via electronic delivery only

December 26, 2023

Mark Pugh, Project Manager
Oregon Department of Environmental Quality
700 NE Multnomah St, Suite #600
Portland, OR 97232

Re: Response to DEQ Comments on the Contaminated Media Management Plan
Astoria Marine Construction Company
92134 Front Road, Astoria, Oregon
ECSI No. 1898

Dear Mr. Pugh:

On behalf of the Astoria Marine Construction Company (AMCCO), GSI Water Solutions, Inc. (GSI) reviewed the Oregon Department of Environmental Quality (DEQ) comments sent to AMCCO via email on October 2, 2023, regarding the *Contaminated Media Management Plan (CMMP),* dated February 2020. After review of DEQ's comments, the CMMP was revised and is attached. Responses to DEQ's comments are provided below.

DEQ Comment 1
5. Soil Classification
Use of the term "clean" soil is problematic as it can be easily confused with clean fill standards under DEQ statute, which implies it has met clean fill screening criteria. We understand use of this term simplifies the CMMP for contractor use, but would prefer an alternative term be used. The draft CMMP is proposed to only be applicable in the cap area. DEQ has concerns regarding soil quality beneath the existing structures. Can the CMMP be expanded to include the footprint of the current buildings in addition to existing cap?

GSI Response
We recognize that the use of the term "clean" soil can be confusing, so it was replaced with the term "managed" soil (see Section 6 of the CMMP). Additionally, the cap was further defined in Section 4 of the CMMP to include the engineered soil cap as well as other protective covers at the site. The definition of the cap that was added to the CMMP is consistent with the definition used in the *Upland Inspection and Maintenance Plan (IMP)* dated November 2023.

For existing structures, a review of historical files indicates the majority of these buildings were built on pasture land when AMCCO expanded its operations northward in 1941 (see Figure 7-7 from the 2015 Remedial Investigation [RI] Report for a 1939 aerial photograph). The building in the northeast corner was added later, but to an area previously used as a parking lot. Contaminant impacts from AMCCO operations would not be expected. Additionally, the RI assessed buildings identified as areas of potential concern, and soil quality beneath buildings was not identified as a concern. Thus,

the CMMP addresses only those areas that were determined to be subject to remedial actions and subsequently capped.

DEQ Comment 2
5.1 Clean Soil
This section indicates "clean" soil can be used "site-wide". Since site parcels extend into a waterway this statement should be qualified. E.g, "clean" soil can be re-used in the upland. It would be helpful to define upland based on location (behind dike, and/or above appropriate datum. Please also revise Section 6.5 accordingly.

GSI Response
The extents of the upland cap were added to Figure 3 for clarity. We have assumed that "Section 6.5" in DEQ's comments is a reference to Section 6.1, and the text in that Section was revised accordingly.

DEQ Comment 3
5.2 Contaminated Soil
DEQ generally does not make a waste determination unless it generates the waste. DEQ may have concurred with this determination. Please clarify and/or add context here and in Appendix A.

GSI Response
Section 6.2 (previously Section 5.2) was revised to omit that DEQ previously made a waste determination.

DEQ Comment 4
References
Please update the IMP date when it is final.

GSI Response
The IMP reference date was updated accordingly.

If you have any questions, please feel free to contact me by phone at 503.349.2248 or by email at crhea@gsiws.com.

Sincerely,

Chris Rhea, RG
Supervising Hydrogeologist

Enclosure: 1. *Revised Final Contaminated Media Management Plan*

CONTAMINATED MEDIA MANAGEMENT PLAN

Astoria Marine Construction Company
92134 Front Road
Astoria, Oregon

ECSI No. 1898

Prepared for:
Astoria Marine Construction Company
Astoria, Oregon

December 2023

Prepared by:

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Acronyms and Abbreviations

AMCCO	Astoria Marine Construction Company
AOC	Area of Contamination (EPA)
bgs	below the ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	chemical of concern
CFR	Code of Federal Regulations
CMMP	Contaminated Media Management Plan
DEQ	Oregon Department of Environmental Quality
Diking District	Clatsop County Diking District No. 5
dioxin TEQ	dioxin toxicity equivalent concentration
ECSI	Environmental Cleanup Site Information
EES	Easement and Equitable Servitudes
EMNR	enhanced monitored natural recovery
EPA	U.S. Environmental Protection Agency
EZ	exclusion zone
GSI	GSI Water Solutions, Inc.
HSP	Health and Safety Plan
IMP	Upland Inspection and Maintenance Plan
MFA	Maul, Foster, Alongi, Inc.
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statute
PCB	polychlorinated biphenyl
PRG	preliminary remediation goal
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
ROD	Record of Decision
TCLP	toxicity characteristic leaching procedure
TPH	total petroleum hydrocarbons

1. INTRODUCTION

This *Contaminated Media Management Plan* (CMMP) provides information needed for the proper management and disposal of contaminated media that may be encountered on the former Astoria Marine Construction Company (AMCCO) property (hereafter referred to as the Site) located at 92134 Front Road, Astoria, Oregon. The objectives of the CMMP are to:

- Describe conditions that may impact future work on the Site.
- Discuss safety issues related to residual Site contamination beneath the engineered cap.
- Provide procedures for management and disposal of contaminated soil that may be encountered during construction or excavation activities.
- Provide procedures to prevent spreading or exacerbating existing environmental conditions.
- Identify record keeping and reporting requirements.

This CMMP may be kept on Site and is also available at the Oregon Department of Environmental Quality's (DEQ's) office located at 700 NE Multnomah Street, Suite 600, Portland, Oregon, as part of Environmental Cleanup Site Information (ECSI) database file No. 1898, or online in the Site documents associated with ECSI file No. 1898.

2. SITE DESCRIPTION AND REMEDIATION ACTIVITIES

The Site is located on approximately 7 acres at 92134 Front Road just outside the eastern boundary of the City of Warrenton and 3 miles southwest of the City of Astoria, Oregon, on the east shore of the Lewis and Clark River at the confluence with Jeffers Slough (Figures 1 and 2). The Site is generally flat, and a flood-control dike (Dike) separates the upland from the adjacent tidal mudflats of the Lewis and Clark River. The approximate ground elevation of the Site is 5 to 8 feet above mean sea level. Earthen levees were constructed in the 1930s along the Lewis and Clark River and Jeffers Slough. The on-site Dike is operated and repaired by Clatsop County Diking District No. 5 (Diking District) and protects the Site against the high-water stages of the Lewis and Clark River and extreme tidal fluctuations. A drainage ditch is located along the landward toe of the Dike which drains to the river through an on-site tide gate.

AMCCO performed a remedial investigation (RI; GSI/MFA, 2015) and feasibility study (GSI/MFA, 2016) that document the presence of hazardous substances in Site soil, groundwater, and sediments. In February 2017, DEQ selected an action for the Site and the adjacent in-water area. The selected remedial action is documented in the DEQ Record of Decision (ROD; DEQ, 2017). The following are elements of the selected remedial action:

1) Excavation and off-site disposal of "hot-spot" soil and sediment
2) On-site treatment of selected soils exhibiting U.S. Environmental Protection Agency (EPA) hazardous waste leaching characteristic before offsite disposal of "hot-spot" soil
3) Removal and disposal of contaminated offsite ditch sediments
4) Engineering controls involving the installation of an upland cap with a geotextile demarcation barrier at the base of the fill (Figure 3)
5) Placement of a near shore thin sand layer in the Lewis and Clark River for enhanced monitored natural recovery (EMNR)
6) Periodic monitoring of the sediment conditions within the EMNR area
7) Upland institutional controls via an Easement and Equitable Servitude (EES).

3. RESIDUAL CONTAMINATION

The remedial actions described in Section 2 included removal and offsite disposal of soils and ditch sediments classified as "hot-spots" by DEQ because of contaminant concentration and toxicity. Areas with lower levels of contaminants in soils remain onsite (residual contamination) and are contained beneath a cap which covers much of the Site (see Figure 3). This upland cap consists of various Site features and serves as a physical barrier to prevent human or ecological exposure to residual contaminated soil beneath the cap. The features of the upland cap include vegetated soil, gravel, pavement, and concrete pads to prevent exposure to soil. The upland cap also serves as a source control measure to prevent erosion and tracking of Site-related soil contaminants and subsequent transport to the Lewis and Clark River, Jeffers Slough, and off-site stormwater drainage ditches. The on-site stormwater system consists of ditches, berms, a stormwater storage pond, and limited piping.

Human health chemicals of concern (COCs), present in residual soil at the Site beneath the upland cap, for a current occupational worker or a future construction/excavation worker include:

- Metals (arsenic and copper)
- Petroleum hydrocarbons
- Dioxins (dioxin toxicity equivalent concentration [dioxin TEQ])
- Polychlorinated biphenyls (PCBs)
- Benzo(a)pyrene

For ecological receptors, metals (copper, lead, nickel, and zinc) were identified as ecological COCs for plant populations. Copper also was a COC for invertebrate and mammal populations.

Note that under the remedial action, contaminated soil was removed from the Dike, but copper-impacted soil remains within and below the Dike in the area shown in Figure 3. As discussed in Section 2, repair of the Dike is the responsibility of Diking District, in accordance with the requirements of the Dike easements, and therefore is exempt from the requirements of the *Upland Inspection and Maintenance Plan* (GSI/MFA, 2023) and this CMMP.

4. Description of Upland Cap

The upland cap prevents potential exposure to upland workers (occupational) and ecological receptors, and prevents erosion and tracking of residual contaminated soil off-site. The upland cap is shown in Figure 3 and consists of the following elements:

- Hardscape. Existing asphalt pavement or concrete in designated traffic areas.
- Soil Cap. A soil cap consists of an approximately 1-foot-deep, clean gravel material or, alternatively, a 2-foot-thick layer of vegetated soil.[1] For the soil cap, clean soil [2] or gravel was placed over a geotextile fabric installed as a demarcation layer on top of the graded Site surface.

[1] DEQ approved a 1-foot-thick layer of vegetated soil along the north property line, for a 50-foot wide section, to accommodate the County-required landscape buffer.
[2] Imported soil was sampled and screened against DEQ risk-based concentrations and clean fill criteria. Minor exceedances were discussed with DEQ before placement (see Construction Completion Report; MFA, 2023).

- Soil and Dense Vegetative Cover on Dike. Copper-impacted soil is present in an approximate area of 3,000 square feet in front of and below a portion of the Dike. Two feet of soil were placed on the copper-impacted soil on the Dike and seeded with a lowland pasture mix. For the portion below the Dike, dense groundcover vegetation serves as an engineering control and is required to be maintained on the face of the Dike by the Diking District, under an agreement between the Diking District and U.S. Army Corps of Engineers. Any repairs to the Dike will be conducted by the Diking District as it is responsible for maintaining the engineering integrity of the Dike.

Disturbances of the upland cap do not require any special handling or health and safety requirements outside of standard construction health and safety protocols, so long as they do not cause disturbance of the contaminated soils below it.

5. WORKER NOTIFICATION AND SAFETY

As described in Section 4, soils beneath the upland cap may contain COCs at concentrations above those considered protective of human health. Therefore, personnel working at the Site who breach the cap shall be made aware of the potential risks associated with encountering impacted soil beneath it.

It is the responsibility of each party (e.g., Owner, Contractor, Consultant) to conduct its own hazard assessment to determine appropriate health and safety measures for its workers and to notify and update employees of potential hazards that may be encountered. This typically includes preparation of a site-specific Health and Safety Plan (HSP) in accordance with occupational health guidelines for chemical hazards (i.e., Occupational Safety and Health Administration and National Institute for Occupational Safety and Health). The HSP should identify personal protection equipment (gloves, steel-toes boots, hard hat, face shield, etc.) and/or engineering controls required to minimize exposure to contaminated soils.

Prior to any ground-disturbing activities, a subsurface utility locate should be performed to identify potential utilities in the proposed work areas. Contractors or parties performing work subject to this CMMP are responsible for complying with worker safety regulations.

6. SOIL CLASSIFICATION

Figure 3 illustrates the approximate areal extent of the upland cap at the Site as described in Section 4. Onsite activities that could breach the cap may encounter two classifications of soil present on the Site: (1) Managed Soil and (2) Contaminated Soil. These soil classifications are distinguished based on soil screening values presented in Table 1 which are the preliminary remediation goals from the ROD for the Site that are protective of human health and the environment (DEQ, 2017). Each soil classification is described below. Chemical analysis of the soil or reference to existing analytical results from prior environmental activities will be needed to evaluate which soil classification is being encountered. Further discussion of the appropriate management and disposal methods for each of these soils is presented in the remaining sections of this CMMP.

Table 1: Preliminary Remediation Goals from the Record of Decision

COC	Soil Screening Values (µg/Kg)
Arsenic	12,000
Copper	250,000
Lead	250,000
Nickel	160,000
Zinc	250,000
Total Petroleum Hydrocarbons (TPH)	4,600,000
Dioxin TEQ	0.015
Total PCBs	560
Benzo(a)pyrene	270

6.1 Managed Soil

For the purposes of this CMMP, "Managed Soil" is soil that does not have a concentration of a compound greater than those listed in Table 1. Managed Soil excavated on the Site does not require special handling procedures and can be reused at upland areas of the Site behind the Dike. Managed soil should not be removed from the Site for unrestricted use without approval from DEQ.

6.2 Contaminated Soil

For the purposes of this CMMP, "Contaminated Soil" is soil with contamination at concentrations greater than the soil screening values listed in Table 1. Contaminated Soil, present beneath the cap, should be managed in accordance with this CMMP in the event it is encountered during an excavation.

7. SOIL MANAGEMENT PROCEDURES

This section is intended to provide specific guidance to the Owner and its contractors regarding the management and disposal of soil on the property. This is specifically written for soil that remains below the upland cap. **This Section 7 applies only to the upland cap area shown on Figure 3. Any work contemplated on the Dike should be coordinated with the Diking District (see Section 11).**

7.1 Routine Surface Maintenance - No Excavation Below Cap

Routine surface maintenance or landscaping activities that do not include digging or excavation below the upland cap (i.e., below pavement, concrete, or the soil cap demarcation layer; see Section 4) are not subject to this CMMP. However, workers should be informed of the Site conditions and presence of the upland cap. In particular, Site workers should be provided a copy of this CMMP, and how to identify the orange geotextile demarcation layer[3] that separates the soil cap (noted on Figure 3) and underlying contaminated soil. If pavement, concrete, or the demarcation layer is accidentally breached, then work

[3] The demarcation layer is installed below the upland cap and signifies that contaminated soil is below it. It is a lightweight woven geotextile in orange with high porosity. Due to the orange color, the fabric is highly visible and can be readily observed during Site inspections or when performing Site work.

should immediately stop and conditions evaluated in accordance with the requirements for excavation activities described in Section 7.2.

7.2 Excavations Below Cap

Excavations that breach the upland cap will trigger management of the soil beneath. Soil encountered beneath the upland cap, and any soil that exhibits visual or olfactory evidence of contamination, within the Site boundary, should be treated as if it has contaminants and contractors are required to comply with the following procedures:

1) Before beginning excavation of any areas that may generate contaminated soil, the Owner/Contractor must establish an exclusion zone (EZ) around the proposed work area to limit potential exposure to and spread of contaminants in the work area.
2) Cap material should be segregated from underlying soil. Care should be taken to avoid mixing capping material with the underlying soil. If cap material is inadvertently mixed with underlying soil, the resultant mixture shall be appropriately managed as Managed Soil or Contaminated Soil.
3) Soil excavated from beneath the upland cap shall not be placed directly on the upland cap. The Contractor shall place excavated soil directly into haul trucks, or onto impervious sheeting or pavement.
4) Excavated soil will be segregated according to the soil classification described in Section 6 (i.e., Managed Soil or Contaminated Soil) so that soils of different classifications are not commingled.
5) Best efforts to maintain a condition of no visible airborne dust should be employed at all times during construction, maintenance, and landscaping activities in contaminated areas. The Contractor will use water, as necessary, to prevent the generation of visible dust during excavation activities. However, the Contractor must use care during on-site activities to avoid:
    a. Run-off of water from the Site, and
    b. Free liquids in soil from being transported off-site for disposal.
6) Maintain excavation equipment in good working order. The Contractor will immediately clean up any soil contaminated from releases of hydraulic oils or other hazardous materials from equipment.
7) On-site truck routes should be established to utilize existing Site roads to minimize or prevent routine movement of trucks over exposed Site soils (i.e., soil below the upland cap).
8) A quarry spall apron or wheel wash will be used as a measure to prevent tracking of exposed Site soil to other areas of the Site.
9) Sweeping of loose soil and removal of significant quantities of adhered soil shall be performed, when necessary, to decontaminate equipment prior to leaving the EZ (i.e., visible soil adhered to equipment must be removed and managed per the soil classification being excavated).
10) Decontamination procedures for personnel exiting the EZ must be described in the Site-specific HSP prepared for the Site by the Contractor.
11) Document the location of all areas where the cap is breached, the volume of Managed Soil and Contaminated Soil encountered and disturbed, and the soil management procedures that were implemented.

7.3 Erosion Control

Site contractors or personnel should take appropriate steps to prevent the erosion of soil in and from contaminated areas. Erosion control methods should be implemented to meet local or State requirements, and may include one or more of the following:

1) Install silt fence in pervious surfaces (soil or capped areas)
2) Install straw wattles on impervious surfaces (asphalt pavement or concrete slabs)
3) Schedule soil-disturbing activities to avoid rainy periods, to the extent practicable
4) Direct runoff away from Managed Soil and Contaminated Soil
5) Other methods that are necessary and appropriate.

7.4 Soil Stockpiles

Temporary stockpiling of soil is a common requirement of subsurface excavations. Unless soil is loaded directly into trucks for immediate off-site disposal, stockpiled soil will be handled in a manner that minimizes erosion, contact with stormwater runoff, dust generation, and worker or public contact. Stockpiles will be placed on an impervious surface (e.g., asphalt pavement or concrete slab) or impermeable liner (e.g., impervious plastic sheeting with a minimum 10-mil thickness), or stored in lined roll-off containers. Stockpiles will remain covered with tarps whenever not in use. The edges and interior portions of the tarps will be tied down with sand bags and rope, as necessary, to maintain their integrity.

7.5 Onsite Reuse and Placement of Soil

Managed Soil. Managed Soil may be reused behind the Dike within upland areas of the Site.

Contaminated Soil. Excavated Contaminated Soil beneath the upland cap may be placed back in the excavation providing the cap is fully restored. When this occurs, analytical testing and DEQ notification are not required provided the soil is placed in the original excavation and the cap is restored to its functional condition.

If excavated Contaminated Soil is not returned to the original excavation, the excavation will be backfilled with Managed Soil or soil from an offsite source that meets DEQ clean fill criteria (DEQ, 2019a). Contaminated Soil excavated from beneath the cap will be segregated from any imported, clean soil to avoid contamination of the backfill material.

7.6 Offsite Disposal of Excess Excavated Soil

Managed Soil or Contaminated Soil that is to be transported offsite must be appropriately profiled so that it is disposed of at an appropriate DEQ-permitted facility. Appendix A presents the steps to conduct a hazardous waste determination as part of the profiling process. During previous Site work, contaminated soil was previously disposed of as non-hazardous solid waste (MFA, 2023). Sampling and chemical analysis may be required by the receiving permitted landfill to obtain approval for disposal. Existing analytical data may be adequate, or landfill operators may require additional or more recent data for profiling. As such, contact the landfill or DEQ regarding the requirements for collection of representative samples of the contaminated soil for chemical analysis.

If any soil is proposed to be transported offsite and disposed as clean fill (i.e., not in a Subtitle D landfill), the soil will be subject to analytical testing and evaluation against DEQ's clean fill criteria (DEQ, 2019a).

7.8 Offsite Transportation of Soils

When transporting Managed Soil or Contaminated Soil off the Site, the Contractor will comply with all applicable federal, state, and local laws, codes, and ordinances that govern or regulate solid waste and/or hazardous waste transportation. If the soil is determined to be a characteristic hazardous waste, offsite transportation would be subject to the manifest requirements of 40 Code of Federal Regulations (CFR) 262.

Prior to trucks leaving the Site with each load, and at the conclusion of the project, the Contractor will decontaminate the equipment to prevent soil from being spilled or tracked offsite. Decontamination will include use of a quarry spall apron and possible broom cleaning to remove all visible adhered soil from the exterior of the truck. The loads of each truck will be covered with a well-secured tarp prior to trucks leaving the Site. Trucks will not be allowed offsite if free liquids are draining from the load. If visible tracking is noted on adjoining public rights-of-way, the Contractor must have the street cleaned daily.

8. WATER MANAGEMENT

Groundwater and precipitation may accumulate in excavations or low spots created during construction activities. The Contractor should avoid working in areas where soil is saturated, or where water has accumulated. If that is unavoidable, and pre-approved by Consultant or Owner, water can be removed from low spots, trenches, or excavations to facilitate construction activities, but must be contained in a temporary storage tank(s). Stored water will be tested to make sure it is not a characteristic waste. If it is not characteristic waste, it may be allowed to infiltrate on the upland cap in areas where it will not discharge to surface water. If stored water is a characteristic waste, it may be treated on-site or taken to a Resource Conservation and Recovery Act (RCRA)-approved treatment, storage, and disposal facility. If extended dewatering is required, the Owner or Contractor should pursue an appropriate discharge permit and conduct dewatering and discharge activities in accordance with the applicable permit.

9. NOTIFICATION, RECORDKEEPING AND REPORTING

If the protective cap is breached and more than 1 cubic yard of material is disturbed, then the Owner or Contractor will document Site activities and repair of the cap. The report will include, at a minimum, the following:

- Location of the activity that penetrated the protective cap.
- Estimated volume of soil excavated and dimensions of excavation.
- Description of soil sampling activities and results (if conducted).
- Description of soil management activities and disposition of excavated soil including manifests.
- Documentation of cap repairs (e.g., material used, thickness, construction details, contractor identity).
- A discussion of water removed during dewatering activities (if any), including temporary storage, sampling activities and results, the volume and/or rate of wastewater disposed, and its disposal location.
- The nature of deviations, if any, from this CMMP.
- Photographs of Site activities.

The Site Owner will prepare and maintain copies of completed reports pursuant to the recordkeeping requirements in the Consent Judgment.[4]

10. SITE ACCESS AND INSTITUTIONAL CONTROLS

This CMMP is referenced in the EES that will be recorded on the property following the remedial actions set forth in Section 2. The EES includes provisions for Site access and institutional controls (including this CMMP), which will remain in effect until such time that DEQ determines, in writing, that such controls are no longer necessary.

11. DIKING DISTRICT

Repairs of the dike are subject to the Diking District easements. The approximate Dike location is shown in Figure 3. Any work conducted on the Dike should be coordinated with Diking District and is subject to its standards.

12. UPLAND INSPECTION AND MAINTENANCE PLAN

An *Upland Inspection and Maintenance Plan (IMP)* has been prepared for the Site and is referenced in the EES. The IMP describes the Site access and institutional controls (cap monitoring and inspections) necessary to ensure that the upland cap is maintained and protective of Site workers and the environment.

13. REFERENCES

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[4] See Section 4.E., Consent Judgment for a Remedial Design and Remedial Action between Oregon Department of Environmental Quality (DEQ) and Astoria Marine Construction Co.: Clatsop County Case No. LQSR-19CV13270. Dated March 2019. DEQ, 2019b.

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Figures

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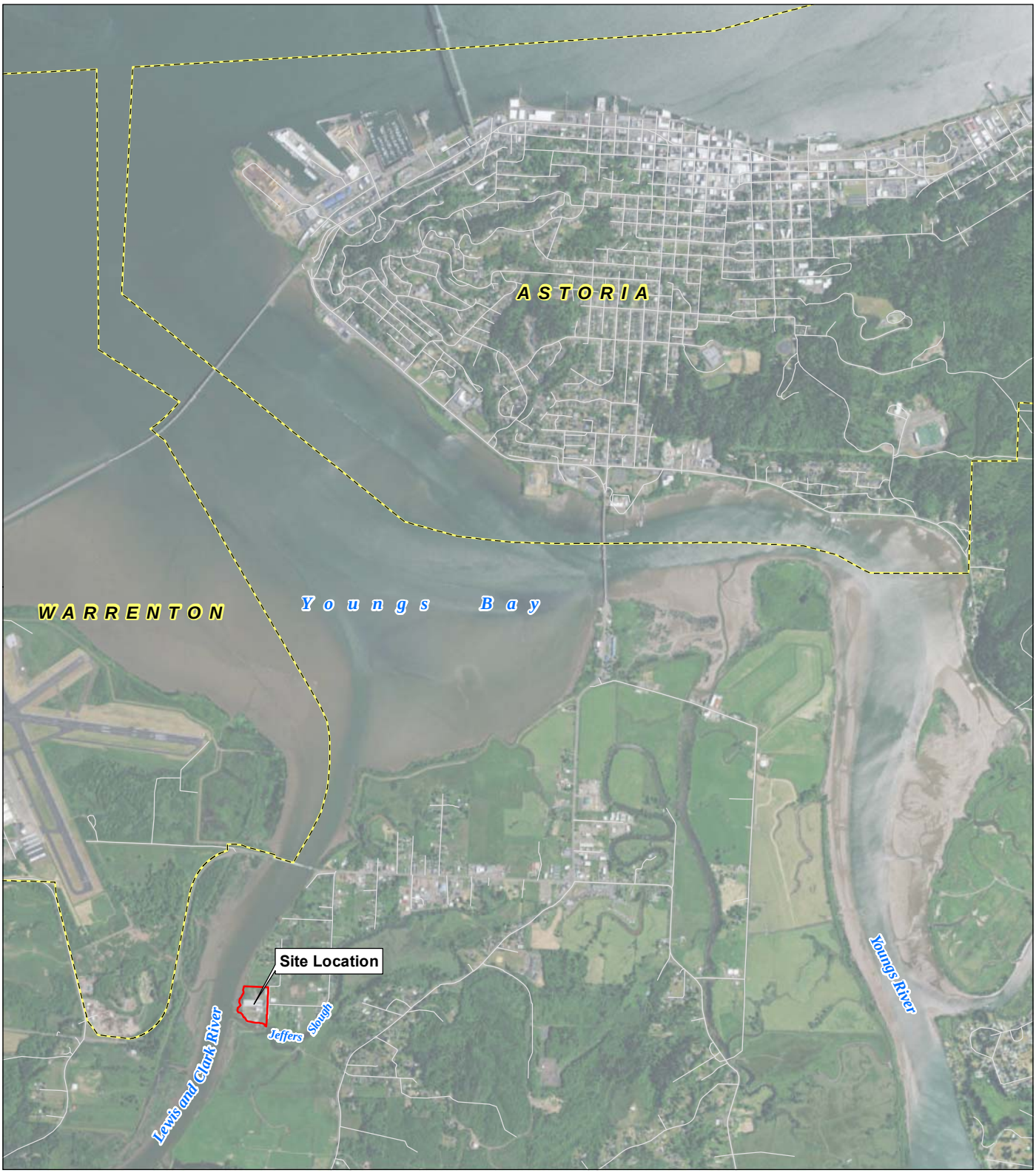

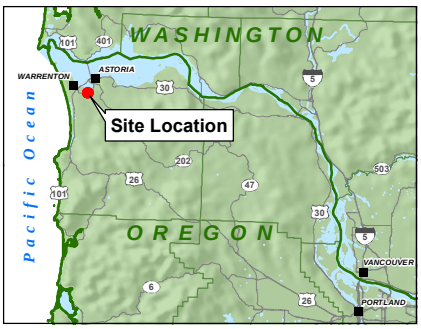

LEGEND

- Site Location
- Cities
- Roads

Date: March 14, 2017
Data Sources: OGIC, USGS, ESRI, Air photo from Microsoft 2010

N

0 0.25 0.5
Miles

FIGURE 1

Site Location Map

Astoria Marine Construction Company (AMCCO)
Astoria, Oregon

MAUL FOSTER ALONGI

GSI Water Solutions, Inc.

File Path: P:\Portland\453-Astoria_Marine\GIS\Project_mxds\RI\Figure1-1_Site_Location.mxd, Date: September 9, 2013 1:27:50 PM

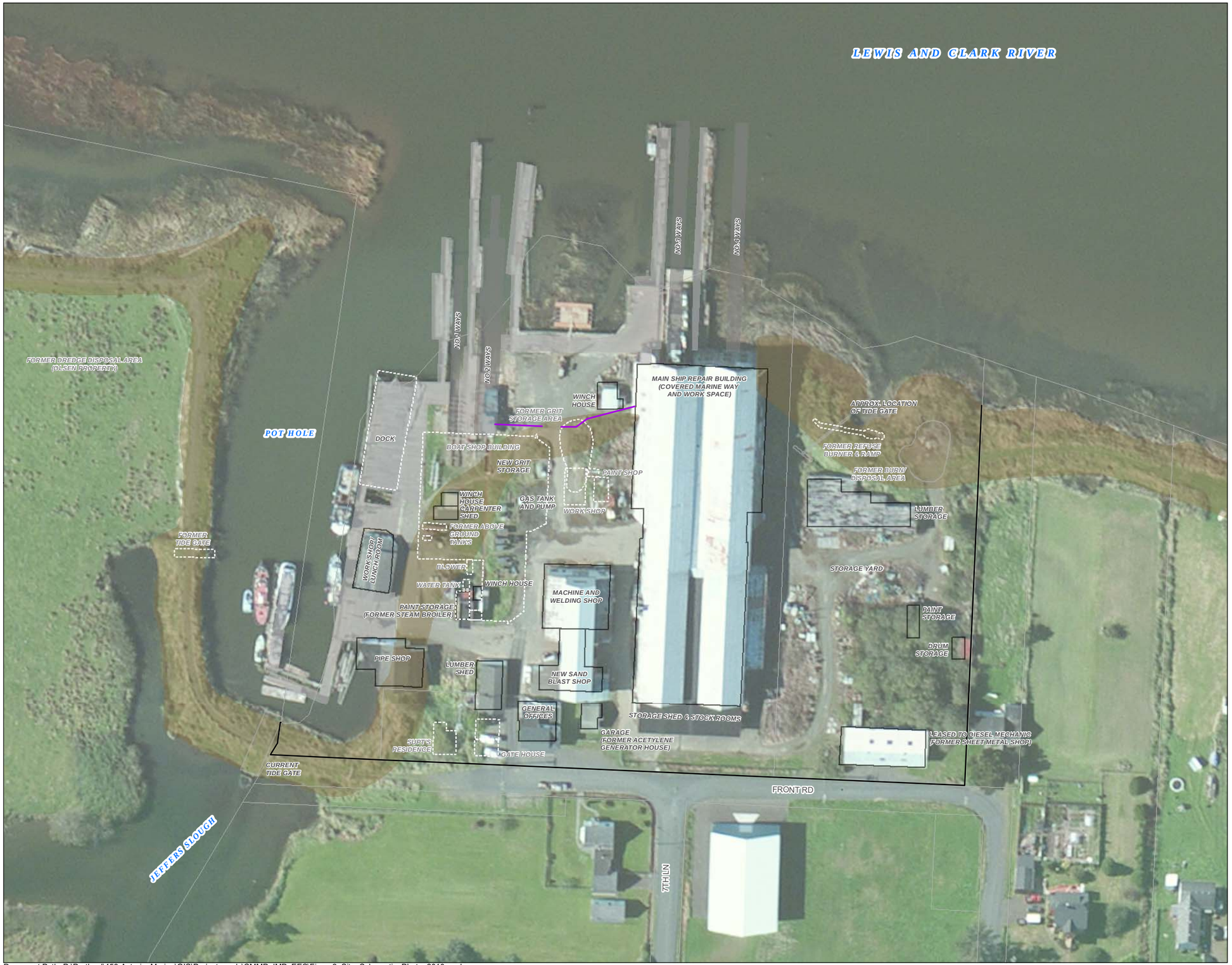

FIGURE 2

Site Schematic with 2010 Aerial Photo

Astoria Marine Construction Company (AMCCO)
Astoria, Oregon

LEGEND

- Building
- Misc Structure
- Dock
- Railway
- Historical Feature
- AMCCO Upland Boundary
- Tax Lot
- Cement Dike
- Levee

NOTES:

- The locations of all features shown are approximate.
- Historical site features were identified using the 'Plant Arrangment' engineering drawing from July 1948.

N

0 50 100 150
Feet

Date: March 14, 2017
Data Sources: OR DEQ, Clatsop County, Air Photo by Microsoft 2010

MAUL FOSTER ALONGI

GSI Water Solutions, Inc.

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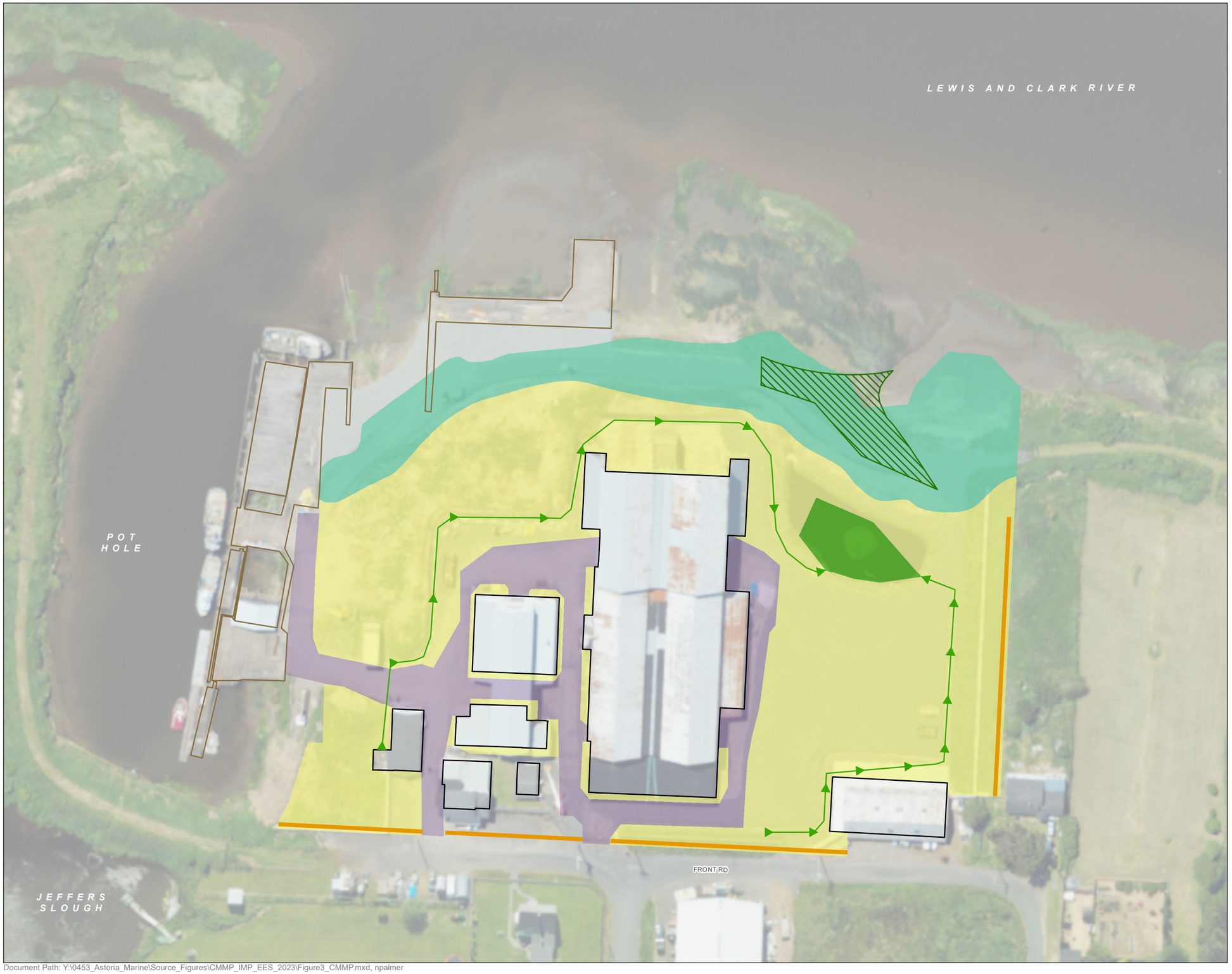

FIGURE 3

Upland Cap Location

Astoria Marine Construction Company (AMCCO)
Astoria, Oregon

LEGEND

- Soil Cap with Demarcation Layer[1]
- Dike
- Hardscape (Asphalt Pavement, Concrete)
- Stormwater Detention Pond
- Stormwater Conveyance Ditch
- Berm
- Copper-Impacted Soil Covered by Dike Soil or Dense Vegetative Groundcover[2]
- Building (Concrete Floor)
- Dock

NOTES

1. Soil cap consists of gravel fill or imported soil. Gravel depth is approximately 1 foot, and soil depth is approximately 2 feet. Soil below the buried orange geotextile demarcation layer may be contaminated.
2. Dike extent is approximate. Soil cover is 2 ft thick where covering copper-impacted soil. Outside of the dike, copper-impacted soil is covered with dense vegetative groundcover.
3. All features are approximate.

N

0 40 80 120
Feet

Date: November 20, 2023
Data Sources: MFA, Aerial 2022

GSI Water Solutions, Inc.

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Appendix A

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Appendix A: Hazardous Waste Determination

For the purposes of this CMMP, contaminated soil is defined as soil with contamination at concentrations greater than the soil screening values listed in Table 1. Contaminated soil, present beneath the cap, should be managed in accordance with this CMMP in the event it is encountered during an excavation. For reference, contaminated soil was previously disposed of as non-hazardous solid waste. In the event that unanticipated wastes or contaminated media are encountered, this appendix summarizes the steps to determine if the material encountered is a hazardous substance. Hazardous substances are defined by DEQ rules (OAR Chapter 340, Division 122) as:

- Substances defined as hazardous in Section 101(14) of the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Oil, including gasoline, fuel oil, diesel, lubricating oil, or other petroleum products

Step 1: Determine if the material is solid waste.

The federal Resource Conservation and Recovery Act (RCRA; 40 CFR 261) and Oregon Solid Waste Rules (OAR 340-093) define a solid waste as garbage, refuse, sludge, or other discarded material (including solids, semisolids, liquids, and contained gaseous materials). If a waste is considered solid waste, it must then be determined whether it is hazardous waste (§262.1). In general, contaminated media are considered solid wastes. For any material to be a hazardous waste, it must first be a solid waste (DEQ, 2012).

EPA has made a distinction between material that may be designated as a solid waste and environmental media (i.e., soil, water, or air). EPA determined that in-place environmental media does not meet the definition of a waste. Further, the EPA in its Area of Contamination (AOC) policy recognizes that movement of contaminated soil within an area of contamination does not constitute a new act of treatment, storage, or disposal for purposes of RCRA (EPA, 1996). For the purposes of the AMCCO Site, the AOC is considered to be the entirety of the property and contiguous drainage ditches that currently emanate from the property, as shown in Figure 3.

DEQ's 2015 Internal Management Directive (DEQ, 2015) states: "*The DEQ Cleanup Program employs EPA's Area of Contamination Policy for on-site remedial action involving consolidation and containment of contaminated soil that may contain RCRA hazardous waste constituents. Under this policy, EPA has not defined this contaminated media as solid waste provided the party undertaking the cleanup is a federal or state agency and/or a private party performing or under DEQ formal agreement or order.*" Site remedial actions will be performed under a formal consent judgement order with DEQ; therefore, contaminated soil excavated, treated, and managed during the remedial action are not considered a solid waste or hazardous waste while onsite within the AOC. Soils excavated, following completion of the remedial action, and managed onsite within the AOC in accordance with the EES and this CMMP, will not be considered solid or hazardous waste. A hazardous waste determination will be made, and the waste considered generated, at the point the waste leaves the property (i.e., leaves the AOC).

Step 2: Determine if the solid waste is exempted or excluded from hazardous waste regulation. No solid waste exemption or exclusion from hazardous waste regulation was identified for onsite contaminated media or solid waste.

Step 3: Determine if the waste is a listed or characteristic hazardous waste.

> **Listed Waste:** On-Site contamination is from historical activities and is not related to known specific sources (F- and K-listed waste) or discarded commercial products (P- or U-listed waste). Therefore, the media to be excavated during the planned remedial action or generated during future activities (e.g., construction, excavation) is considered to not contain listed hazardous waste.

Characteristic Waste: Information obtained during the Remedial Investigation (RI) was also used to evaluate whether Site soil would be considered a characteristic hazardous waste for ignitability, corrosiveness, reactivity, or toxicity if generated (i.e., excavated).

- Ignitability. Data collected during the RI indicate that Site media is not classified as an ignitable characteristic hazardous waste.
- Corrosiveness and Reactivity. Data collected during the RI did not identify historical processes or contaminants that would be expected to exhibit these characteristics and is not classified as a corrosive or reactive characteristic hazardous waste.
- Toxicity. Toxicity is evaluated using the Toxicity Criteria Leaching Procedure (TCLP). Test results greater than values listed in 40 CFR § 261.24 are considered to be characteristic hazardous waste. Soils were excavated and/or treated from the hot spots in accordance with the ROD with the goal that remaining Site soils be at concentrations that do not exhibit the hazardous waste characteristic. In accordance with the ROD, these soils were treated and managed onsite using the AOC approach allowed under RCRA and DEQ's guidance for remediation waste (DEQ, 2015) and under a consent judgment with DEQ. Residual concentrations were documented following cleanup in accordance with the ROD and are present at the Site. Based on samples collected during the RI and RI analytical results, other soils are not anticipated to exhibit the toxicity characteristic.

  Contaminated media that is non-hazardous (i.e., does not exhibit the toxicity characteristic of hazardous waste) will be disposed of at an Oregon permitted Subtitle D Solid Waste Landfill. The closest permitted landfill is currently located in Hillsboro, Oregon.

Characteristic Contaminated Soil Sampling and Disposal

In the event that soil or other media are excavated at the Site and planned to be disposed offsite, it is recommended additional sampling be performed to support the hazardous waste determination. Procedures and equipment for obtaining and analyzing representative samples for performing hazardous waste determinations are presented in the EPA document "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846, third edition). A representative sample would be expected to reflect the concentration of the area/volume to be excavated and managed as a whole (DEQ, 2012).

In the event, contaminated media are generated that exhibit a characteristic of hazardous waste, three options are available for their management: The media can be disposal off-site at a Subtitle C hazardous waste landfill or treatment facility. The media can also be managed onsite in accordance with the AOC approach allowed under EPA's Resource, Conservation, and Recovery Act (RCRA) and DEQ's 2015 Internal Management Directive (IMD) for remediation waste (DEQ, 2015). Under this approach, media may be placed or consolidated onsite beneath the upland cap. Onsite placement will not create a RCRA-regulated solid or hazardous waste management unit. Thirdly, media or waste designated as potential characteristic toxicity hazardous waste may be treated onsite (e.g., phosphate-based reagent, fly ash, or other appropriate reagent) to stabilize the media to reduce the leachability to levels below the EPA criterion. DEQ determined that if media or waste do not exhibit the toxicity characteristic when they leave the property (i.e., the AOC), they may be disposed offsite at an Oregon permitted Subtitle D Solid Waste Landfill (DEQ, 2017).