Engineering and Institutional Controls Monitoring and Maintenance Plan

Dakota Creek Industries Site
Anacortes, Washington

for
Washington State Department of Ecology
on Behalf of Port of Anacortes

May 2, 2024

2101 4th Avenue, Suite 950
Seattle, Washington, 98121
206.728.2674

GeoEngineers

Engineering and Institutional Controls Monitoring and Maintenance Plan

Dakota Creek Industries Site
Anacortes, Washington

File No. 5147-006-17
May 2, 2024

Prepared for:

Washington State Department of Ecology
PO Box 47600
Olympia, Washington 98504-7600

Attention: David Horne

On Behalf of:

Port of Anacortes
100 Commercial Avenue
Anacortes, Washington 98221

Prepared by:

GeoEngineers, Inc.
2101 4th Avenue, Suite 950
Seattle, Washington 98121
206.728.2674

Robert S. Trahan, LG
Senior Environmental Scientist

John M. Herzog, LG, PhD
Senior Principal

RST:JMH:ch

Disclaimer: Any electronic form, facsimile, or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Table of Contents

LIST OF FIGURES

APPENDICES

List of Acronyms and Abbreviations

Acronym/ Abbreviation	Description
Agreed Order	Agreed Order No. DE-07TCPHQ-5080
AST	Above ground storage tank
bgs	below ground surface
BMP	Best Management Practice
CAO	Cleanup Action Objective
CAP	Cleanup Action Plan
CFR	Code of Federal Regulations
CMP	Compliance Monitoring Plan
cPAH	Carcinogenic Polycyclic Aromatic Hydrocarbon
Consent Decree	Consent Decree No. 22-2-00800-29
DCI	Dakota Creek Industries
Ecology	Washington State Department of Ecology
EICMMP	Engineering and Institutional Controls Monitoring and Maintenance Plan
EPA	United States Environmental Protection Agency
FS	Feasibility Study
HAZWOPER	Hazardous Waste Operations and Emergency Response
HPAH	High Molecular Weight Polycyclic Aromatic Hydrocarbon
LPAH	Low Molecular Weight Polycyclic Aromatic Hydrocarbon
mg/kg	milligram per kilogram
MLLW	Mean Lower Low Water
MS	Manufacturing/Shipping
MTCA	Modal Toxics Control Act
OHW	Ordinary High Water
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
Port	Port of Anacortes

QAPP	Quality Assurance Project Plan
RCW	Revised Code of Washington
RI	Remedial Investigation
ROW	right-of-way
Site	Dakota Creek Industries Site
TBT	Tributyltin
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalent Quotient
WISHA	Washington Industrial Safety and Health Act
WAC	Washington Administrative Code

1.0 Introduction

This Engineering and Institutional Controls Monitoring and Maintenance Plan (EICMMP) describes the engineering and institutional controls established for the Dakota Creek Industries Site (Site; Figure 1) and the monitoring and maintenance actions that will be completed to ensure long-term compliance with the Site's overall cleanup action objectives (CAOs). Preparation of the EICMMP for the Site is a requirement of the Washington State Department of Ecology (Ecology) Cleanup Action Plan (CAP; Ecology 2022).

In accordance with the CAP and pursuant to Chapter 173-340 of the Washington Administrative Code (WAC), cleanup action activities were completed at the Site by the Port of Anacortes (Port) to address source area soil that was determined to have the greatest potential to adversely impact groundwater. In other upland portions of the Site, soil contamination is isolated in place by existing protective barriers (asphalt and concrete pavement, gravel working surface, gravel working surface over concrete pavement and sheet pile bulkhead) to prevent contact with Site workers and the leaching of contaminants through the soil column and migration to surface water. The procedures specified in this EICMMP are applicable to future property redevelopment or maintenance activities that involve the disturbance of soil or the disturbance of the protective barriers that could create a potential exposure pathway.

This EICMMP is divided into the following sections:

- Section 1.0 (**Introduction**) provides a brief description of the purpose and organization.
- Section 2.0 (**Background**) provides a description of the Site, regulatory framework and summary of current conditions.
- Section 3.0 (**Site Controls**) provides a description of the engineering and institutional controls established for the Site in accordance with the CAP.
- Section 4.0 (**Monitoring and Maintenance of Site Controls**) describes the monitoring activities that will be completed and maintenance or corrective actions that may be required based on the monitoring activities.
- Section 5.0 (**Materials Management**) describes the management of soil and wastewater generated during future Site work.
- Section 6.0 (**Limitations**) describes the limitations of this document.
- Section 7.0 (**References**) presents the references used in preparing this EICMMP.

2.0 Background

The Site has been used for shipping, shipbuilding, ship repairs and other maritime-related industrial purposes since approximately 1879. Historically, various above ground storage tanks (ASTs), a rail spur, and associated buildings including machine shops, welding shops and equipment sheds were located at the Site to support industrial operations. Historical records indicate that a bulk oil storage and distribution facility with at least six ASTs was in operation in the central upland portion of the Site. Between the mid-1940s to the mid-1970s, the Port acquired various portions of the Site and in about 1976, Dakota Creek Industries (DCI) began to lease the Site from the Port (DCI Lease Area) for use as a shipyard and has

continued to operate the facility since that time. Currently, public access to the shipyard facility as well as the Port's Pier 1 and Pier 2 facilities are restricted with fencing, signage and security guards.

Historical operations and features are shown in Figure 2. Current DCI operations and DCI Lease Area features are shown in Figure 3.

2.1 SITE DESCRIPTION

The Site is comprised of multiple property parcels (P32866, P32867, P32898, P32903, P32904, P32905, P32906, P32907, P54924, P55030, P55031, P56539) owned by the Port (Figure 4). At present, the property parcels located within the Site are zoned by the City of Anacortes for industrial use (Manufacturing/Shipping [MS]) and are characterized by marine shipping, warehousing, bulk material storage, transportation, and other industrial uses. Although the specific future use of the Site is dependent on the operations of the Port's lessees, it is likely to continue to be for industrial purposes including shipbuilding, ship repairs and other maritime-related industrial business. Currently, the Port maintains a lease with DCI that extends through 2055. For the purposes of the completed cleanup action, the Site is divided into the Marine and Upland Areas as described below.

2.1.1 Marine Area

The Marine Area of the Site is located offshore of Ordinary High Water (OHW) and is located between the Port's Pier 1 and Pier 2 Marine Terminals (Pier 1 and Pier 2). The Marine Area is maintained to a navigation depth of approximately -35 feet Mean Lower Low Water (MLLW) to allow adequate navigation depths for the shipyard facility. To the west and south, the Marine Area is separated from the adjacent uplands by vertical sheet pile bulkheads. To the east, the Marine Area is bound by Pier 2 which is an earth fill structure and a pile supported wharf along the northern most part of the facility. The slope of the earth fill is armored with large rock (riprap).

As described in Section 2.2, an interim action was completed in 2008 (2008 Interim Action) which resulted in the complete removal of the contaminated sediment. As a result of the completeness of the 2008 Interim Action, the Marine Area is not subject to this EICMMP.

2.1.2 Upland Area

The Upland Area of the Site located is landward of OHW and is relatively flat with a ground surface elevation of approximately 15 feet MLLW. Most of the Upland Area is paved with asphalt or concrete. The limited unpaved portions of the Upland Area are covered with a crushed gravel working surface or crushed gravel working surface over concrete pavement that are used for fabrication layout and heavy equipment operations. There is little or no stormwater run-on to the Site. Precipitation falling onto the DCI lease area is primarily captured by a network of stormwater drains and is treated by DCI prior to permitted discharge to Guemes Channel or the City of Anacortes sanitary sewer. In the limited areas that are unpaved, stormwater infiltrates into the ground.

DCI currently has utility connections for power, water, sewer, and communications which extend into the adjacent right-of-way (ROW), including Commercial Street and 3rd Avenue. DCI also maintains a compressed air utility to support facility operations.

As discussed in Section 2.3, Site contaminants remain below the paved and crushed gravel working surfaces in portions of the Upland Area at concentrations greater than the cleanup level established by the CAP. As a result, Upland Area is subject to this EICMMP.

2.2 REGULATORY FRAMEWORK

2.2.1 Agreed Order and Previous Environmental Investigations

Several environmental investigations have been conducted at the Site, beginning with an initial soil investigation in 1997, and culminating in the Remedial Investigation (RI) and Feasibility Study (FS) in 2022. On December 12, 2007, the Port entered into Agreed Order No. DE-07TCPHQ-5080 (Agreed Order) with Ecology. Between March 2008 and July 2018, the Port completed RI field investigations as required by the 2007 Agreed Order to fill data gaps in the characterization of Site sediment, groundwater and soil conditions and to define the nature and extent of contamination on a Site-wide basis to develop and evaluate cleanup alternatives for addressing Site contamination.

Between July and November 2008, interim action dredging within the Marine Area and soil excavation activities in the Upland Area as shown in Figure 2 were completed in accordance with the Interim Work Plan (GeoEngineers 2008) to facilitate the Port's Project Pier 1 Redevelopment. The 2008 Interim Action resulted in the removal of approximately 26,000 cubic yards (approximately 38,000 tons) of contaminated sediment from the Marine Area and an additional 580 cubic yards (approximate) of contaminated soil from the Upland Area. Both contaminated sediment and soil were transported from the Site for permitted upland landfill disposal. Due to the completeness of the 2008 Interim Action, Ecology determined that sediment was no longer considered a media of concern for the Site.

In March 2021, additional soil sampling and analysis were completed as required by Ecology to verify the completeness of three separate independent cleanup action areas (Figure 2). Independent cleanup actions included the 1991 UST Cleanup Action, 2001 Hydraulic Winch Cleanup Action and 2002 Petroleum and Marine Railway Cleanup Action Areas. Results of the additional soil investigation (presented as Appendix A of the CAP) confirmed the removal of petroleum related contamination from these areas. Based on these results, Ecology determined additional actions to address the previously identified petroleum contamination associated with these areas are not required.

A detailed summary of historical and Agreed Order investigation activities, and interim action cleanup activities completed at the Site is presented in the RI/FS Report (GeoEngineers 2022a).

2.2.2 Consent Decree Cleanup Action

On October 21, 2022, the Port entered into a Consent Decree (Consent Decree No. 22-2-00800-29) with Ecology to implement the Ecology-selected cleanup action presented in the CAP. Pursuant to the Consent Decree, cleanup actions were completed by the Port between June and August 2023 to remove soil contamination in the southeastern portion of the Site with the potential to impact groundwater (contaminant source area). Because the selected cleanup action included leaving soil contamination in place in other portions of the Site at concentrations exceeding the established cleanup levels, engineering and institutional controls were required to maintain the CAOs. Engineering and institutional controls (Site controls) are further described in Section 3.0.

Contaminated soil removal activities completed in accordance with the CAP pursuant to Consent Decree No. 22-2-00800-29 are presented in the Construction Completion Report (GeoEngineers 2023). The 2023 cleanup action area is shown in Figure 3.

2.3 CURRENT SITE CONDITIONS

2.3.1 Soil

Site soils are generally comprised of multiple layers of historical fill overlying native marine sediment and glacial deposits. More recently, imported material was placed at the Site as part of the Project Pier 1 Redevelopment activities to expand the shoreline of the Upland Area northward of the historical shoreline. Clean fill material was placed behind the new open cell bulkhead following completion of the interim action dredging in this area. Additionally, clean fill material was placed at the Site to restore the 2023 cleanup action area. Project Pier 1 and 2023 Cleanup Action backfill areas are shown in Figure 5.

Currently, contaminated material in the Upland Area of the Site contains arsenic and nickel, and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) at concentrations greater than the established soil cleanup level. The distribution of Upland Area arsenic and nickel, and cPAH contamination is shown in Figure 5 and is summarized below.

- **Soil Contamination Area 1** – Arsenic and nickel exceed the cleanup level in fill deposits to a depth of approximately 10 feet below ground surface (bgs).
- **Soil Contamination Area 2** – Arsenic exceeds the cleanup level in shallow fill deposits to a depth of approximately 2 feet bgs.
- **Soil Contamination Area 3** – Arsenic and nickel exceed cleanup levels in fill deposits to a depth of approximately 10 feet bgs.
- **Soil Contamination Area 4** – Total cPAHs calculated using the toxic equivalent quotient (TEQ) methodology exceed the soil cleanup level in fill deposits between approximately 5 and 13 feet bgs.
- **Soil Contamination Area 5** – Arsenic and nickel exceed the soil cleanup levels in fill deposits to a depth of approximately 8 feet bgs.
- **Soil Contamination Area 6** – Nickel exceeds the cleanup levels in fill deposits to a depth of approximately 8 feet bgs.
- **Soil Contamination Area 7** – Arsenic and nickel exceed the cleanup levels in fill deposits to a depth of approximately 8 feet bgs.

The range of contaminant concentrations remaining in place within the Upland Area of the Site are summarized in the table below.

CONTAMINANT OF CONCERN	RANGE OF DETECTION (MG/KG)	SOIL CLEANUP LEVEL[1] (MG/KG)
Metals		
Arsenic	1 to 92	20
Nickel	5.75 to 200	48

CONTAMINANT OF CONCERN	RANGE OF DETECTION (MG/KG)	SOIL CLEANUP LEVEL[1] (MG/KG)
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs)		
Total cPAH TEQ – Vadose Zone	0.0069 to 1.38	2
Total cPAH TEQ – Saturated Zone	0.024 to 0.18	0.1

Notes:

[1] Cleanup levels for the Site are established by the CAP.

mg/kg = milligrams per kilogram

cPAHs = carcinogenic polycyclic aromatic hydrocarbons

TEQ = toxic equivalent quotient

2.3.2 Groundwater

One shallow water-bearing hydrogeologic unit is identified for the Upland Area of the Site. The shallow water-bearing unit occurs in the fill material at a depth of approximately 4 to 10 feet bgs with an inferred flow direction to the north toward Guemes Channel. The RI groundwater monitoring results initially identified concentrations of arsenic, nickel, and cPAHs exceeding their respective cleanup levels. However, groundwater monitoring results have shown a general decrease in contaminant concentrations over-time which generally correlates with the increase in the amount of Upland Area paving completed between 2015 and 2016.

Currently, compliance monitoring to document groundwater conditions is being completed in accordance with the Compliance Monitoring and Quality Assurance Project Plan (CMP/QAPP; GeoEngineers 2022b) utilizing the monitoring wells MW-2B, MW-3A, MW-6 and MW-8 shown in Figure 6 as confirmed in an email from Ecology (Ecology 2023). Future long-term groundwater monitoring needs and frequency will be determined by Ecology based on review of the initial post-construction monitoring results.

2.3.3 Sediment

The RI identified sediment contamination including metals (arsenic, copper, lead, mercury and zinc), tributyltin (TBT), low molecular weight PAHs (LPAHs), high molecular weight PAHs (HPAHs), cPAHs, polychlorinated biphenyls (PCBs), and dioxin and furans at concentrations greater that the sediment cleanup level for the Marine Area. The 2008 interim action described in Section 2.2 addressed the identified contamination through full removal and permitted upland landfill disposal of the contaminated sediment. As a result, Ecology determined that the cleanup action for the Marine Area is complete with no further action required.

3.0 Site Controls

In accordance with the CAP, the paved surfaces (asphalt and concrete pavement), gravel working surfaces including gravel working surfaces over concrete pavement and the open cell bulkhead at the Site are established as engineering controls to prevent direct contact with the soil contamination that remains in place. The surface paving and stormwater conveyance and treatment system limits stormwater infiltration that could result in the mobilization and discharge of contaminants to surface water.

Institutional controls established for the Site include warning signs to inform Site workers and visitors regarding restricted activities and fencing at the perimeter of the DCI Lease Area restricting access to the general public. Additionally, an Environmental Covenant (once established) will impose restrictions on future use of the Upland Area of the Site where residual contamination is present consistent with industrial land use of the Site and prohibit the use of use of groundwater for drinking water in accordance with WAC 173-340-440 and Revised Code of Washington (RCW) 64.70.

To maintain the integrity and function of the established Site controls, activities that result in their alteration or removal are restricted. Restricted activities include but are not limited to drilling, digging or piercing of the paved surfaces, gravel working surfaces or open cell bulkhead without prior authorization by the Port. Additionally, removal of the DCI Lease Area perimeter fencing and warning signs are restricted without prior authorization by the Port.

Exceptions to these restricted activities include the following routine and emergency maintenance situations:

- Maintenance activities to fix broken, worn or damaged asphalt or concrete pavement that do not disturb soil below the underlying base coarse material.
- Maintenance activities to re-grade the gravel working surface including the placement of additional surfacing material (crushed rock) or vegetation removal (i.e., weed control) that does not extend below a depth of approximately 1 foot bgs.
- Maintenance activities to fix broken, damaged or worn portions of the open cell bulkhead including but not limited to replacing zinc anodes, patching holes and addressing areas of corrosion.
- Maintenance activities to fix broken or damaged portions of Warehouse Nos. 4, 9 and 10 or other structures being utilized for storage or to house machining and fabrication facilities.
- Maintenance activities to fix broken or damaged portions of the DCI Lease Area perimeter fencing.
- Maintenance activities to fix or replace missing or damaged warning signs secured to the DCI Lease Area perimeter fencing.
- Emergency maintenance activities that damage or remove one or more Site control or result in the exposure of the underlying soil or groundwater. Under such conditions, corrective actions or repairs as described in Section 4.2 will be taken to ensure that the Site controls are restored to their original function. For these emergency maintenance events, notice will be given to Ecology describing the emergency activity and corrective actions completed to restore the Site controls.

The Port will require their tenant to provide notice of planned activities that will disturb one or more of the Site controls beyond what is generally considered to be a routine maintenance action so that they may review the details of the proposed action to ensure that the elements of this EICMMP are followed. Materials generated by these activities (if any) will be managed using the guidelines presented in Section 5.0.

The Site controls established for the Upland Area of the Site are shown in Figure 6. Monitoring and maintenance of these Site controls are further described below in Section 4.0.

4.0 Monitoring and Maintenance of Site Controls

Monitoring of the Site controls will consist of routine inspection and documentation of the observed condition followed by reporting. Maintenance actions will be completed, as necessary, to address conditions that may compromise Site controls integrity. Site controls requiring routine monitoring and maintenance include:

- Asphalt and concrete pavement which prevent stormwater infiltration and contaminant leaching and migration through the soil column as well as provide a physical barrier to prevent direct contact to Site contaminants.
- Gravel working surfaces which provide a physical barrier to prevent direct contact to Site contaminants.
- Gravel working surface over concrete pavement which provide a physical barrier to prevent direct contact to Site contaminants.
- Open cell bulkhead that separates the Marine Area from the Upland Area and provides a physical barrier to prevent direct contact as well as limit the discharge of groundwater to surface water.
- Stormwater collection system including catch basins and treatment area being utilized to transfer collected water from the pavement surfaces.
- Perimeter fencing encompassing the DCI Lease Area and security procedures to restrict public access to the Upland Area of the Site.
- Warning signage which informs Site workers and visitors on land use restrictions.

In addition, monitoring wells being utilized to verify compliance with the cleanup standards should be observed for accessibility and damage so that they can be repaired in advance of future monitoring events as required by Ecology. The monitoring plan for the Site controls established for the Upland Area of the Site is shown in Figure 6. Monitoring and maintenance activities are further discussed below (Sections 4.1 and 4.2).

4.1 SITE CONTROL MONITORING AND MAINTENANCE

4.1.1 Monitoring Schedule

Routine monitoring will be completed on an annual basis to evaluate the overall integrity and function of the Site controls and identify maintenance action (if needed) to restore the Site control(s). Routine monitoring will be completed at the Site until which time the residual contaminated soil is either remediated, has attenuated or as otherwise directed by Ecology. Additional monitoring may be necessary during non-routine activities such as maintenance work or other activity that could potentially compromise the integrity of a Site control. Ecology will be informed of any non-routine activity with the potential to disturb one or more Site controls, to confirm compliance with overall CAOs and determine whether special provisions are required.

4.1.2 Monitoring Activities

4.1.2.1 ROUTINE MONITORING

Routine monitoring activities will consist of a review of this EICMMP, as-built plans and base maps showing the current layout of the Site, and changes in Site conditions prior to completing a visual reconnaissance of the Site. In addition, previous monitoring reports and maintenance records will be reviewed prior to

visiting the Site to evaluate if any previously documented anomaly or maintenance related issue was identified and to confirm that repairs or maintenance work was completed.

Upon visiting the Site, the visual reconnaissance will include walking the perimeter of the DCI Lease Area to verify the condition of the existing fence and warning signs as well as to verify that the security procedures for access of authorized personnel into the DCI Lease Area are maintained. Within the DCI Lease Area, multiple transects will be completed to visually observe the Site surfaces. Transects will be completed at intervals that are not greater than approximately 100 feet apart to identify evidence of one or more of the following:

- Breaching, cracking or deformation of the concrete and asphalt paved areas.
- Rutting, grading, digging or other disturbances within the areas containing the gravel working surfaces.
- Damage or corrosion of the open cell sheet pile bulkhead that separates the Marine Area from the Upland Area.
- Blockage or damage to the stormwater conveyance or stormwater treatment system that would limit the ability to transfer water away from the pavement collection areas and allow for pooling of water on Site.
- Damage or alteration of the DCI Lease Area perimeter fencing.
- Damage, missing or fallen warning signs attached to the DCI Lease Area perimeter fencing.
- Damage to the groundwater monitoring well surface monuments.
- Other potential anomalies or non-routine activities that appear to compromise the integrity of the Site Controls which could result in the exposure or release of Site contaminants.

Conditions that may affect the function or integrity of the Site controls will be documented, and maintenance actions identified to address the observed condition. Documentation and reporting of observed condition of the Site controls are further discussed below (Section 4.1.3). Site controls and monitoring activities are shown in Figure 6.

4.1.2.2 NON-ROUTINE MONITORING

Non-routine monitoring will be completed when activities outside of those listed in Section 3.0 are implemented and will be completed on an as needed basis to document activities that could potentially compromise the integrity of the Site controls. Non-routine monitoring will also include documentation of the restoration activities to ensure that their long-term function is maintained.

4.1.3 Reporting

Each monitoring event (routine or non-routine) will be documented by completing an inspection form that includes a description of the observed Site conditions noting areas of interest on a log or map. Conditions that do not comply with this EICMMP will be identified and photographed. An example inspection form for documenting the review of previous monitoring events, observed condition of the Site controls and photograph log to document the observed conditions that do not comply with this EICMMP during each monitoring event is presented in Appendix A.

Inspection forms and supporting documentation for each monitoring event (routine or non-routine) will be retained by the Port and made available for regulatory review upon request. On an annual basis, an Engineering and Institutional Controls Monitoring Report will be prepared and submitted to Ecology for review. The Engineering and Institutional Controls Monitoring Report will include the following:

- A description of the monitoring activities completed and condition of the Site controls;
- A summary of any identified Site controls disturbance activities; and
- A description of any identified or implemented maintenance or corrective actions to restore the proper function of the Site controls. Maintenance and corrective actions are discussed in Section 4.2.

4.2 MAINTENANCE AND CORRECTIVE ACTIVITIES

If a monitoring event identifies existing or potential conditions that may threaten the integrity of the Site controls, maintenance or corrective actions may be required. Maintenance or corrective actions will be evaluated and determined on a case-by-case basis. These actions may involve providing reminders to on-site workers or maintenance crews of the activities that are restricted or completing restoration activities to address an observed condition that may affect one or more Site control.

Maintenance or corrective actions that are anticipated to result in the exposure of contaminated media or permanent modifications to a current Site control will be coordinated with Ecology to confirm compliance with overall CAOs and determine whether special provisions are required. Maintenance or corrective actions may include the following type of activities:

- Placing and compacting new fill or subgrade materials.
- Re-grading activities.
- Modifying drainage patterns or repairing the stormwater drainage system.
- Replacing, patching or sealcoating paved surfaces.

5.0 Materials Management

In the event that it becomes necessary to disturb one or more Site control that results in the exposure of soil within the DCI Lease Area, the Port will identify proper soil management procedures prior to initiating the work. These procedures apply to both the areas of contamination identified in Figure 5 and the remaining parts of the DCI Lease Area outside of these areas. Such on-site work should not begin until the Port has reviewed the proposed work and provides authorization to proceed. Proper material handling procedures based on the Port's review of the planned work will be established for soil disturbed in these areas, and as further described below.

5.1 SOIL EXCAVATION AND STOCKPILING MANAGEMENT PROCEDURES

As described in Section 2.3, arsenic, nickel and cPAH contamination has been identified in fill soil up to a depth of approximately 13 feet bgs within portions of the DCI Lease Area (see Figure 5). In general, soil and/or demolition debris (asphalt, concrete, etc.) generated from within the materials management area shown in Figure 7 should be segregated, stockpiled and managed as described in Section 5.3.

Best management practices (BMPs) will be used to minimize the potential for cross-contamination of soil during excavation, handling, stockpiling, loading and transporting activities. Segregation and stockpiling of excavated soil should be conducted as close as practicable to the excavation area in which the material was generated. Stockpiles should be placed on and covered by durable plastic sheeting and bermed to control runoff, or in roll-off or other covered and labeled containers. Access to the temporarily stockpiled/secured soil should be restricted by a properly labeled fence or other barrier pending recuse as backfill or offsite disposal. Additionally, BMPs will be used to prevent erosion and the transport of soil to the DCI stormwater collection and treatment system or to the Marine Area.

Personnel working in areas of known or suspected contaminated soil or groundwater should comply with provisions of WAC 173-340-810 (Model Toxics Cleanup Act [MTCA] Cleanup Regulation, Worker Safety and Health). WAC 173-340-810 states that requirements under the Occupational Safety and Health Administration (OSHA) and the Washington Industrial Safety and Health Act (WISHA) are applicable to the type of remedial activities that will be conducted at the Property (excavation and handling of contaminated soil). Personnel working in areas of known or suspected contaminated soil or groundwater should also be in compliance with Hazardous Waste Operations and Emergency Response (HAZWOPER) Training in accordance with WAC 296-62. A health and safety plan should be maintained by the contractor and include precautionary health and safety measures to address potential exposure to contaminants present.

5.2 DEWATERING AND WASTEWATER MANAGEMENT

Contingency measures should be established to address wastewater that accumulates in an excavation or comes into contact with potentially contaminated soil during future development, maintenance, utility work or other soil disturbance activity. Based on existing subsurface information, groundwater may be encountered at depths as shallow as 4 feet bgs.

If dewatering becomes necessary, the wastewater should be collected and characterized as discussed in Section 5.3 to determine what treatment is required (if any) and to meet the off-Site discharge and disposal requirements of the receiving facility. BMPs will be employed to prevent leaks, spills, or releases of the recovered stormwater and/or excavation wastewater.

5.3 WASTE STREAM CHARACTERIZATION

5.3.1 Soil Characterization

Excavated soil that is geotechnically suitable for reuse may be used as backfill from the area in which it was generated to the extent practicable and does not require testing. Excavated soil that is not reused as backfill should be disposed at an approved landfill and characterized to meet the specific disposal criteria of the selected facility. The procedures for stockpile characterization and dangerous waste evaluation are described in the following sections.

5.3.1.1 STOCKPILE CHARACTERIZATION SAMPLING

Where stockpile characterization sampling is necessary, stockpile sampling should be completed at a frequency consistent with Table 6.9 of Ecology's Guidance for Remediation of Petroleum Contaminated Sites (Ecology 2016), as follows:

CUBIC YARDS OF SOIL	MINIMUM NUMBER OF SAMPLES
0-100	3
101-500	5
501-1000	7
1001-2000	10
>2000	10 + 1 for each additional 500 cubic yards

Discrete grab samples should be collected from various zones and depth horizons within the stockpiles as the stockpiles are being constructed to obtain spatially representative samples of the stockpiled material. The stockpile samples should be collected from locations that are generally representative of the soils, and where physical evidence of contamination (sheen, odor, staining, etc.) may be present. If physical evidence of contamination is not observed, the stockpile should be divided into relatively equal sections and each section sampled depending on the volume of material generated.

Stockpile soil samples should be submitted to an Ecology-certified laboratory for chemical analysis of Site contaminants including arsenic, nickel and cPAHs or as otherwise requested by the receiving facility to support to support waste disposal acceptance. Copies of the analytical data should be submitted to the receiving facility with written approval for material acceptance.

5.3.1.2 DANGEROUS WASTE EVALUATION

Dangerous waste regulations require that contaminants be evaluated for the toxicity "characteristic" if they are included on the toxicity characteristic list (WAC 173-303-090[8]). A contaminant has the potential to designate as a dangerous waste if its concentration in soil is greater than 20 times[1] the associated toxicity characteristic threshold listed in WAC 173-303-090(8). In this case, representative samples of the soil would also be tested using the toxicity characteristic leaching procedure (TCLP). The results from the TCLP test should then be compared directly to the toxicity characteristic threshold to determine whether the material is designated as a dangerous waste.

Excavated soil with concentrations that are greater than the MTCA cleanup levels will fall into one of two categories: 1) non-hazardous waste suitable for disposal at a Subtitle D facility; or 2) Washington-defined dangerous/hazardous waste requiring either disposal at a Subtitle C facility, or treatment followed by disposal at a Subtitle D facility. Before the stockpiled soil is transported off-property for disposal, chemical characterization data for this soil should be reviewed to evaluate potential dangerous or non-dangerous waste status, and follow-up TCLP analyses completed if the detected metals concentration exceeds the "trigger value" to confirm waste designation as appropriate. TCLP results equal to or greater than their associated toxicity characteristic threshold designates as a dangerous waste requiring special handling, transport and disposal in accordance with state (WAC 173-303) and federal (40 CFR 261) regulations.

[1] This is referred to as the "20-times rule" and is described in a September 21, 1992, United States Environmental Protection Agency (EPA) letter titled "Calculation of TCLP Concentrations from Total Concentrations". This reference is available at: http://yosemite.epa.gov/osw/rcra.nsf/ea6e50dc621472528525 6bf00063269d/95e9e57b91ea2e9f8525670f006c0acd!OpenDocument

5.3.2 Wastewater Characterization

Depending on the location and amount of water requiring disposal, logistical or construction schedule considerations, it may be necessary to temporarily store wastewater generated in one or more storage tanks for chemical analytical testing prior to off-Site disposal. Wastewater generated should be sampled for chemical analysis at an Ecology-certified laboratory for Site contaminants including arsenic, nickel and cPAHs or as otherwise requested by the receiving facility.

If the water does not meet discharge/disposal criteria of the receiving facility, the wastewater will be treated and re-sampled to ensure compliance with the receiving facility acceptance criteria. A waste disposal authorization will be obtained prior to off-Site discharge or disposal of the wastewater generated from the Site.

6.0 Limitations

This report has been prepared for the exclusive use of the Port of Anacortes and the Washington State Department of Ecology. No other party may rely on the product of our services unless we agree in advance and in writing to such reliance. Any use of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and written authorization by GeoEngineers, Inc., shall be at the user's sole risk. Any unauthorized use of (or reliance on) this report shall release GeoEngineers from any liability resulting from such use (or reliance). Within the limitations of scope, schedule, and budget, GeoEngineers, Inc.'s respective services have been provided in a manner consistent with that level of care and skill exercised by members of the profession currently practicing in the same locality under similar conditions as this project. No warranty or other conditions, expressed or implied, should be understood. GeoEngineers, Inc. assumes no responsibility for any consequence arising from any information or condition that was concealed, withheld, misrepresented, or otherwise not fully disclosed or available.

Any electronic form, facsimile, or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

7.0 References

GeoEngineers Inc. (GeoEngineers) 2008. Final Work Plan, Remedial Investigation/Feasibility Study and Interim Action Work Plan – Dakota Creek Industries. Prepared for the Washington State Department of Ecology on behalf of Port of Anacortes. April 1.

GeoEngineers Inc. (GeoEngineers) 2022a. Remedial Investigation/Feasibility Study Report, Dakota Creek Industries, Anacortes, Washington, Ecology Agreed Order No. DE-07TCPHQ-5080. Prepared for the Washington State Department of Ecology on Behalf of Port of Anacortes. October 27.

GeoEngineers Inc. (GeoEngineers) 2022b. Compliance Monitoring and Quality Assurance Project Plan (CMP/QAPP), Dakota Creek Industries, Anacortes, Washington. Prepared for Washington State Department of Ecology on Behalf of Port of Anacortes. November 1.

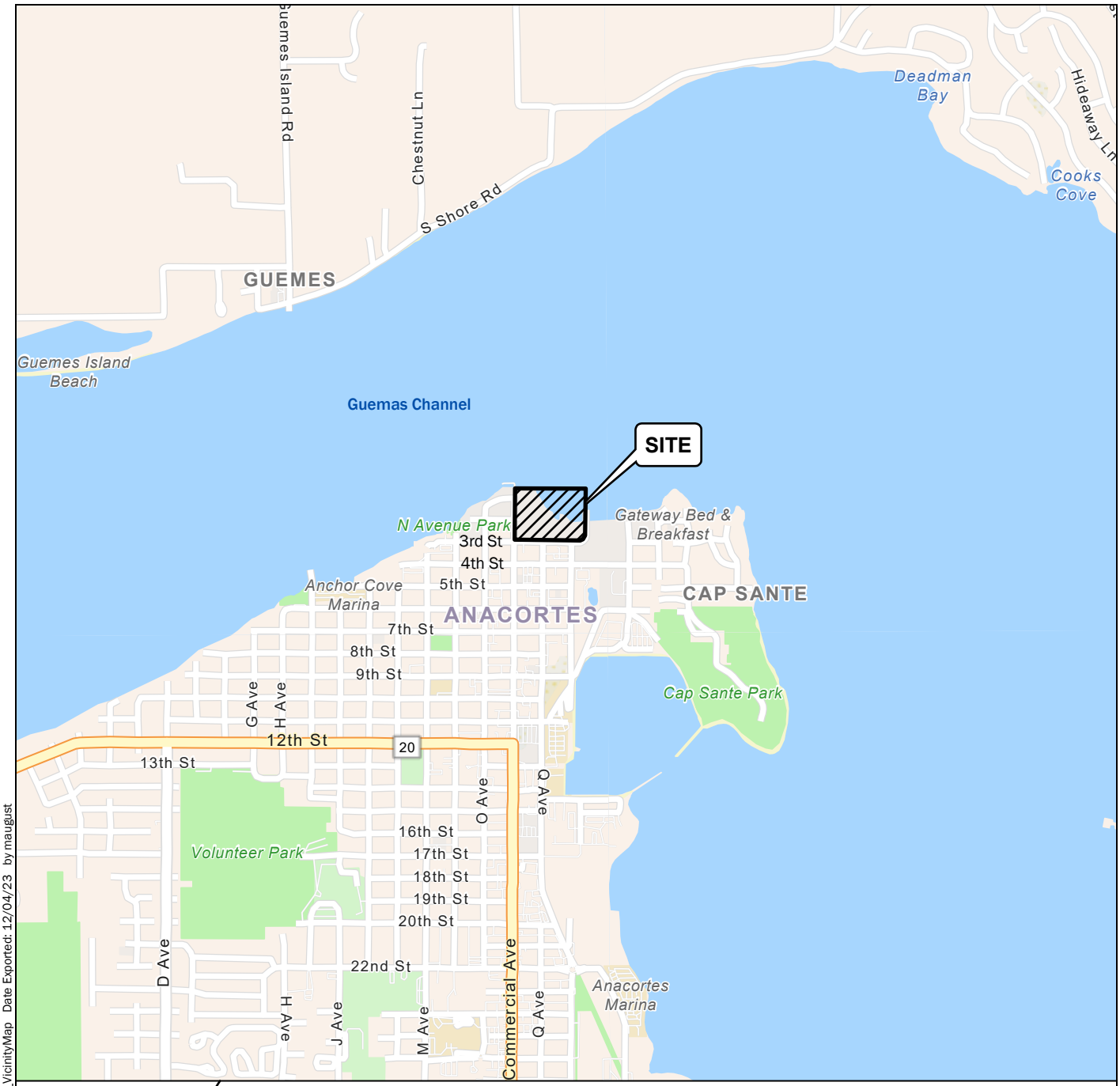
GeoEngineers Inc. (GeoEngineers) 2023. Construction Completion Report, Dakota Creek Industries, Anacortes, Washington. Prepared for Washington State Department of Ecology on Behalf of Port of Anacortes. December 7.

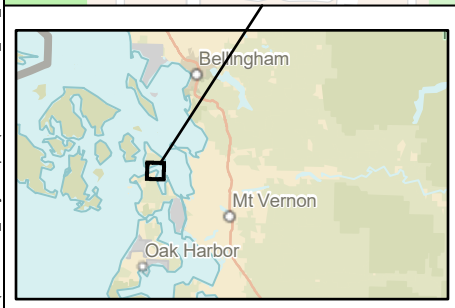
Washington State Department of Ecology (Ecology) 2016. Guidance for Remediation of Petroleum Contaminated Sites. Toxics Cleanup Program. Publication No. 10-09-057. Revised June.

Washington State Department of Ecology (Ecology) 2022. Cleanup Action Plan, Dakota Creek Industries, Anacortes, Washington, Facility Site ID: 2670, Cleanup Site ID: 5147. July.

Washington State Department of Ecology (Ecology) 2023. Email Correspondence to GeoEngineers from Ecology confirming the use of shoreline monitoring wells MW-2B, MW-3A, MW-6 and MW-8 for post-construction groundwater compliance monitoring. October 2.

Figures





N
W E
S

2,000 0 2,000

Feet

Vicinity Map

Port of Anacortes - Dakota Creek Industries
Anacortes, Washington

GeoEngineers

Figure 1

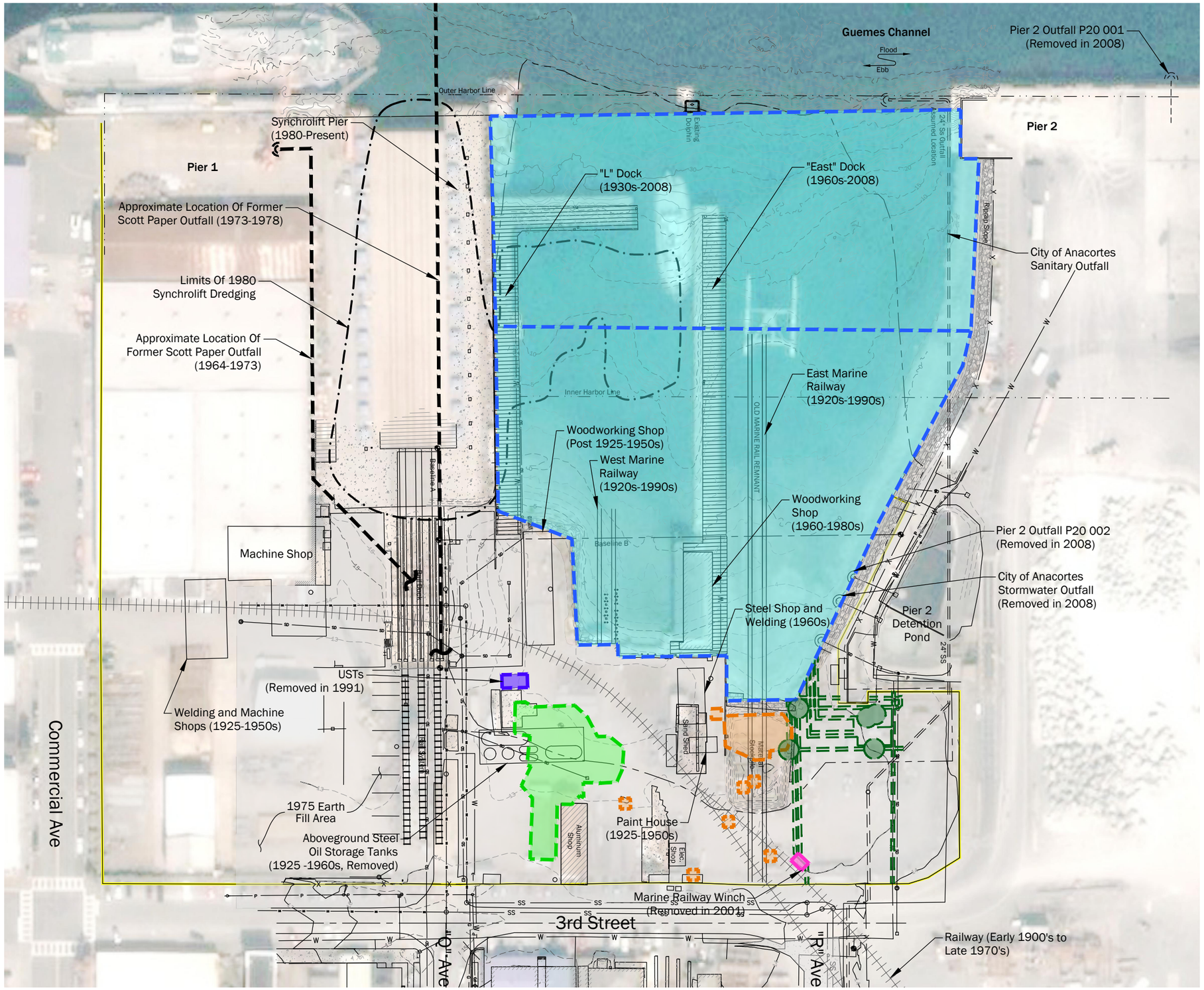
Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ESRI

Projection: NAD 1983 UTM Zone 10N

P:\5\5147006\GIS\5147006_Project\5147006_Project.aprx\5147006_F01_VicinityMap Date Exported: 12/04/23 by maugust



Legend

- Dakota Creek Industries (DCI) Lease Area
- Fence
- Sanitary Sewer
- Stormwater Drain
- Water
- Outfall
- Catch Basin
- Sewer Manhole
- Storm Manhole
- Gravel Working Surface
- Concrete
- Rip Rap
- Approximate Synchrolift Dredge Limits
- Elevation Contour (Mean Lower Low Water [MLLW])
- Approximate Footprint of Historical Structures - Labels Indicate Function and Time Period in Existence.
- Independent Cleanup Action Area (see Figure 2)
- UST Remedial Action Area (A-1 1991)
- Hydraulic Winch Remedial Action Area (Landau 2001)
- Petroleum Remedial Action Area (Landau 2002)
- Marine Railway Remedial Action Area (Landau 2002)
- Marine Area Dredge and Interim Action (GeoEngineers 2008)
- Upland Area Interim Action (GeoEngineers 2008)

Source(s):

- Aerial from Google Earth Pro, dated 9/6/2006
- Background from PND Engineers, Inc, dated 9/2007

Projection: WA State Plane, North Zone, NAD83, US Foot, North American Datum 1983 (NAD83), US Feet

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

0 N 100
Feet

Historical Property Layout and Features

Dakota Creek Industries
Anacortes, Washington

GeoEngineers

Figure 2

P:\5\5147006\CAD\17\Control Monitoring and Maintenance Plan\5147006617_F02_Historical Property Layout.dwg TAB:2 Date Exported: 03/14/24 - 11:17 by JFellows

Dry Dock
Outer Harbor Line
Guemes Channel
Flood
Ebb
Central Pier
Pier 1
Pier 2
Warehouse 4
Warehouse 10
Warehouse 9
Syncrolift Pier
Inner Harbor Line
Bulkhead
Open Cell Bulkhead
Pier 2 Wastewater Storage and Treatment System
Syncrolift Rail
Guard Station
Gate
Pier 2 Detention Pond
Paint Shed
Stormwater Treatment System
Shop
Sand Shed
Shed
Guard Station
Gate
Commercial Ave
3rd Street
"Q" Ave
"R" Ave
DCI Wastewater Treatment System

Legend

- Dakota Creek Industries (DCI) Lease Area
- Fence
- Interim Action Backfill Area
- Compressed Air
- Comm Line
- Electrical
- Fireline 4
- Fireline 6
- Sanitary Sewer
- Stormwater Drain
- Water
- Cold Water
- Power
- Outfall
- Gravel Working Surface
- Concrete/Asphalt Pavement
- Rip Rap
- Upland Area Cleanup Action (GeoEngineers, 2023)
- Soil/Gravel Working Surface over Concrete Pavement
- Footprint of Current Structure (Approximate)
- Topographic Contour (Mean Lower Low Water [MLLW])
- Bathymetric Contour (Mean Lower Low Water [MLLW])
- Mean Higher High Water (MHHW)

Source(s):
- Aerial from Microsoft Bing, Circa 2023

Projection: WA State Plane, North Zone, NAD83, US Foot, North American Datum 1983 (NAD83), US Feet

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

N

0 100
Feet

Current Property Layout and Features

Dakota Creek Industries
Anacortes, Washington

GeoEngineers

Figure 3

P:\5\5147006\CAD\17\Control Monitoring and Maintenance Plan\5147006617_F03_Current Property Layout.dwg TAB:3 Date Exported: 04/23/24 - 14:48 by JFellows

Dry Dock
Guemes Channel
Flood
Ebb
Central Pier
Pier 2
Pier 1
Warehouse 4
Syncrolift Pier
P32866
Marine Area
Warehouse 10
P32898
Open Cell Bulkhead
P55032
P32866
Bulkhead
Warehouse 9
P55031
P55034
P32867
P32904
P32900
Gate
P32903
Pier 2 Detention Pond
P55035
Commercial Ave
Upland Area
P32867
P55030
P54924
P32906
P32907
P32905
P32903
P32900
P55040
P56539
Gate
Gate
3rd Street
P56531
P56533
"Q" Ave
"R" Ave
P56537
P55023
P55022
P55021
P55020
P54929

Legend

Dakota Creek Industries (DCI) Lease Area

P32904 Skagit County Parcel Boundary and Number

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial from Microsoft Bing, Circa 2023.

Projection: WA State Plane, North Zone, NAD83, US Foot

N

0 60

Feet

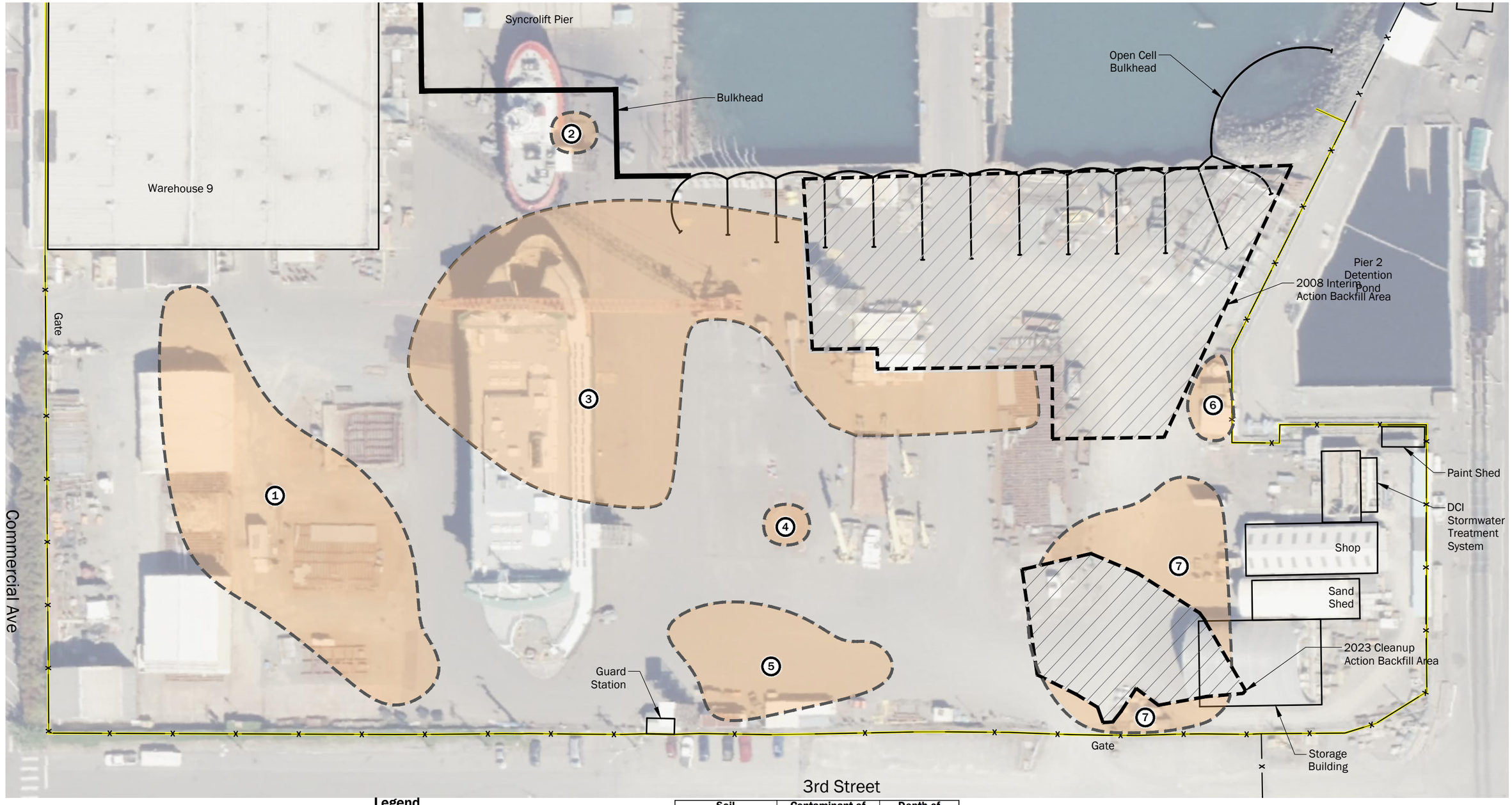
Parcel Map

Dakota Creek Industries
Anacortes, Washington

GeoEngineers

Figure 4

P:\5\5147006\CAD\17\Control Monitoring and Maintenance Plan\5147006l7_F04_Parcel Map.dwg TAB:4 Date Exported: 04/24/24 - 10:25 by JFellows



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial from Microsoft Bing Images, Circa 2023.

Projection: WA State Plane, North Zone, NAD83, US Foot, North American Datum 1983 (NAD83), US Feet

Legend

- Dakota Creek Industries (DCI) Property Boundary
- Area of Soil Contamination Based on Previous Site Investigation
- Import Soil Backfill Area

cPAH - Carcinogenic Polycyclic Aromatic Hydrocarbon
TEQ - Toxic Equivalent Quotient
bgs - Below Ground Surface

Soil Contamination Area	Contaminant of Concern (COC)	Depth of Contamination (feet bgs)
1	Arsenic and Nickel	0 - 10
2	Arsenic	0 - 2
3	Arsenic and Nickel	0 - 10
4	Total cPAHs TEQ	5 - 13
5	Arsenic and Nickel	0 - 8
6	Nickel	0 - 8
7	Arsenic and Nickel	0 - 8

N

0 60
Feet

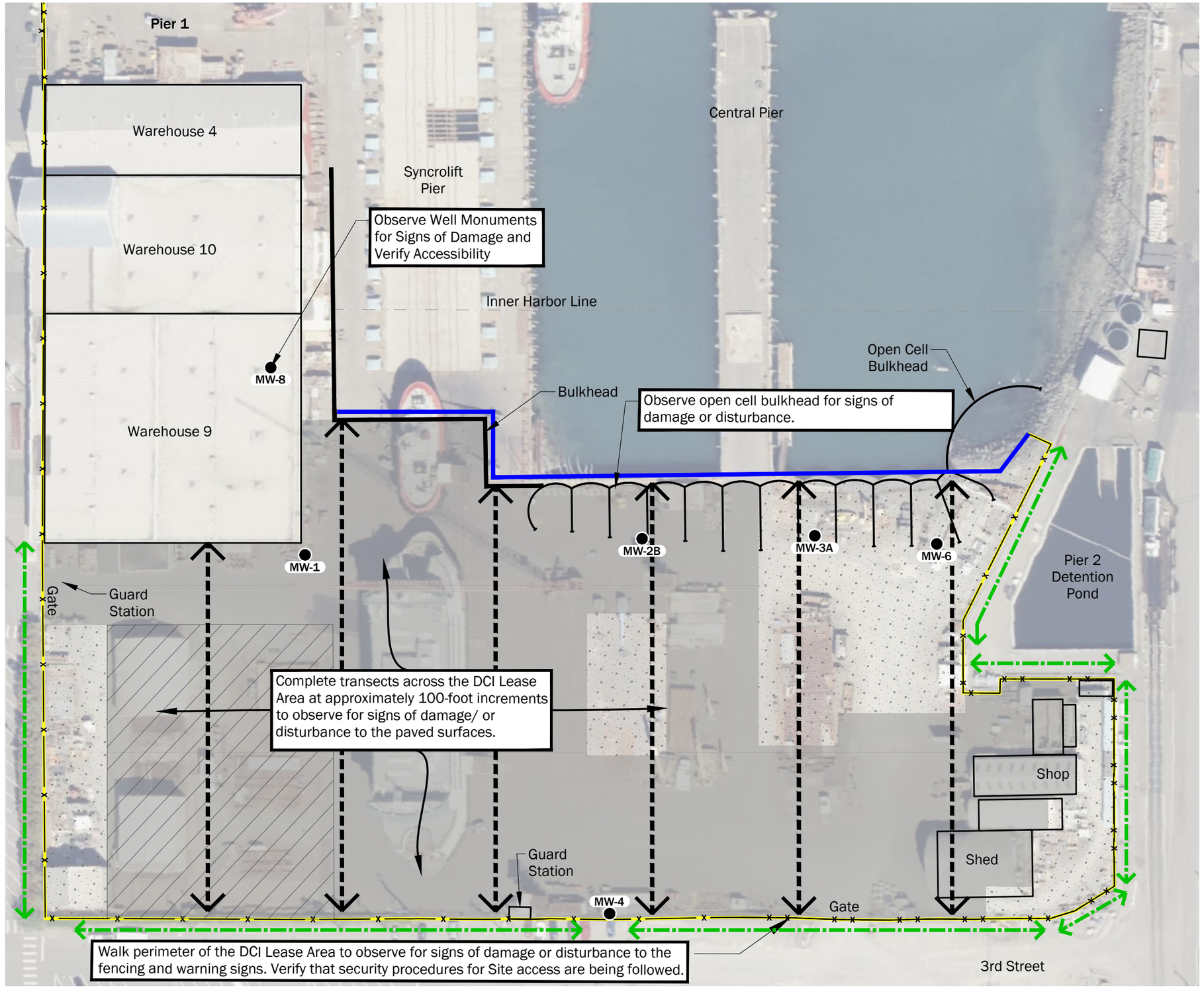
Soil Contamination Summary

Dakota Creek Industries
Anacortes, Washington

GeoEngineers

Figure 5

P:\5\5147006\CAD\17\Control Monitoring and Maintenance Plan\5147006617_F05_Soil Contamination Summary.dwg TAB:5 Date Exported: 05/02/24 - 9:18 by JFellows



Legend

- Dakota Creek Industries (DCI) Lease Area
- Monitoring Well (Active)

Engineering Controls

- Bulkhead
- Asphalt/Concrete Pavement
- Gravel Pavement/Working Surface
- Gravel Working Surface Over Concrete Pavement

Institutional Controls

- DCI Lease Area Fencing With Warning Signs

Monitoring Plan

- Perimeter Inspection of DCI Lease Area Fence and Warning Signs
- Proposed DCI Lease Area Surface Inspection Transect - Actual Transect Locations may be Altered
- Open Cell Bulkhead Inspection

Source(s):

- Aerial from Microsoft Bing, Circa 2023

Projection: WA State Plane, North Zone, NAD83, US Foot, North American Datum 1983 (NAD83), US Feet

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

N

0 80

Feet

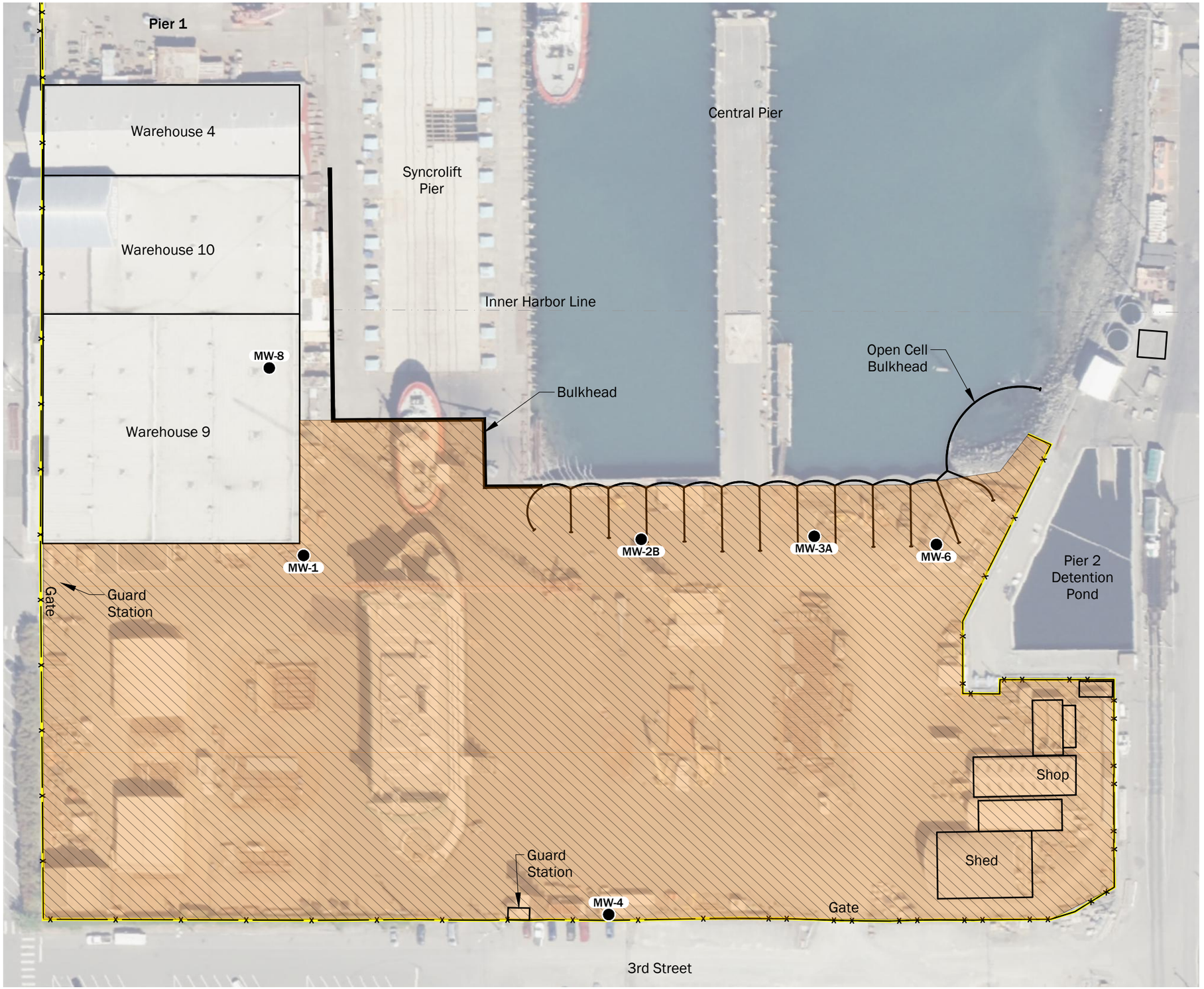
Site Controls and Monitoring Plan

Dakota Creek Industries
Anacortes, Washington

GeoEngineers

Figure 6

P:\5\5147006\CAD\17\Control Monitoring and Maintenance Plan\5147006617_F06_Site Controls and Monitoring Plan.dwg TAB:6 Date Exported: 05/02/24 - 9:14 by JFellows



Legend

- Dakota Creek Industries (DCI) Lease Area
- Bulkhead
- DCI Lease Area Fencing With Warning Signs
- Monitoring Well (Active)
- Material Management Area

Source(s):

- Aerial from Microsoft Bing, 2023

Projection: WA State Plane, North Zone, NAD83, US Foot, North American Datum 1983 (NAD83), US Feet

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

N

0 80

Feet

Materials Management Area

Dakota Creek Industries
Anacortes, Washington

GeoEngineers

Figure 7

P:\5\5147006\CAD\17\Control Monitoring and Maintenance Plan\5147006617_F07_Excavated Materials Management Area.dwg TAB:7 Date Exported: 05/02/24 - 9:17 by JFellows

Appendix A

Engineering and Institutional Controls Monitoring Form

Engineering and Institutional Controls Monitoring Form

Site Name:	Date:
Monitoring Event Completed By (Name, Title, Organization):	Signature:

Instructions:

- All checklist items must be completed and detailed comments made to document the results of the site controls evaluation.
- The completed checklist is part of the field record of the evaluation. Additional pages should be used (as necessary) to ensure a complete record is made. Number, date, initial and attach additional pages to this checklist upon completion.
- Any checklist line item marked in a SHADED BOX must be fully explained or an appropriate reference to previous reports provided. The explanation should include the rationale for conclusions and recommendations, if appropriate. Annotated the attached Site Plan as appropriate to provide additional detail.
- An evaluation of the site controls should consist of a complete site walk to fully evaluate the condition of site controls and features specifically described in this checklist.

Preparation (to be completed prior to site visit)	**YES**	**NO**	**EXPLANATION**
1. Site as-built plans and/or base maps reviewed?			
2. Previous monitoring report reviewed?			
a. Were anomalies or site changes identified on the previous report?			
b. Was maintenance performed on areas with identified anomalies?			
3. Site Maintenance and repair records reviewed?			
a. Has site repair resulted in a change from as-build conditions?			
b. Are revised as-built drawings available that reflect repair changes?			
4. Changes in adjacent property conditions?			
a. Any change in adjacent property tenants?			
b. Any change in property use/features?			
c. Any utility and/or maintenance work completed?			
d. Any erosion of adjacent property surfaces?			
e. Changes in surrounding vegetation?			
5. Changes in property conditions?			
a. Any change in adjacent property ownership?			
b. Any change in property tenant(s)?			
c. Any change in property use/features?			
d. Any utility, repair and/or maintenance work completed?			
Evaluation of Site Controls (to be completed during site visit)	**YES**	**NO**	**EXPLANATION**
1. Integrity of the **paved surfaces** (asphalt/concrete) threatened?			
a. Evidence of disturbance, excavation, grading?			
b. Evidence of cracking?			
c. Evidence of deformation/subsidence?			
d. Evidence of ponded water?			
e. Evidence of invasive plant species (weeds)?			

Initials:_____

Evaluation of Site Controls (continued)	**YES**	**NO**	**EXPLANATION**
2. Integrity of the **gravel working surfaces** threatened?			
a. Evidence of excavation or grading?			
b. Evidence of rutting?			
c. Evidence of erosion/subsidence?			
d. Evidence of ponded water?			
e. Evidence of invasive plant species (weeds)?			
3. Integrity of **sheet pile bulkhead** threatened?			
a. Evidence of disturbance or damage?			
b. Evidence of corrosion?			
4. Integrity of DCI Lease Area **perimeter fencing/warning signs**?			
a. Evidence of disturbance or damage?			
b. Evidence of missing or fallen warning signs?			
5. Integrity of compliance **monitoring wells**?			
a. Evidence of disturbance or damage?			
b. Well covered, buried or inaccessible?			
6. Evidence of anomalies or non-routine activities that may compromise the integrity of the Site Controls?			

Conclusions and Recommendations	**YES**	**NO**	**EXPLANATION**
1. Is there visual evidence of an imminent threat to one or more Site control?			
2. Are follow-up site evaluations required?			
3. Are existing maintenance/corrective actions satisfactory?			
4. Are other maintenance/corrective actions necessary?			

5. Corrective/Maintenance Action(s) Required:

6. Corrective/Maintenance Action(s) Implemented:

7. Additional Comments:

Initials:_____

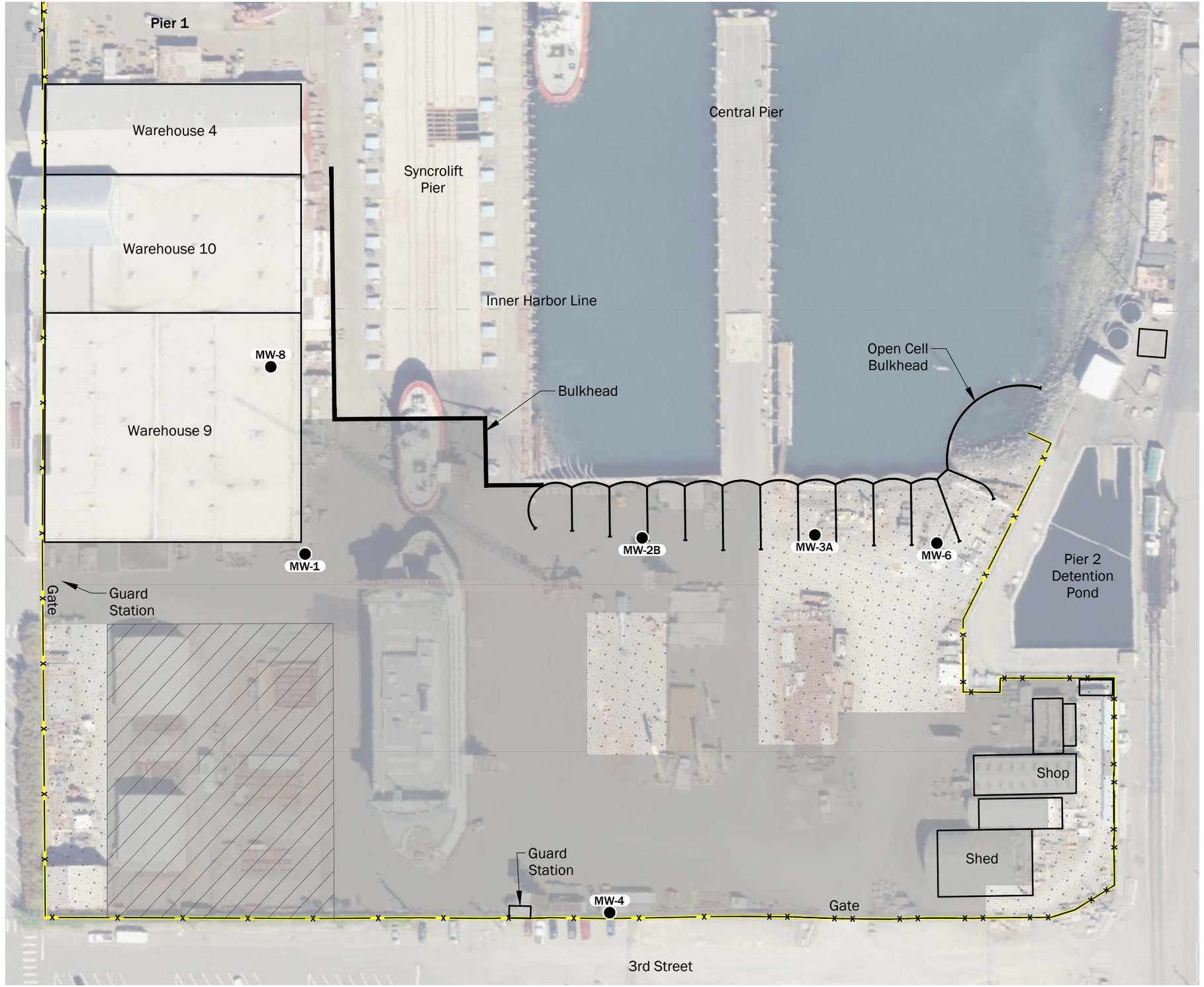
Photograph Log

General Instructions

- Photograph areas of interest in which anomalous conditions such as damage or changes to an existing site control are observed.
  - Record photograph number and a description of the observed condition.
  - Annotate the attached Site Plan with the approximate location of the observed anomalous condition that could potentially compromise the integrity of a Site control and corresponding photograph number.
  - Attach photographs documenting the anomalous Site condition.

Photograph No.	Photograph	Description

Initials:_____



Legend

- Dakota Creek Industries (DCI) Lease Area
- Monitoring Well (Active)

Engineering Controls

- Bulkhead
- Asphalt/Concrete Pavement
- Gravel Pavement/Working Surface
- Gravel Working Surface Over Concrete Pavement

Institutional Controls

- DCI Lease Area Fencing With Warning Signs

Source(s):

- Aerial from Microsoft Bing, 2023

Projection: WA State Plane, North Zone, NAD83, US Foot, North American Datum 1983 (NAD83), US Feet

Disclaimer: This figure was created for a specific purpose and project. Any use of this figure for any other project or purpose shall be at the user's sole risk and without liability to GeoEngineers. The locations of features shown may be approximate. GeoEngineers makes no warranty or representation as to the accuracy, completeness, or suitability of the figure, or data contained therein. The file containing this figure is a copy of a master document, the original of which is retained by GeoEngineers and is the official document of record.

N

0 80

Feet

Site Plan

Dakota Creek Industries
Anacortes, Washington

GeoEngineers

Figure A-1

P:\5\5147006\CAD\17\Updated Monitoring and Maintenance Plan\5147006617_FA-1_Site Controls and Monitoring Plan.dwg TAB:9 Date Exported: 03/14/24 - 9:49 by JFellows