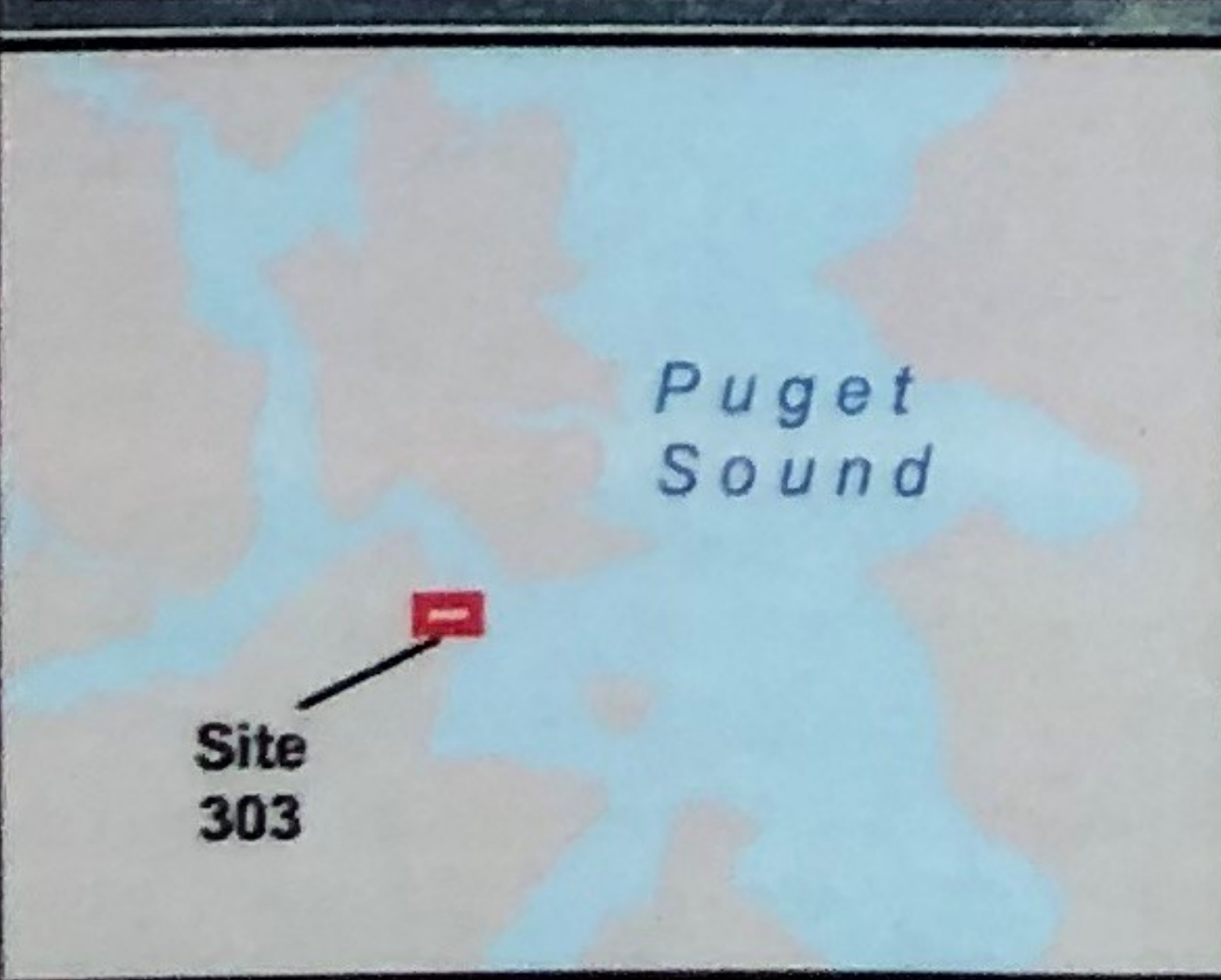
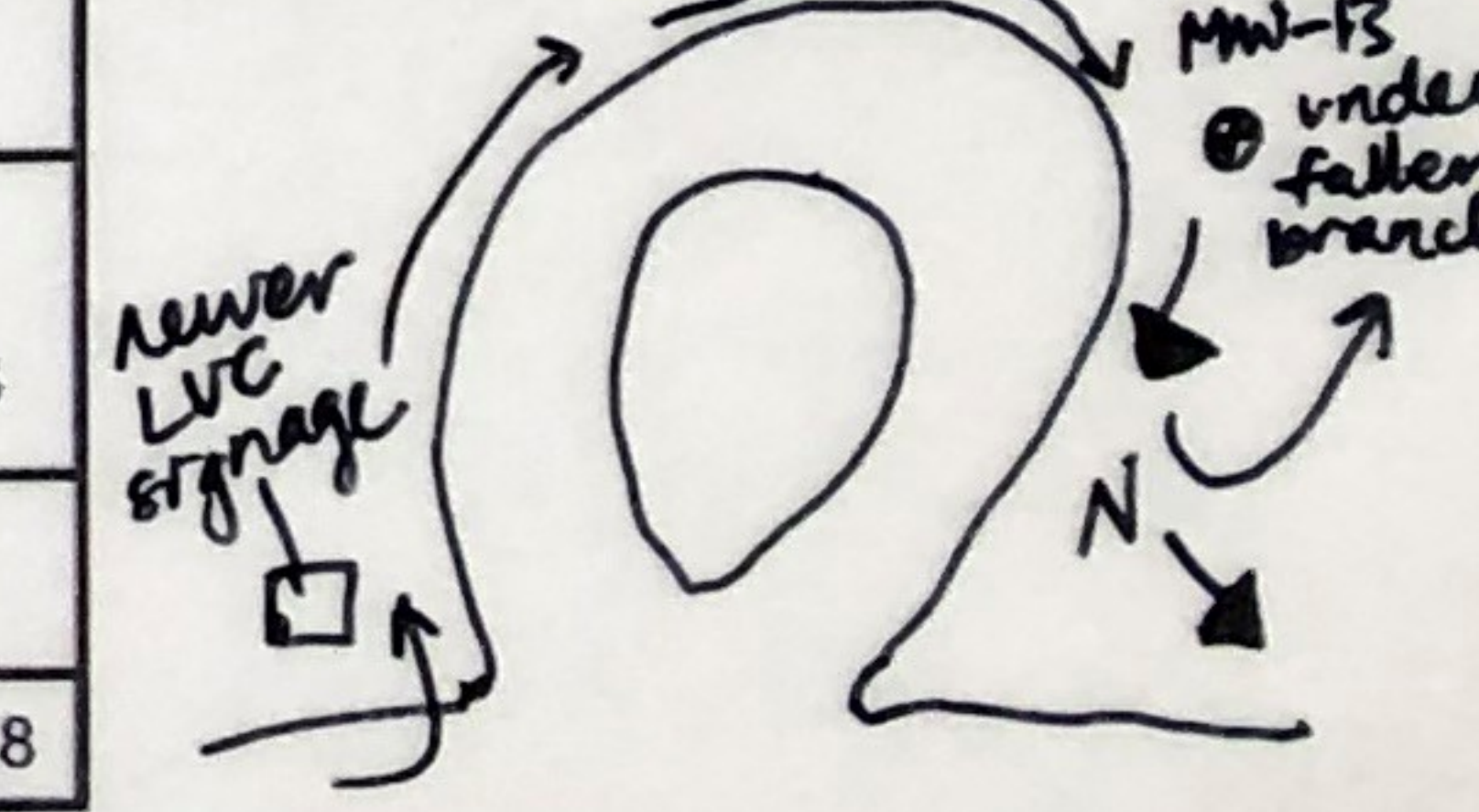
Found MW-3 and MW-1 south of Tank 24.
Staging Area SW Tank 24:
Several Empty 55-gal drums in SE corner.
Unlabeled soil/debris pile covered w/ black tarp in NW corner.
Hazardous Waste Accumulation Tent adjacent to drums in SE corner.

Tank 24 @ 0857




Found All 13 Vapor MWs
Several stakes remaining from 2018 Phase II Investigation.
New stakes (2) w/ red + blue markings. -> Potential Construction.
Several trailers + equipment staged in parking lot south of Tank 23.

Tank 25 @ 0920



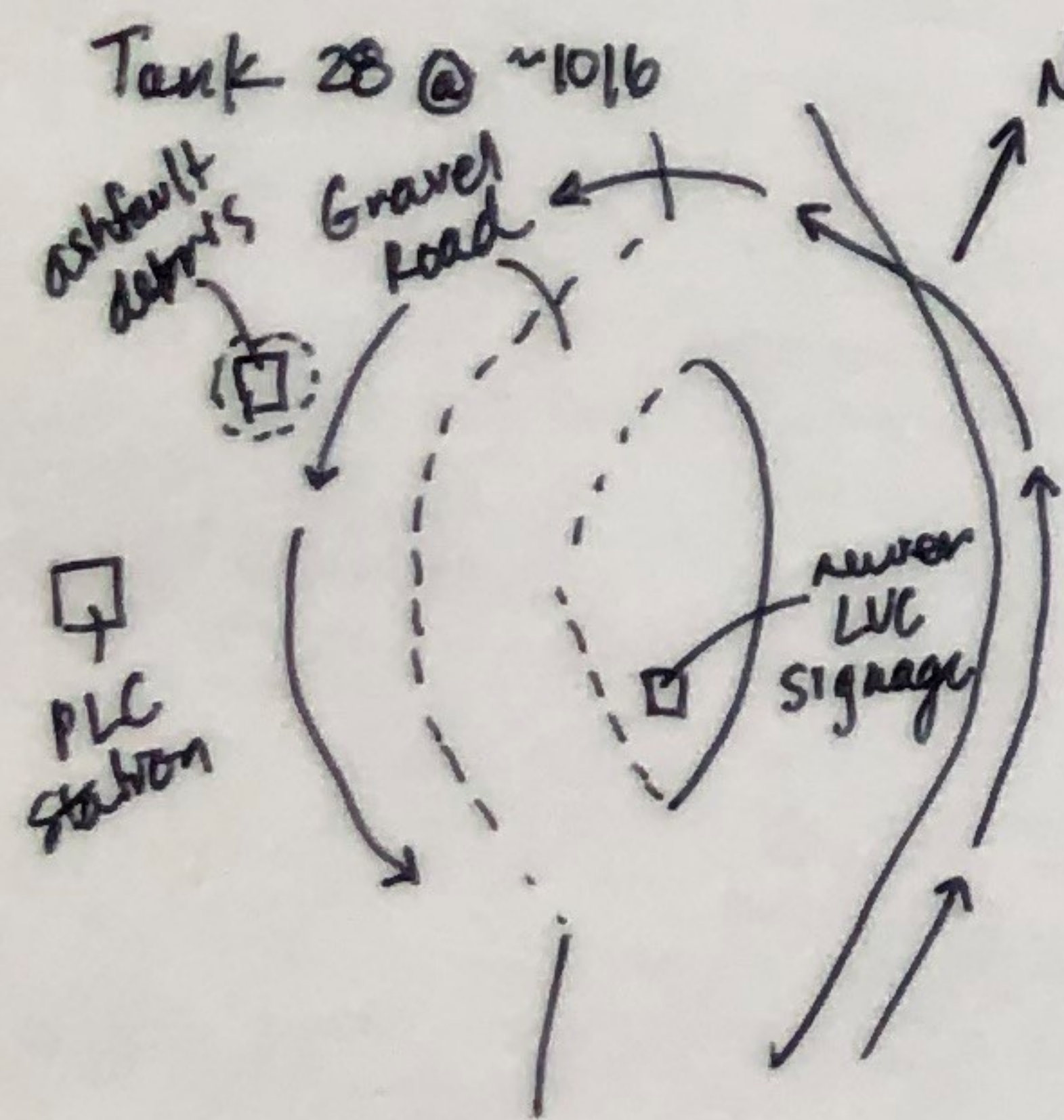
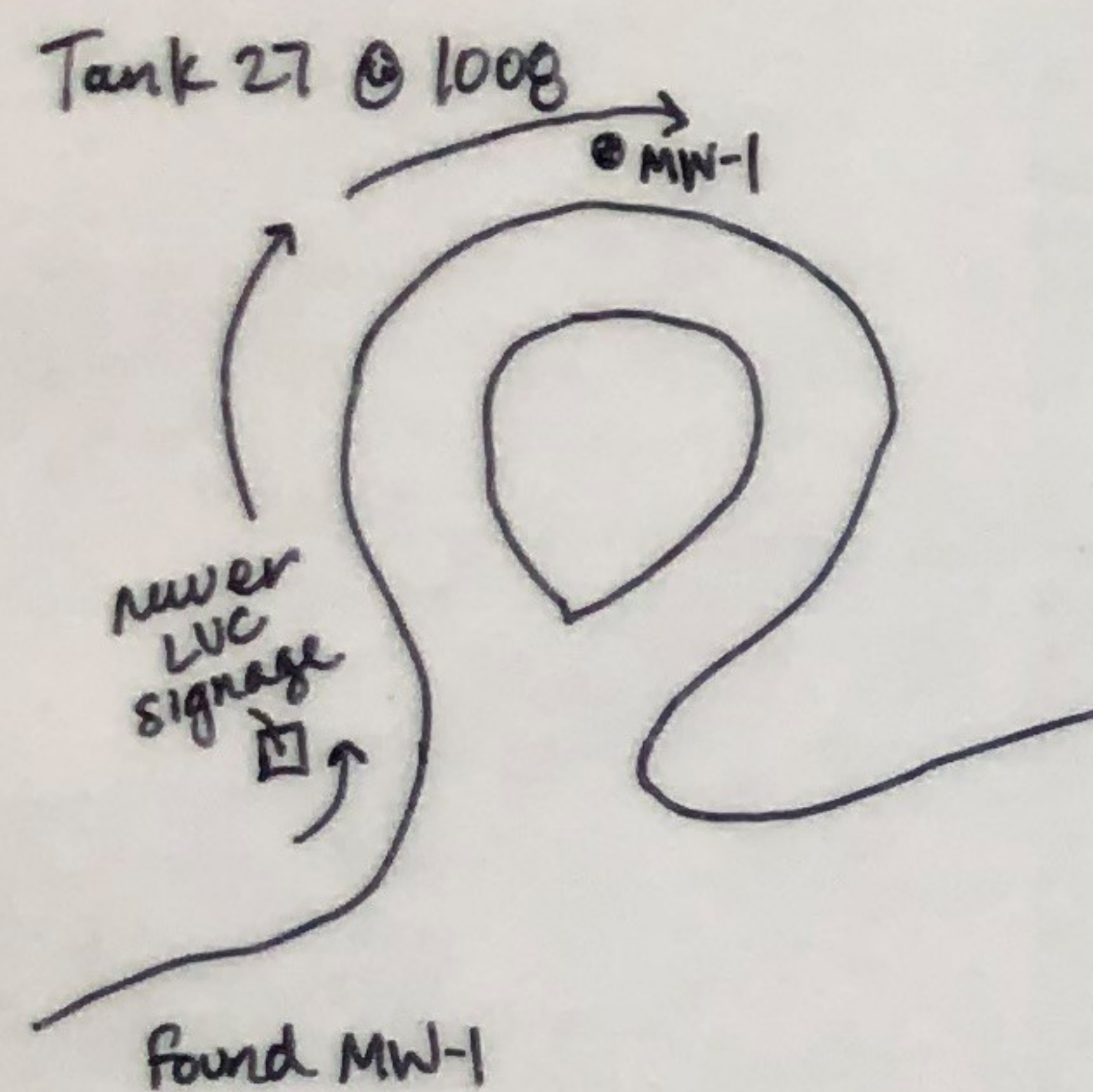
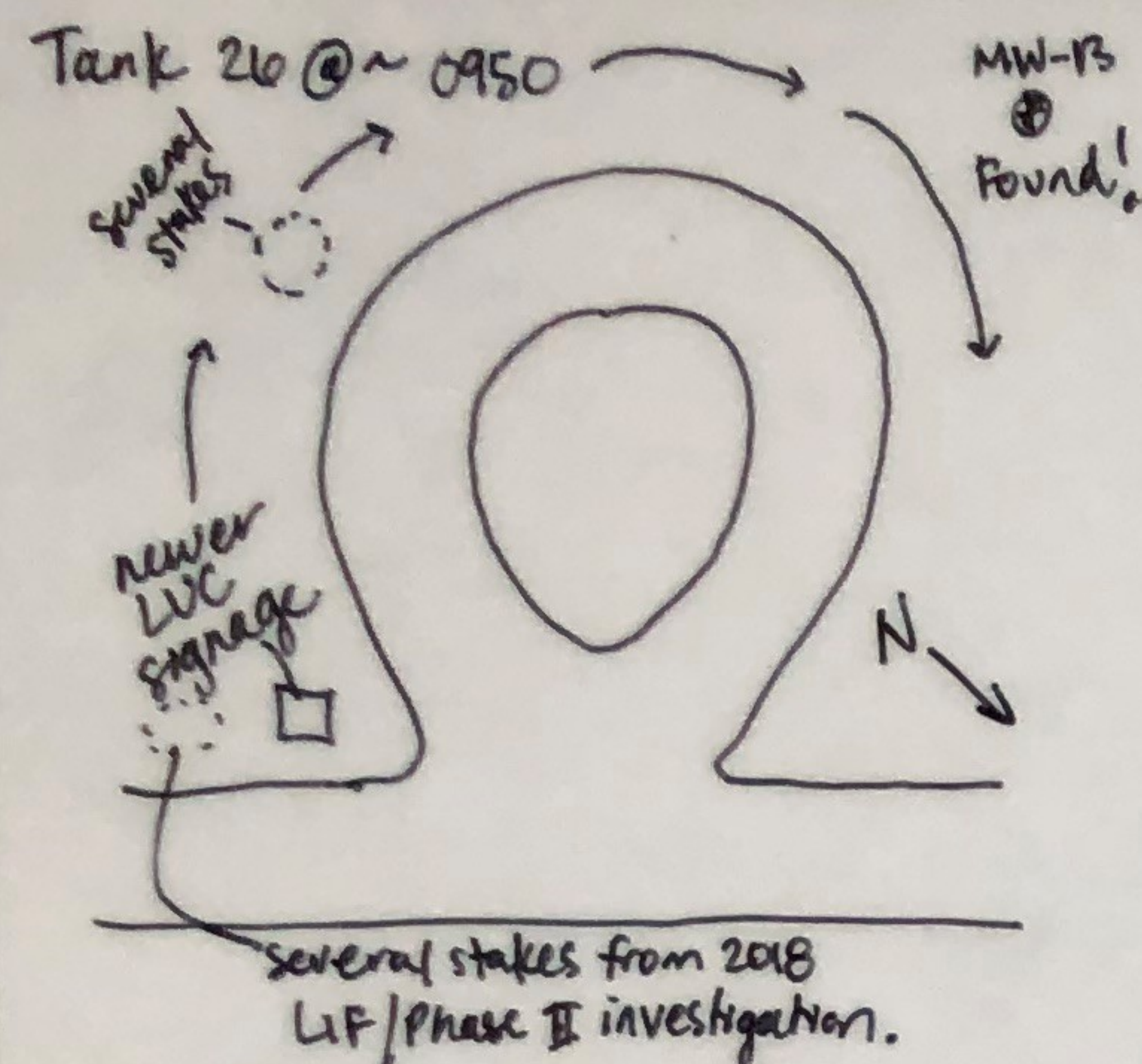
Legend	
	Groundwater Monitoring Well
	Vapor Monitoring Well
	Site Boundary
	Installation Area
	Buildings
	Underground Fuel Tank
	Water Tank
	Unknown Tank
	Oil Water Separator
	Docks/Wharfs
	Tunnel
	Road/Section
	Water Body
	Wetland
	Wall
	Trail
	Fence

03/05/19.

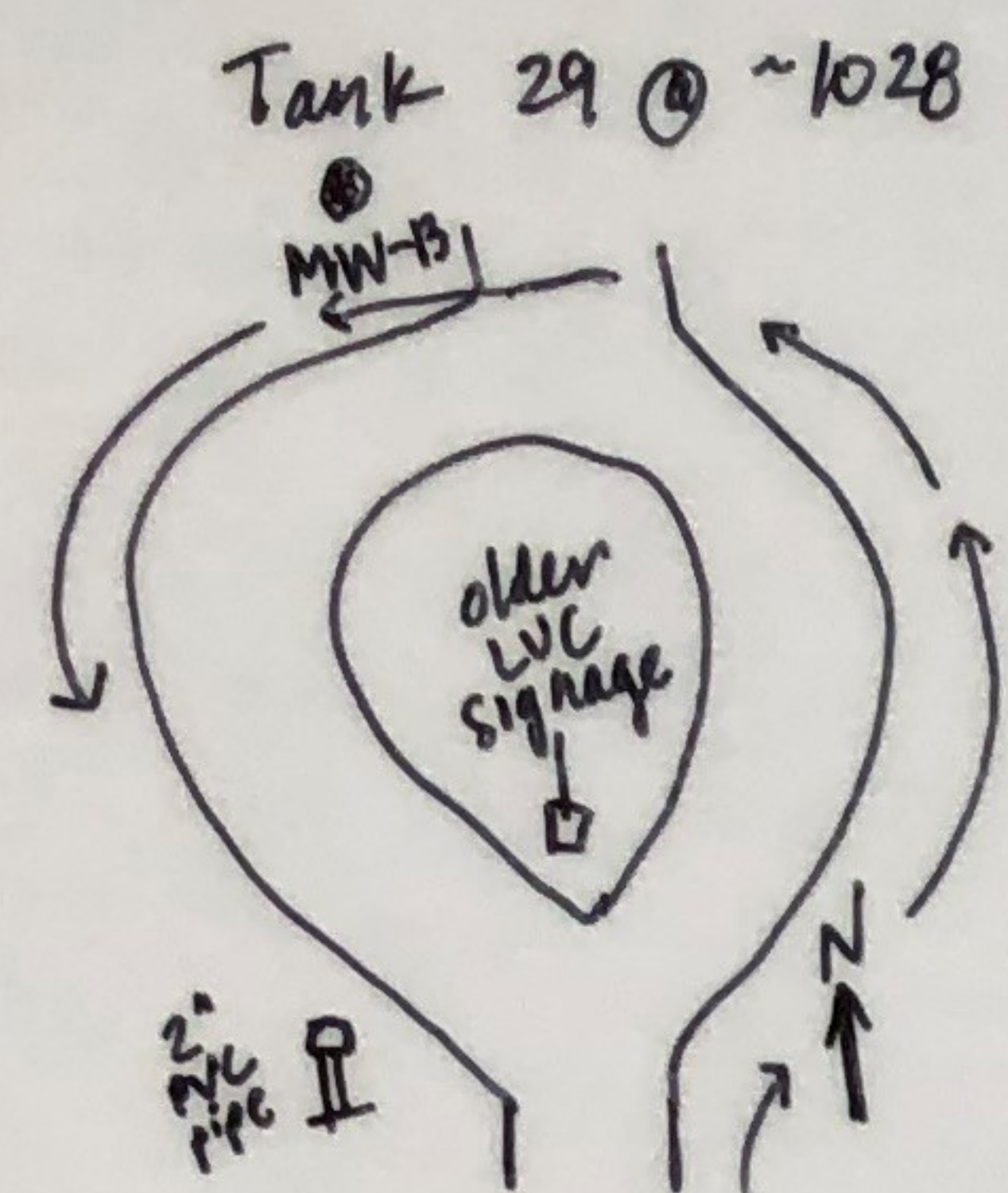
DESIGNED BY			
JH			
DRAWN BY	Figure 4.		
JEH/VS	Site 303 – D-Tunnel Tanks LUC Inspection Findings		
CHECKED BY	MFD, MANCHESTER, WA		
AP	100103629-X034NW31	SITE303_LUC02.CDR	DATE 07/18

Could NOT find MW-2; several damaged trees + trees marked w/ white tape SW of Tank 25.

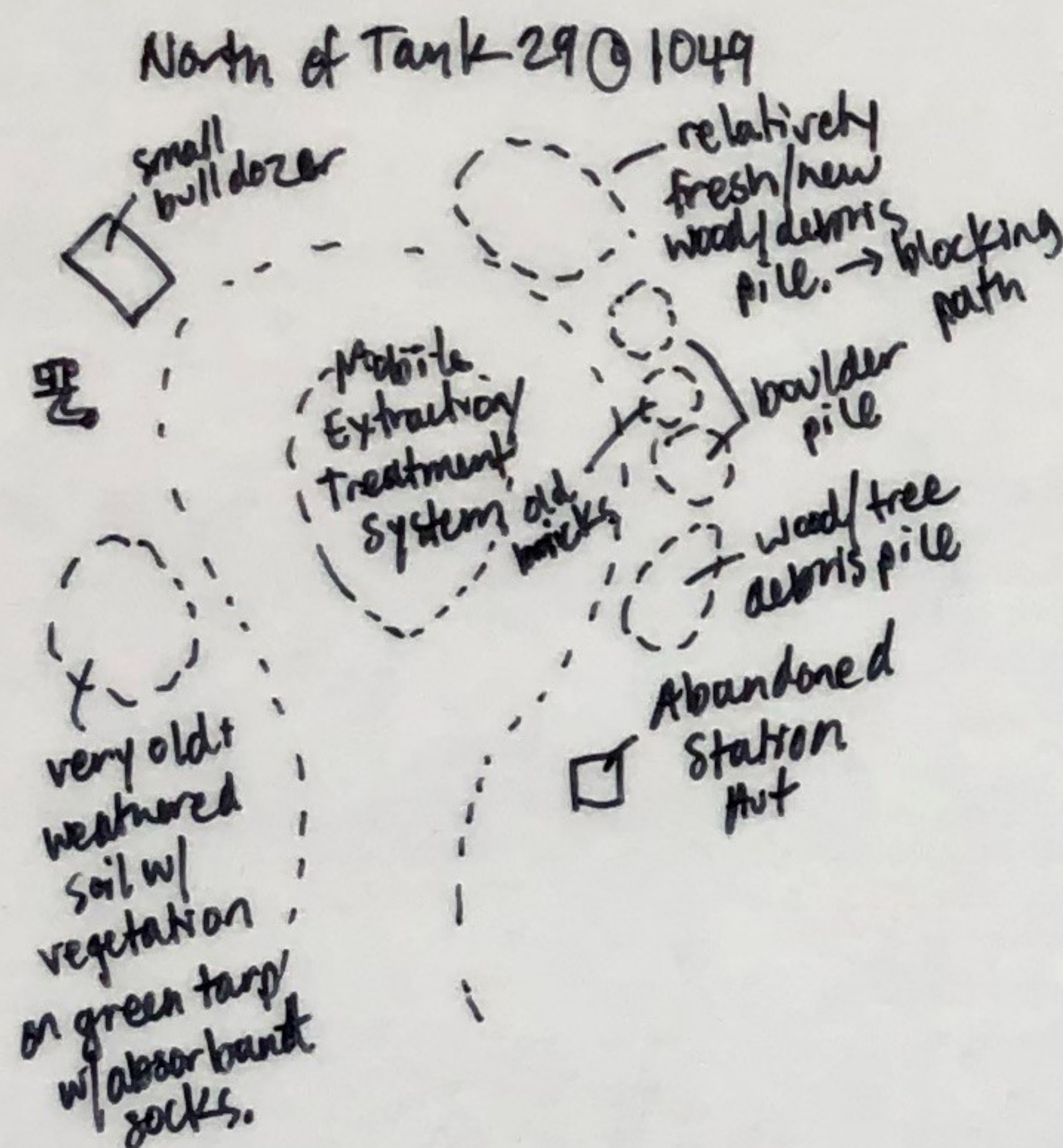
c 1/2



NO wells @ Tank 28.
Evidence of tree trimming + cutting down.



Found all 13 MWs; however MW-13 was found under trees + branches debris.



@ 1337 tried to open MW-1 located South of Tank 24.

→ OPENED!!

@ 1142 MW-1 (MW-1)

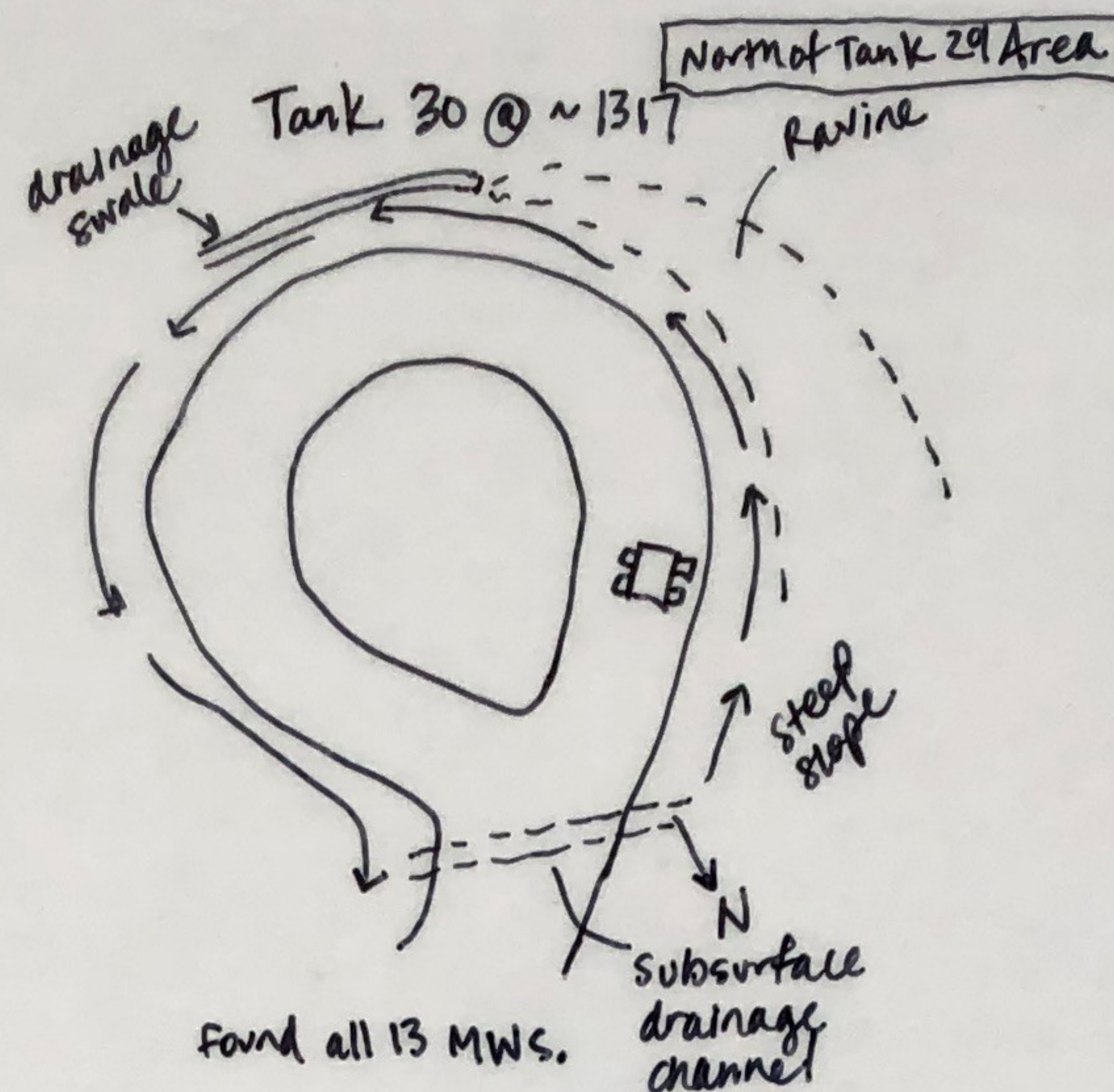
2" PVC casing in good condition; however, too tall for J-plug + lock. J-plug cap in well monument, but NOT on casing.

Well monument + lid rusty, but still functional, competent.

All 3 bolts on well lid.

No odors.

Overall, MW-1 in good condition.



Found all 13 MWs.

Inspection of MW-3 North of Tank 30 @ 1346

4" PVC casing, too tall for cap to fit under well lid.: NO CAP!

Casing, lid, + monument in good condition.

Push-mount well w/2 bolts, No odor.

O-ring in place + intact.

@ 1409 found MW-1, North of Tank 30, behind Gate B-A.

Flush-mount well; lid was covered w/mess.

Tank 33 @ 1418

Maintenance/cleaning being conducted @ Tank 33.

Found MWs: MW-9

MW-11 ~~MW-10~~ MW-8

MW-7

MW-6

MW-5 under trailer

MW-2

MW-1

MW-12

buried under soil West of entry drive.

MW-13

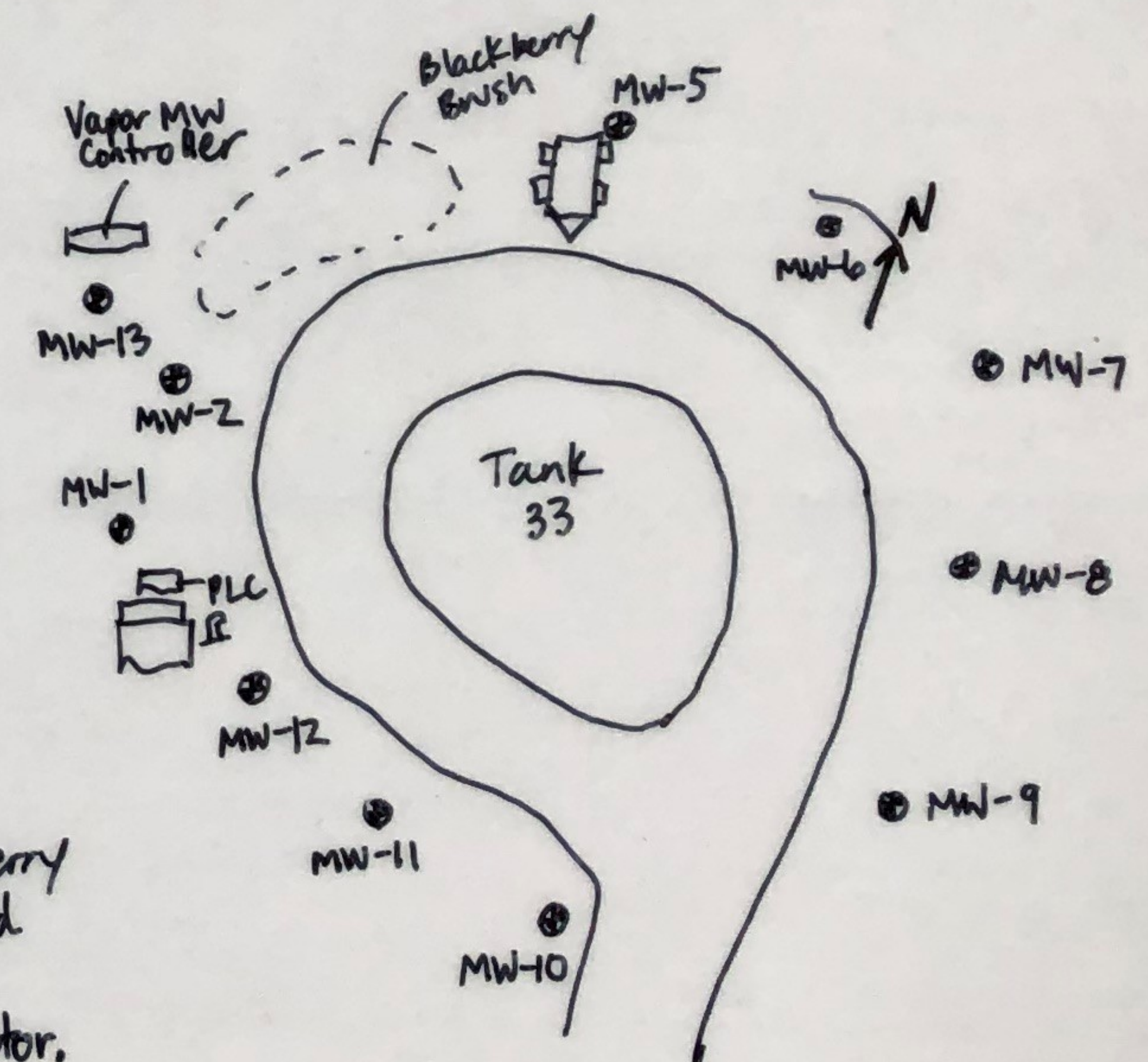
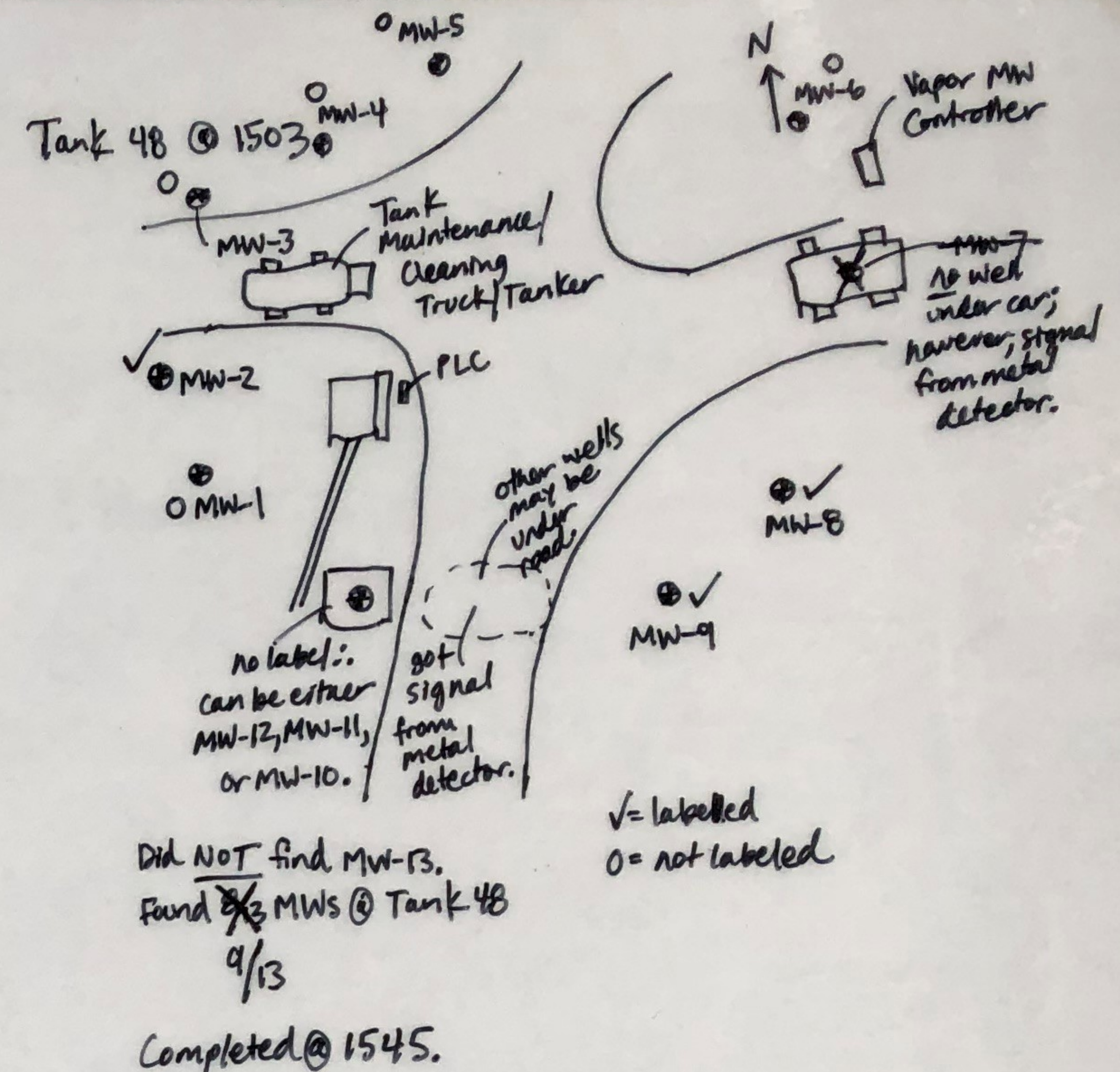
off of MW-2

Did NOT find:

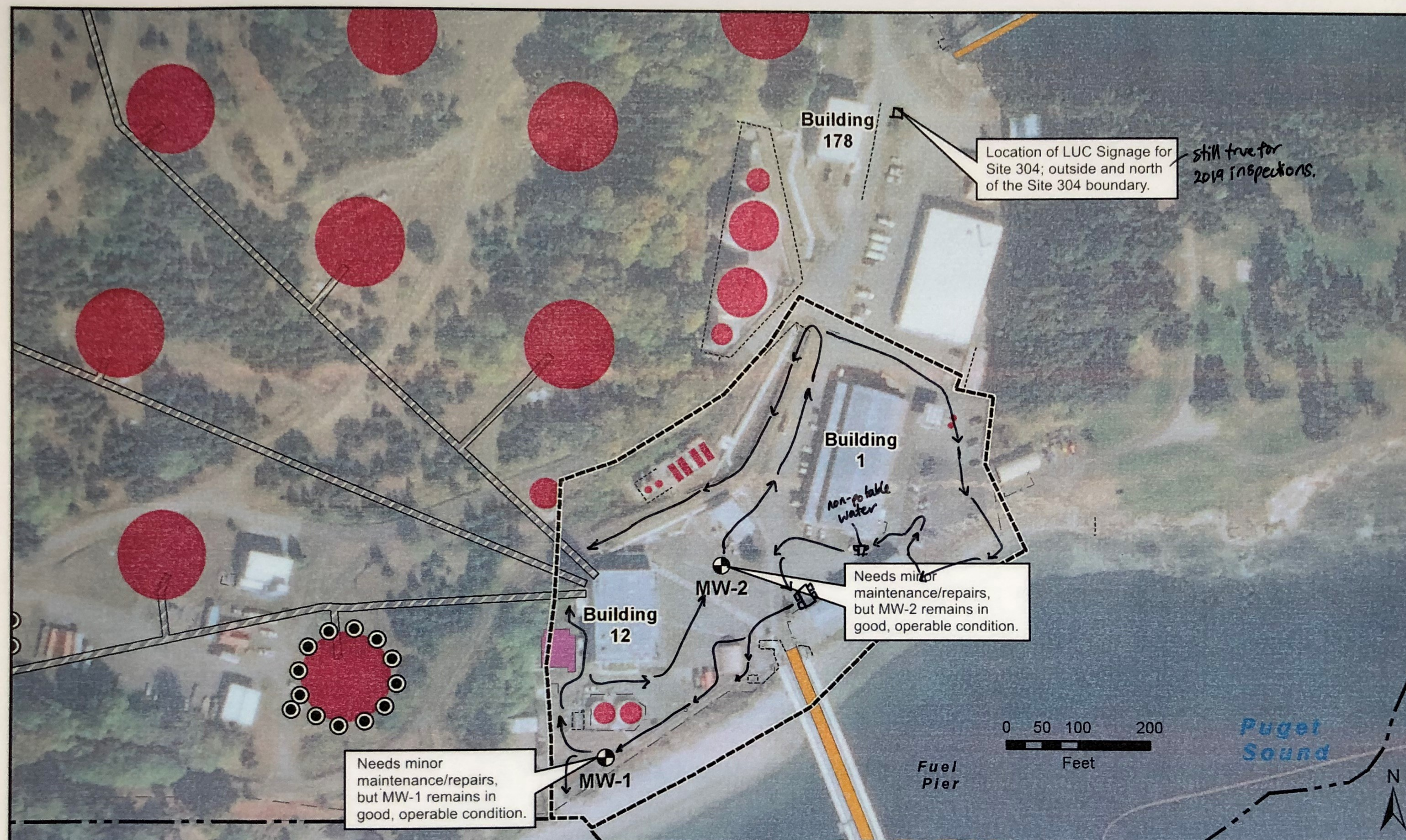
MW-3

MW-4

Both most likely under blackberry brush; could NOT find w/ metal detector.

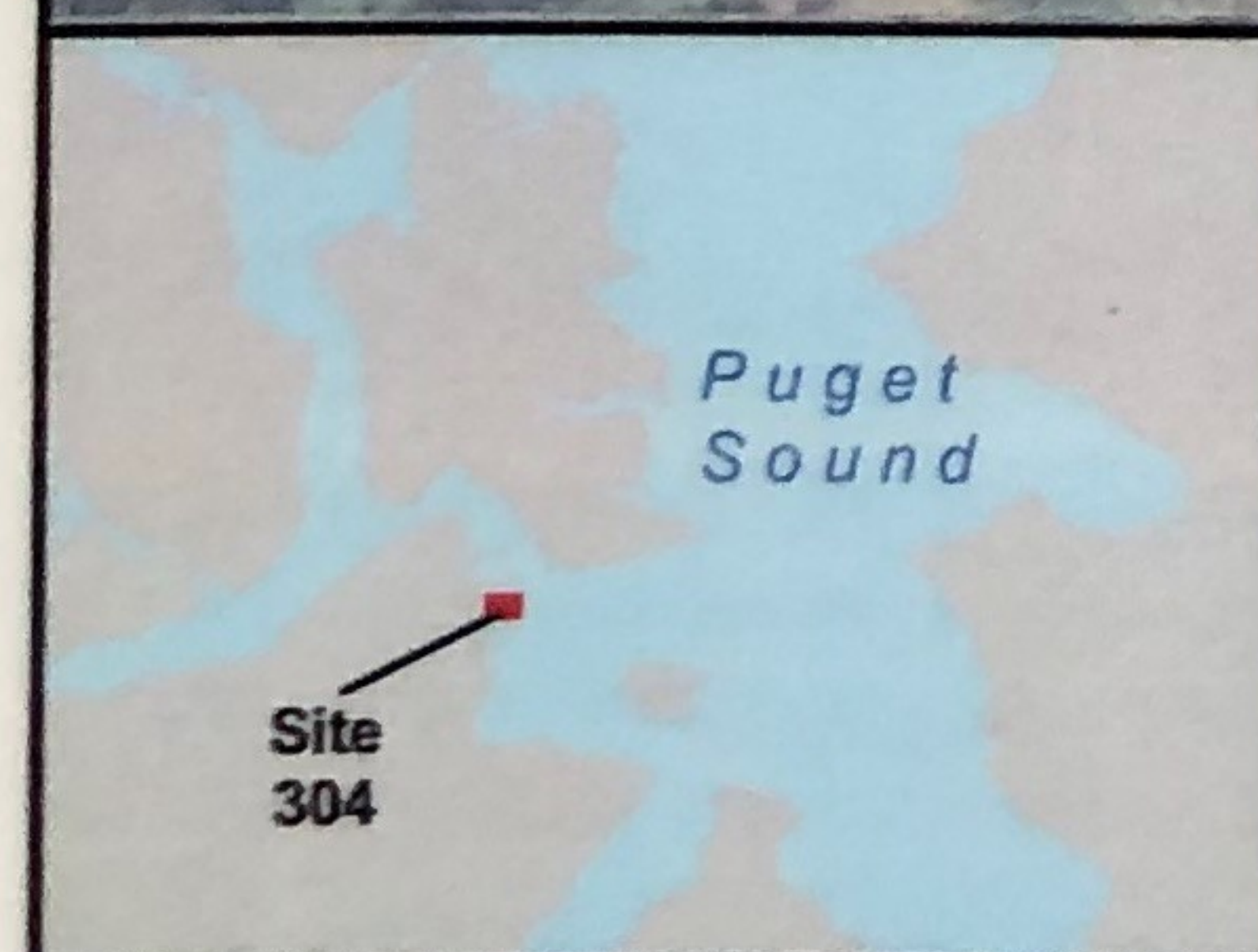


02/04/19 1422-1505



MW-1 @ 1420
No label
2" PVC casing, I-plug caps broken.
only 1 bolt, ear on monument
is broken.
Flush-mount well.
No odor.
Casing in well monument too high
∴ cap(w/lock on it) broke off.

MW-2 @ 1442
No label
2" PVC casing, J-plug cap w/ lock
but cap is not fully on casing.
Flush-mounted well.
No odor.
2 bolts
No evidence of GW use or
well installation.
No evidence of soil disturbance
or excavation.



Legend

- Groundwater Monitoring Well
- Vapor Monitoring Well
- Site Boundary
- Installation Area
- Buildings
- Underground Fuel Tank
- Water Tank
- Unknown Tank
- Oil Water Separator
- Docks/Wharfs
- Tunnel
- Road/Section
- Water Body
- Wetland
- Wall
- Trail
- Fence

DESIGNED BY

JH

DRAWN BY

JEH/VS

CHECKED BY

AP



Figure 5.
Site 304 – Industrial Area LUC Inspection Findings

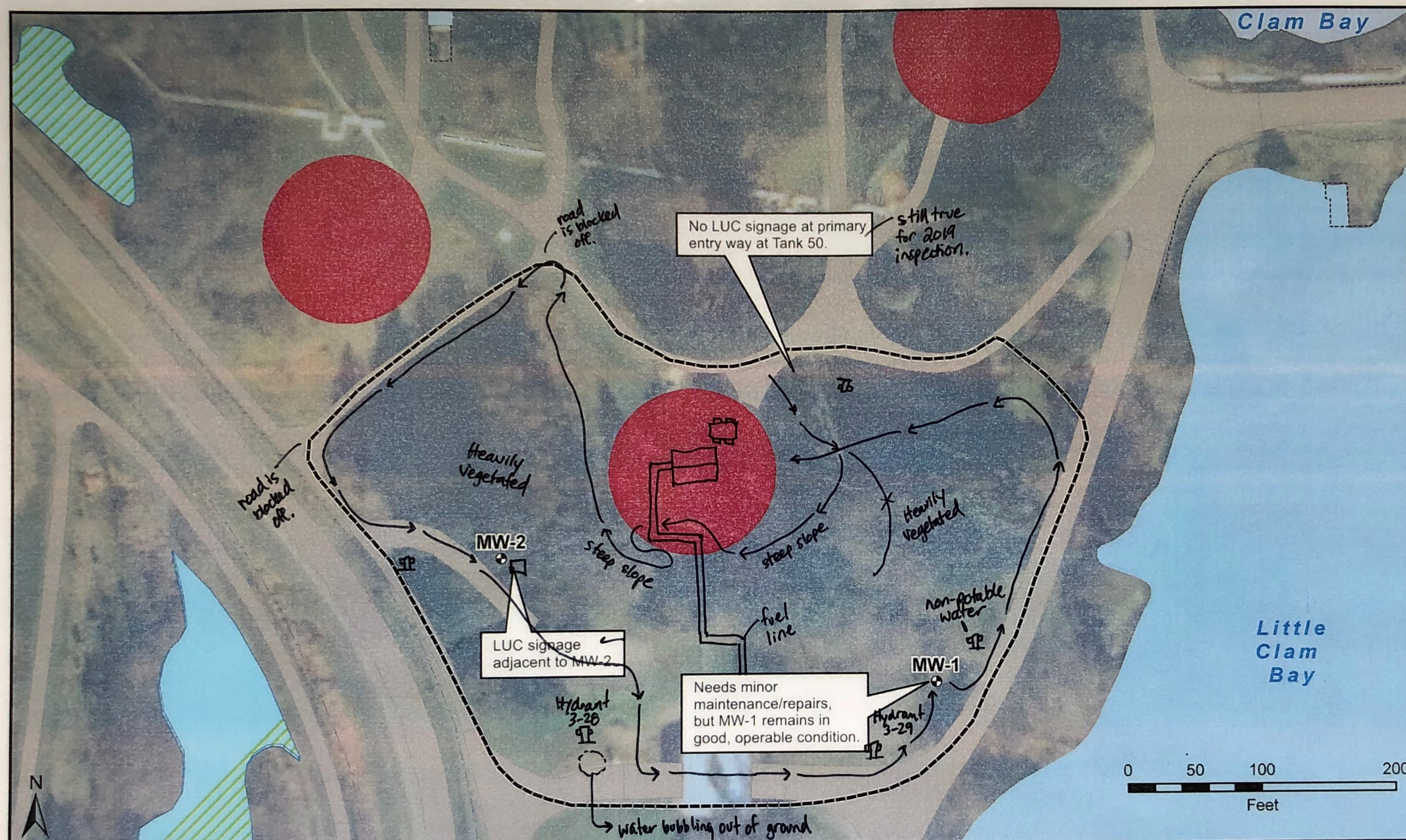
MFD, MANCHESTER, WA

100103629-X034NW31

SITE304_LUC02.CDR

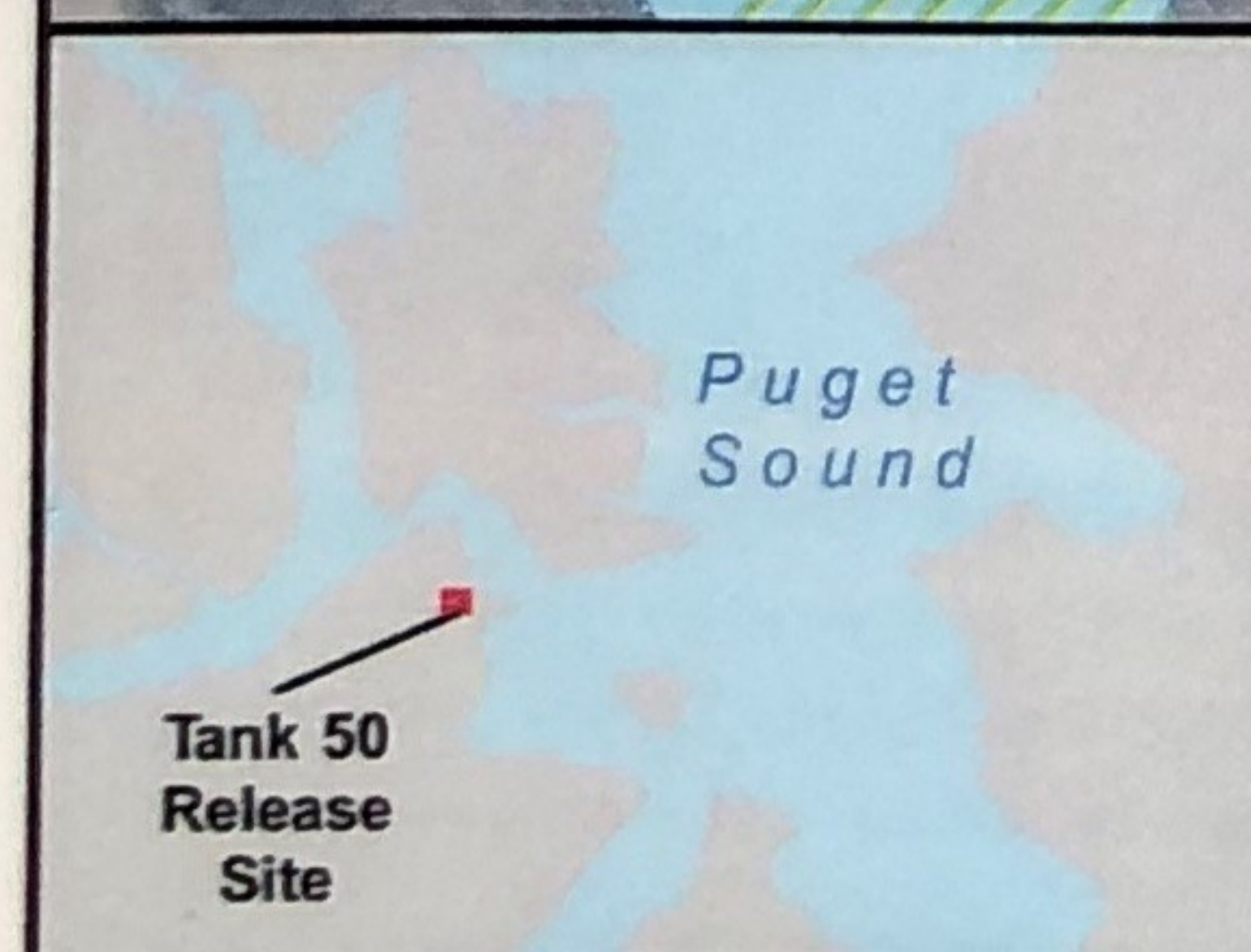
DATE 07/18

03/04/19 1332-1414



MW-2 @ 1349
2" casing PVC, J-plug cap
Well monument + lid in good, intact condition.
No odor
No lock on lid or cap, but still in overall good condition.

MW-1 @ 1400
2" PVC casing, J-plug cap
Well monument + lid in good, intact condition.
No odor
No lock on lid or cap, but still in overall good condition.
No evidence of GW use or well installation.
No evidence of soil disturbance.
Tree trimming activity scattered thru-out site.



Legend

- Groundwater Monitoring Well
- Site Boundary
- Buildings
- Fuel Tank
- Road Section
- Water Body
- Wetland
- Wall
- Fence

DESIGNED BY

JH

DRAWN BY

JEH/VS

CHECKED BY

AP



Figure 6.
Tank 50 Release Site LUC Inspection Findings

MFD, MANCHESTER, WA

100103629-X034NW31

TANK50_LUC02.CDR

DATE 07/18

APPENDIX D
Photographic Log

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Site 302 – PCB Site



File Name: DSCF3954
Date Taken: 03/04/2019

Photo 1 - Description: Site 302, PCB Site, Main entrance/gate (Gate J-6) along southern boundary of site



File Name: DSCF3955
Date Taken: 03/04/2019

Photo 2 - Description: Site 302, PCB Site, One of six Restricted Area/Keep Out signs along the southern boundary of the site



File Name: DSCF3952
Date Taken: 03/04/2019

Photo 3 - Description: Site 302, PCB Site, Fencing intact along southern boundary of site



File Name: DSCF3960
Date Taken: 03/04/2019

Photo 4 - Description: Site 302, PCB Site, Open, central portion of site with stockpiles of old soil and boulders (1 of 3)



File Name: DSCF3961
Date Taken: 03/04/2019

Photo 5 - Description: Site 302, PCB Site, Open, central portion of site with stockpiles of old soil and boulders (2 of 3)



File Name: DSCF3966
Date Taken: 03/04/2019

Photo 6 - Description: Site 302, PCB Site, Open, central portion of site with stockpiles of old soil and boulders (3 of 3)



File Name: DSCF3967
Date Taken: 03/04/2019

Photo 7 - Description: Site 302, PCB Site, Concrete and boulder stockpile



File Name: DSCF3962
Date Taken: 03/04/2019

Photo 8 - Description: Site 302, PCB Site, Open, central portion of site bordered by heavily wooded area (1 of 2)



File Name: DSCF3964
Date Taken: 03/04/2019

Photo 9 - Description: Site 302, PCB Site, Open, central portion of site bordered by heavily wooded area (2 of 2)



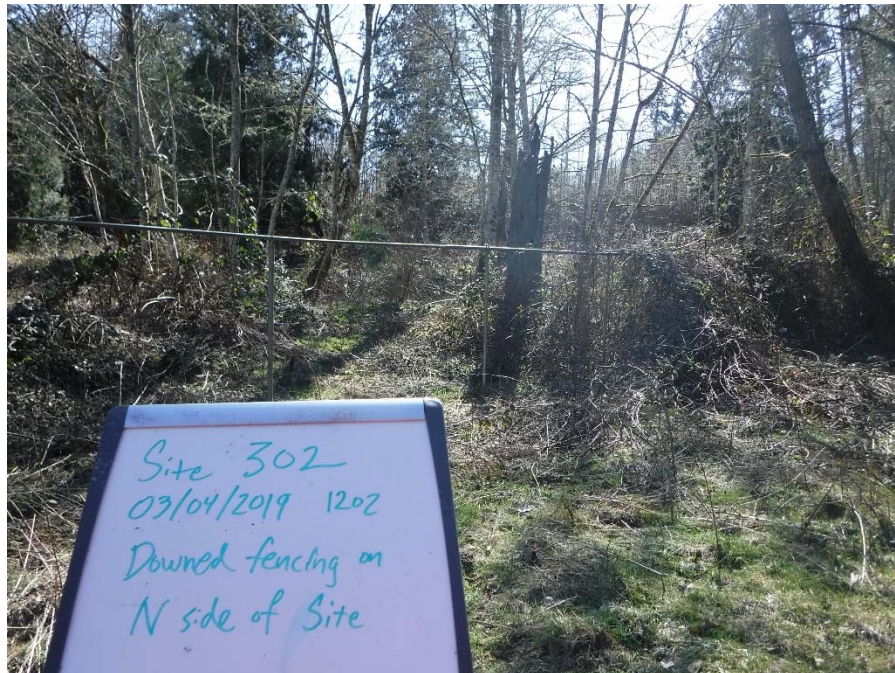
File Name: DSCF3991
Date Taken: 03/04/2019

Photo 10 - Description: Site 302, PCB Site, Gated entrance on north side of site. No lock or LUC signage.



File Name: DSCF3993
Date Taken: 03/04/2019

Photo 11 - Description: Site 302, PCB Site, Downed fencing on the northwest side of site (1 of 2)



File Name: DSCF3996
Date Taken: 03/04/2019

Photo 12 - Description: Site 302, PCB Site, Downed fencing on the northwest side of site (2 of 2)

Site 303 – D-Tunnel Tanks



File Name: DSCF4117
Date Taken: 03/05/2019

Photo 1 - Description: Site 303, D-Tunnel Tanks, Tank 22



File Name: DSCF4118
Date Taken: 03/05/2019

Photo 2 - Description: Site 303, D-Tunnel Tanks, LUC signage at Tank 22



File Name: DSCF4121
Date Taken: 03/05/2019

Photo 3 - Description: Site 303, D-Tunnel Tanks, LUC signage adjacent to monitoring well MW-3, South of Tank 24



File Name: DSCF4123
Date Taken: 03/05/2019

Photo 4 - Description: Site 303, D-Tunnel Tanks, Monument of abandoned monitoring well MW-3, South of Tank 24



File Name: DSCF4125
Date Taken: 03/05/2019

Photo 5 - Description: Site 303, D-Tunnel Tanks, Survey control point south of Tanks 22 and 24



File Name: DSCF4128
Date Taken: 03/05/2019

Photo 6 - Description: Site 303, D-Tunnel Tanks, Walkway and electrical panels south of Tanks 22 and 24



File Name: DSCF4131
Date Taken: 03/05/2019

Photo 7 - Description: Site 303, D-Tunnel Tanks, Walkway and stairs south of Tanks 22 and 24



File Name: DSCF4132
Date Taken: 03/05/2019

Photo 8 - Description: Site 303, D-Tunnel Tanks, Security access road along southern boundary of site



File Name: DSCF4135
Date Taken: 03/05/2019

Photo 9 - Description: Site 303, D-Tunnel Tanks, Empty drum storage in laydown area southwest of Tank 24



File Name: DSCF4136
Date Taken: 03/05/2019

Photo 10 - Description: Site 303, D-Tunnel Tanks, LUC signage south-southwest of Tank 24 along security access road



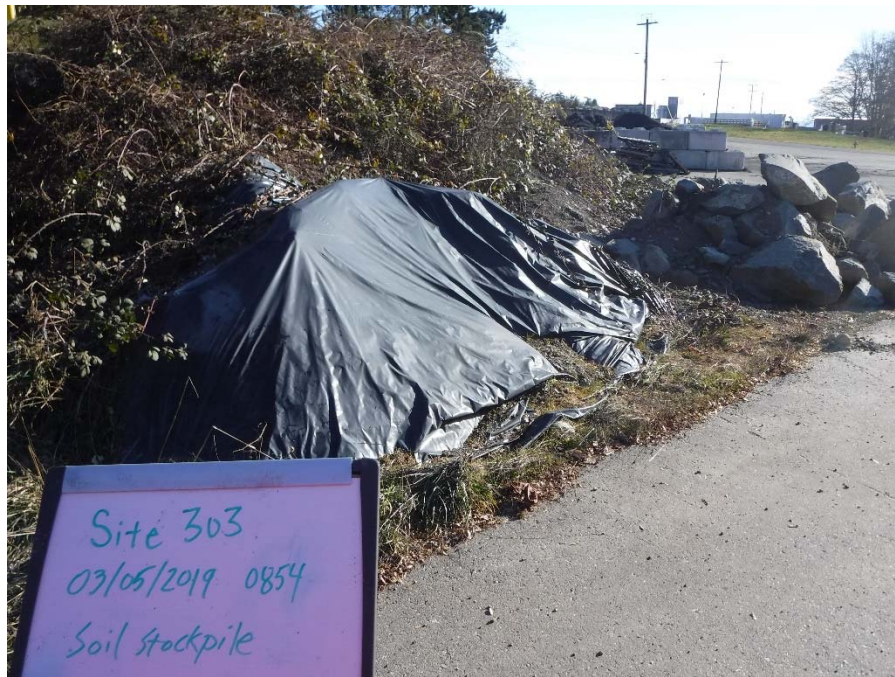
File Name: DSCF4137
Date Taken: 03/05/2019

Photo 11 - Description: Site 303, D-Tunnel Tanks, Equipment and materials stored in laydown yard southwest of Tank 24



File Name: DSCF4140
Date Taken: 03/05/2019

Photo 12 - Description: Site 303, D-Tunnel Tanks, Storage tents in laydown yard southwest of Tank 24



File Name: DSCF4142
Date Taken: 03/05/2019

Photo 13 - Description: Site 303, D-Tunnel Tanks, Stockpiled soil covered with tarp in northwest corner of laydown yard southwest of Tank 24



File Name: DSCF4143
Date Taken: 03/05/2019

Photo 14 - Description: Site 303, D-Tunnel Tanks, Stockpiled boulders in northwest corner of laydown yard southwest of Tank 24



File Name: DSCF4148
Date Taken: 03/05/2019

Photo 15 - Description: Site 303, D-Tunnel Tanks, LUC signage at Tank 24



File Name: DSCF4150
Date Taken: 03/05/2019

Photo 16 - Description: Site 303, D-Tunnel Tanks, Tank 24



File Name: DSCF4151
Date Taken: 03/05/2019

Photo 17 - Description: Site 303, D-Tunnel Tanks, Tank 24



File Name: DSCF4155
Date Taken: 03/05/2019

Photo 18 - Description: Site 303, D-Tunnel Tanks, Laydown area
between Tanks 22 and 24



File Name: DSCF4156
Date Taken: 03/05/2019

Photo 19 - Description: Site 303, D-Tunnel Tanks, Tank 25 and LUC signage



File Name: DSCF4167
Date Taken: 03/05/2019

Photo 20 - Description: Site 303, D-Tunnel Tanks, Tank 26



File Name: DSCF4174
Date Taken: 03/05/2019

Photo 21 - Description: Site 303, D-Tunnel Tanks, Evidence of survey activity near Tank 26



File Name: DSCF4178
Date Taken: 03/05/2019

Photo 22 - Description: Site 303, D-Tunnel Tanks, Tank 26 MW-13 identified in thick overgrowth



File Name: DSCF4179
Date Taken: 03/05/2019

Photo 23 - Description: Site 303, D-Tunnel Tanks, Tank 26 MW-13 identified in thick overgrowth



File Name: DSCF4180
Date Taken: 03/05/2019

Photo 24 - Description: Site 303, D-Tunnel Tanks, Tank 27 and LUC signage



File Name: DSCF4186
Date Taken: 03/05/2019

Photo 25 - Description: Site 303, D-Tunnel Tanks, Tank 28



File Name: DSCF4187
Date Taken: 03/05/2019

Photo 26 - Description: Site 303, D-Tunnel Tanks, LUC signage at Tank 28



File Name: DSCF4191
Date Taken: 03/05/2019

Photo 27 - Description: Site 303, D-Tunnel Tanks, Asphalt debris near Tank 28



File Name: DSCF4193
Date Taken: 03/05/2019

Photo 28 - Description: Site 303, D-Tunnel Tanks, Tank 29 and LUC signage



File Name: DSCF4196
Date Taken: 03/05/2019

Photo 29 - Description: Site 303, D-Tunnel Tanks, Tank 29 MW-13 identified in thick overgrowth; metal detector pointing to location



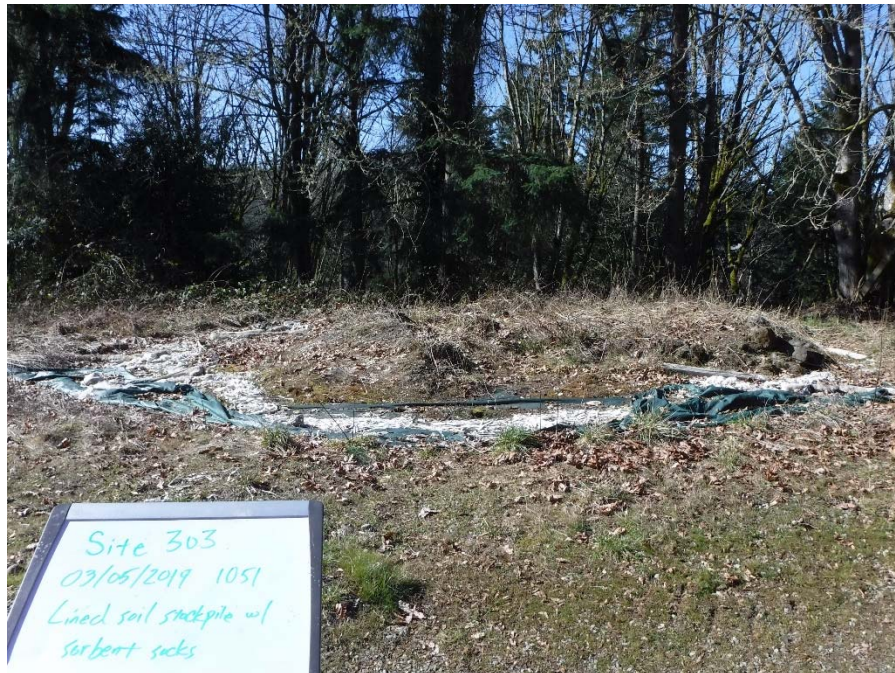
File Name: DSCF4197
Date Taken: 03/05/2019

Photo 30 - Description: Site 303, D-Tunnel Tanks, Laydown area to north of Tank 29



File Name: DSCF4198
Date Taken: 03/05/2019

Photo 31 - Description: Site 303, D-Tunnel Tanks, Old soil stockpile with tarp and absorbent booms in laydown area north of Tank 29 (1 of 2)



File Name: DSCF4199
Date Taken: 03/05/2019

Photo 32 - Description: Site 303, D-Tunnel Tanks, Old soil stockpile with tarp and absorbent booms in laydown area north of Tank 29 (2 of 2)



File Name: DSCF4202
Date Taken: 03/05/2019

Photo 33 - Description: Site 303, D-Tunnel Tanks, Old Bobcat in laydown area north of Tank 29



File Name: DSCF4204
Date Taken: 03/05/2019

Photo 34 - Description: Site 303, D-Tunnel Tanks, Stockpile of boulders and tree trimming in laydown area north of Tank 29



File Name: DSCF4211
Date Taken: 03/05/2019

Photo 35 - Description: Site 303, D-Tunnel Tanks, View along footpath towards location of monitoring well OW-2, southwest of Tank 29



File Name: DSCF4212
Date Taken: 03/05/2019

Photo 36 - Description: Site 303, D-Tunnel Tanks, Vault along footpath towards location of monitoring well OW-2, southwest of Tank 29



File Name: DSCF4214
Date Taken: 03/05/2019

Photo 37 - Description: Site 303, D-Tunnel Tanks, Monitoring well MW-1, south of Tank 24 (in overall good condition)



File Name: DSCF4216
Date Taken: 03/05/2019

Photo 38 - Description: Site 303, D-Tunnel Tanks, LUC signage for Tank 30



File Name: DSCF4217
Date Taken: 03/05/2019

Photo 39 - Description: Site 303, D-Tunnel Tanks, Tank 30



File Name: DSCF4224
Date Taken: 03/05/2019

Photo 40 - Description: Site 303, D-Tunnel Tanks, Newer water access point across from Tank 36



File Name: DSCF4228
Date Taken: 03/05/2019

Photo 41 - Description: Site 303, D-Tunnel Tanks, Monitoring well MW-3, north of Tank 30 (in overall good condition)



File Name: DSCF4229
Date Taken: 03/05/2019

Photo 42 - Description: Site 303, D-Tunnel Tanks, Monitoring well MW-1 north of Tank 30, behind Gate 8-A

Site 304 – Industrial Area



File Name: DSCF4060
Date Taken: 03/04/2019

Photo 1 - Description: Site 304, Industrial Area, View towards southwest from Building 1



File Name: DSCF4065
Date Taken: 03/04/2019

Photo 2 - Description: Site 304, Industrial Area, Area south of Building 12



File Name: DSCF4069
Date Taken: 03/04/2019

Photo 3 - Description: Site 304, Industrial Area, Area southeast of Building 12



File Name: DSCF4067
Date Taken: 03/04/2019

Photo 4 - Description: Site 304, Industrial Area, South side of Building 12



File Name: DSCF4073
Date Taken: 03/04/2019

Photo 5 - Description: Site 304, Industrial Area, West side of Building 12



File Name: DSCF4075
Date Taken: 03/04/2019

Photo 6 - Description: Site 304, Industrial Area, Laydown yard south of Building 12 for booms and hosing



File Name: DSCF4076
Date Taken: 03/04/2019

Photo 7 - Description: Site 304, Industrial Area, Southern boundary of site



File Name: DSCF4080
Date Taken: 03/04/2019

Photo 8 - Description: Site 304, Industrial Area, Monitoring well MW-1 (in overall good condition)



File Name: DSCF4086
Date Taken: 03/04/2019

Photo 9 - Description: Site 304, Industrial Area, Fueling area between Buildings 12 and 1



File Name: DSCF4089
Date Taken: 03/04/2019

Photo 10 - Description: Site 304, Industrial Area, Monitoring well MW-2 (in overall good condition)



File Name: DSCF4092
Date Taken: 03/04/2019

Photo 11 - Description: Site 304, Industrial Area, Spent fuel sorbent pad waste storage at the fueling area



File Name: DSCF4096
Date Taken: 03/04/2019

Photo 12 - Description: Site 304, Industrial Area, Main road to offices west of Building 1



File Name: DSCF4099
Date Taken: 03/04/2019

Photo 13 - Description: Site 304, Industrial Area, Piping and fork in main road to offices and to roads toward fuel storage tanks



File Name: DSCF4105
Date Taken: 03/04/2019

Photo 14 - Description: Site 304, Industrial Area, View towards buildings from roads toward fuel storage tanks



File Name: DSCF4107
Date Taken: 03/04/2019

Photo 15 - Description: Site 304, Industrial Area, LUC signage for site, located north of actual site boundary along main road to offices



File Name: DSCF4110
Date Taken: 03/04/2019

Photo 16 - Description: Site 304, Industrial Area, Area north of Building 1



File Name: DSCF4111
Date Taken: 03/04/2019

Photo 17 - Description: Site 304, Industrial Area, East side of Building 1



File Name: DSCF4112
Date Taken: 03/04/2019

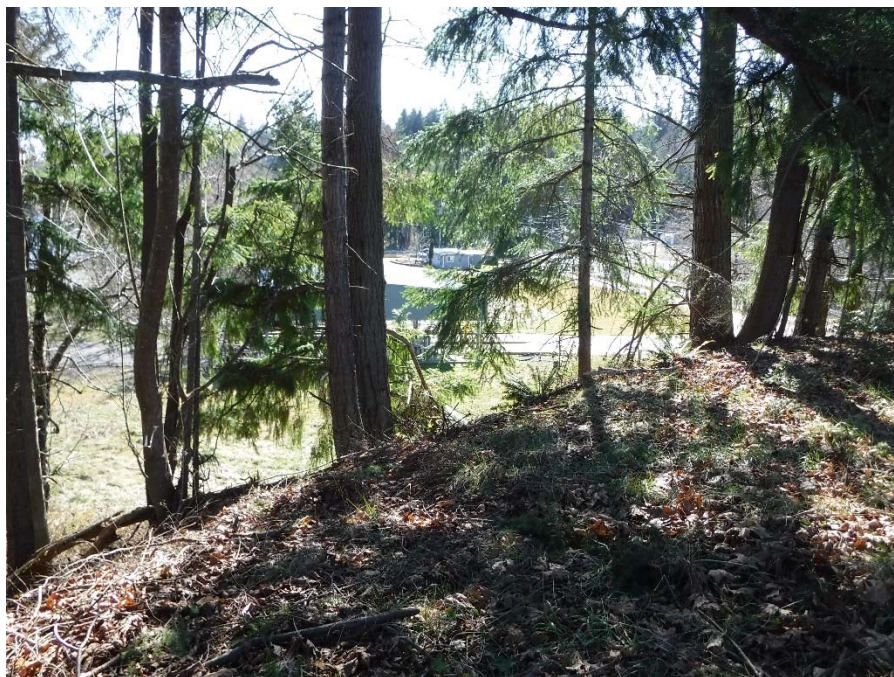
Photo 18 - Description: Site 304, Industrial Area, Southeastern boundary of site

Tank 50 – Tank 50 Release Site



File Name: DSCF4003
Date Taken: 03/04/2019

Photo 1 - Description: Tank 50, Tank 50 Release Site, View from top of site towards the northeast



File Name: DSCF4010
Date Taken: 03/04/2019

Photo 2 - Description: Tank 50, Tank 50 Release Site, View from top of site down to lower area to south



File Name: DSCF4016
Date Taken: 03/04/2019

Photo 3 - Description: Tank 50, Tank 50 Release Site, Mole hills on top of site



File Name: DSCF4017
Date Taken: 03/04/2019

Photo 4 - Description: Tank 50, Tank 50 Release Site, Top of site, Tank piping system



File Name: DSCF4020
Date Taken: 03/04/2019

Photo 5 - Description: Tank 50, Tank 50 Release Site, Access road barricade from top of site to lower area, along northwest boundary of site



File Name: DSCF4023
Date Taken: 03/04/2019

Photo 6 - Description: Tank 50, Tank 50 Release Site, Access road barricade at lower area, along northwest boundary of site



File Name: DSCF4024
Date Taken: 03/04/2019

Photo 7 - Description: Tank 50, Tank 50 Release Site, Access road towards monitoring well MW-2



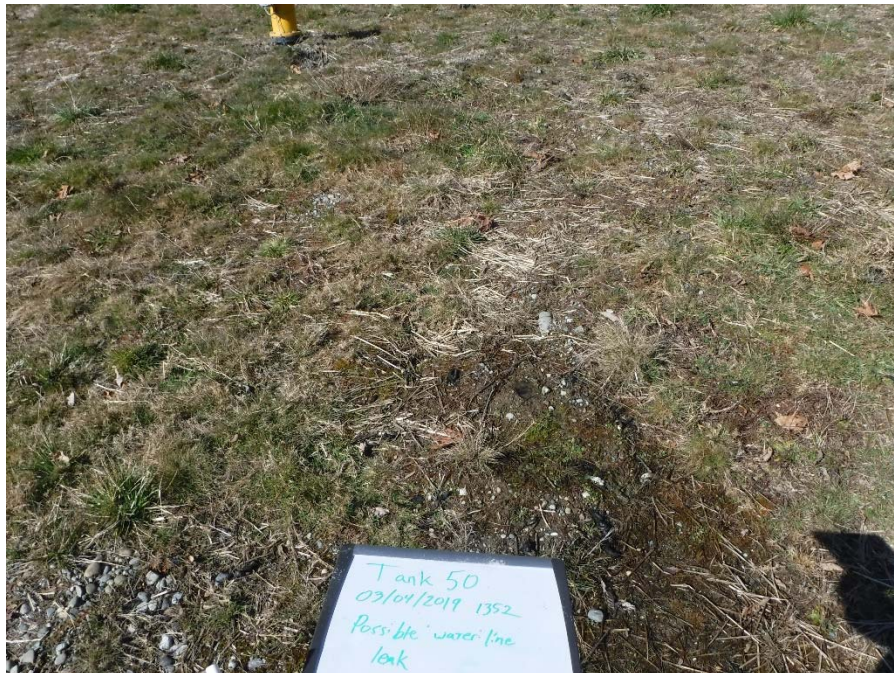
File Name: DSCF4026
Date Taken: 03/04/2019

Photo 8 - Description: Tank 50, Tank 50 Release Site, LUC signage in lower area, adjacent to MW-2



File Name: DSCF4028
Date Taken: 03/04/2019

Photo 9 - Description: Tank 50, Tank 50 Release Site, Fueling area in lower area, along southern boundary of site



File Name: DSCF4035
Date Taken: 03/04/2019

Photo 10 - Description: Tank 50, Tank 50 Release Site, Water main leak identified during inspections adjacent to Hydrant 3-28 in southwest area of site



File Name: DSCF4039
Date Taken: 03/04/2019

Photo 11 - Description: Tank 50, Tank 50 Release Site, One of two non-hazardous waste storage drums for used sorbent pads in fueling area



File Name: DSCF4041
Date Taken: 03/04/2019

Photo 12 - Description: Tank 50, Tank 50 Release Site, Lower area along road, southeast area of site



File Name: DSCF4047
Date Taken: 03/04/2019

Photo 13 - Description: Tank 50, Tank 50 Release Site, Monitoring well MW-1 (in overall good condition)



File Name: DSCF4054
Date Taken: 03/04/2019

Photo 14 - Description: Tank 50, Tank 50 Release Site, slope on northeast boundary of site back towards the top; vehicle tracks and tree debris visible from tree removal