Anna Coates, R.G
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Date: June 12, 2023
Our Ref: 30064294
Subject: Remedial Investigation Work Plan Response to Comments
Former Chevron Bulk Plant No. 1001838
10 Fifth Street, Astoria, Oregon
ECSI #1402

Dear Ms. Coates,

Arcadis U.S., Inc. (Arcadis) and Chevron Environmental Management Company (CEMC) have received and appreciate the Oregon Department of Environmental Quality (DEQ) letter dated April 6, 2023, providing comments on the *Remedial Investigation Work Plan* (RIWP) submitted on November 4, 2022. This letter represents the requested response to DEQ comments. In reviewing the DEQ letter, we note that many of the comments received are, in fact, requests for additional information which will be addressed, to the extent possible, in either the subsequent Remedial Investigation Report or a future Risk Assessment Work Plan, and do not impact the objectives or the work proposed in the RIWP. With that understanding, and to keep progress of the Remedial Investigation (RI) for this site moving forward, we plan to proceed with the implementation of the RI subject to the following notes and scope revisions presented below that are intended to address DEQ comments.

Vapor Intrusion at the State Office Building (Page 1)

Comment: *The Site includes an office building owned by Marine Street LLC and occupied by Oregon Department of Human Services, the Oregon Employment Department and the Clatsop County Services to Children and Families. Vapor intrusion investigations have been completed as a separate scope of work but are also part of the Site RI. In addition to the office building, the potential for vapor intrusion should be evaluated for other areas of the site in consideration of potential future development and use…*

Response: As noted by DEQ, potential vapor intrusion at the State Office Building (subject building) has been, and continues to be, extensively and thoroughly evaluated and documented via a separate set of correspondence and deliverables, with a formal meeting currently planned in late June to discuss this issue. As previously stated in those deliverables, based on the data to date, there do not appear to be vapor intrusion concerns for the subject building. We will continue to work with DEQ on the potential vapor intrusion issue as necessary but prefer to do so concurrently with the implementation of the RI to facilitate timely completion of the RI work; as described below, this initial RI work is essential to update the conceptual site model (CSM) and associated risk assessment for the site.

We acknowledge that soil vapor investigation is part of the overall RI for the site, and that evaluation of soil vapor quality and potential vapor intrusion concerns in other areas of the site (with consideration to potential future redevelopment) has not occurred to date due to the necessary focus on the office building and current potential receptors. We also note that the proposed work in the RIWP is only the initial phase, and that additional follow-up

investigation will in all likelihood be required. As such, the potential vapor intrusion pathway in other parts of the site will be evaluated once the initial phase of the RI is complete and current data sets can be incorporated into an updated CSM and corresponding risk assessment. Due to a lack of current data outside of routine groundwater monitoring, the evaluation of any future vapor intrusion concerns would be incomplete at this time. It is also again noted that with regards to potential hypothetical future exposure scenarios, some form of cleanup action still remains to be performed that will likely affect and may mitigate some of these potential scenarios. Additional soil, groundwater, and soil vapor evaluation within the context of future exposure risk scenarios may be proposed after the initial RI or any associated cleanup action is completed.

Petroleum Distribution Lines (Comment G4)

Comment: *Petroleum Distribution Lines. Chevron's response to comments concluded that "The discussion of the potential for preferential groundwater migration via certain utilities will be expanded in the revised RIRA Report." Cross-sections and a discussion of the utilities in relation to the water table are needed in the RI Report.*

Response: We acknowledge that subsurface utilities may be considered potential preferential pathways for groundwater migration. Records for historical utilities, tank installation and decommissioning, and oil tanks unrelated to Chevron operations are incomplete. However, available information will be incorporated in the RI Report. Arcadis will evaluate the presence of subsurface utilities during the RI field activities and data on current utilities will be included to the extent that they are identified in the cross-sections prepared for the RI Report.

Turbidity Measurements (Comment G11)

Comment: *Site surface water as source of lead. Turbidity measurements should be collected in the field during porewater sampling to document sample turbidity.*

Response: Field measurements of porewater turbidity will be collected where feasible (e.g., deep porewater samples). Arcadis will also record visual observations to evaluate turbidity where sample volume is limited and/or where drawing additional volume for turbidity measurements would introduce quality concerns (e.g., intertidal samplers).

Cannery Debris (Comment S19)

Comment: *Conclusions regarding Ecological Risk Assessment. The cannery debris should be characterized for metals to determine if it is a potential source of lead and other metals.*

Response: Sample collection will be attempted within the area identified as the cannery debris to the extent possible. If sample collection is not feasible, samples will be collected adjacent to the cannery debris and will be characterized for lead and other metals as currently proposed. However, we respectfully note that the presence of debris in the river from the former cannery and any associated issues is unrelated to the former bulk plant.

Metals Toxicity (Comment D4; also pertains to Comment C1 and Comment D1)

Comment: *Evaluate the toxicity by comparing metals concentrations to Table 2, Applicable Water Screening Levels, which are generally the lower of: 1) Oregon Water Quality Criteria (Table 30); 2) National Ambient Water Quality Criteria; and 3) EPA Region 4 SLVs. Also note the narcosis values are presented in a separate tab of Table 2. The total or dissolved analysis that is appropriate for comparison to these thresholds is metals specific and hardness specific. Note 3 in Table 3 states, "Metals presented are adjusted using defaults generally*

applicable to the Willamette Valley. These include a hardness of 25 mg/L, DOC of 1.25 mg/L, and a pH of 7.0. If conditions at your site vary from these defaults, DEQ recommends re-calculating criteria using site-specific data." Site-specific data should be collected to ensure the correct RBCs are calculated using parameters from the receiving waterbody. Arsenic (dissolved), barium (total), cadmium (dissolved, hardness), chromium (dissolved, hardness), lead (dissolved, hardness), selenium (dissolved), silver (dissolved, hardness), mercury (total), iron (total), manganese (total) and zinc (dissolved, hardness).

Response: Metals will be analyzed and preliminarily compared to generic RBCs, as described in the comment above. Site-specific screening values will be developed after data is collected and evaluated as part of the future risk assessment.

The metals analyte list will include arsenic (dissolved), barium (total), cadmium (dissolved), chromium (dissolved), lead (dissolved), selenium (dissolved), silver (dissolved), mercury (total), iron (total), manganese (total) and zinc (dissolved). All samples analyzed for metals will also be analyzed for hardness so that hardness corrections can be made, as appropriate.

Analyte Lists (Comments on Section 6.1)

Comment:

3. *The contaminants of interest list should not be limited, and a full suite of analytes should be completed for all media at the site. Given the age and differential analyte list for historical samples (particularly in the uplands), report full list of metals, VOCs and SVOCs suite of chemicals and do not limit to Table B-2.*

4. *VOCs should not be limited to benzene, toluene, ethylbenzene, and total xylenes (BTEX) as stated in the text. Samples should be tested for all VOCs included in EPA Method 8260D (SW-846): Volatile Organic Compounds by Gas Chromatography-Mass Spectrometry (GC/MS).*

5. *Additionally, hardness, pH, inorganic cations, and anions (USEPA Methods 200.7, 200.8, 300.0, 310.1), total suspended solids, ammonia, sulfides, and dissolved (water) and total organic carbon (sediments) to the analytical suite of all media.*

Response:

A full list of metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), hardness, pH, inorganic cations and anions, total suspended solids, ammonia, sulfides, and dissolved and total organic carbon will be analyzed using the requested USEPA Methods for all samples, if possible.

Analyte Lists (Comments on Appendix B – Sampling and Analysis Plan)

Comments:

4. The analyte list for characterization should include both total and dissolved metals.

7. *Table B-2, Sample Summary, notes that samples will only be analyzed for select VOCs including BTEX, MTBE, EDB, EDC, C, isopropylbenzene, n-propylbenzene, naphthalene, 1,2,4-TMB, and 1,3,5-TMB. The contaminants of interest list should not be limited, and a full suite of analytes should be completed for all media at the site. Given the age and differential analyte list for historical samples (particularly in the uplands) the lab should report the full list of metals, VOCs and SVOCs suite of chemicals. Much of the historical data is older (pre-1990s) and does not include a complete analyte list. Given the incomplete site history, a complete analyte list compared to risk- based concentrations is needed to confirm the list of COPCs for human health and ecological risk.*

Consistent reporting of analytes between media is necessary to complete the conceptual model and link uplands with in-water.

8. *Add hardness, pH, inorganic cations, and anions (USEPA Methods 200.7, 200.8, 300.0, 310.1), total suspended solids, ammonia, sulfides, and dissolved (water) and total organic carbon (sediments) to the analytical suite of all media.*

13. *Section 3.2.3, Laboratory Analysis: Include the full analytical list of VOCs, SVOCs and metals. Include alkylated PAHs in the groundwater analyte list to connect source from upland to in-water sediments and porewater. Do not use sulfuric acid cleanup for TPH analysis. Add ammonia, sulfides, and dissolved organic carbon to the analyte list.*

Response:

A full list of metals, VOCs, SVOCs, hardness, pH, inorganic cations and anions, total suspended solids, ammonia, sulfides, and dissolved and total organic carbon will be analyzed using the requested USEPA Methods for all samples, if possible. TPH will be analyzed with and without silica-gel cleanup. See response to Comments on Section 6.1 (Comments 3, 4, and 5) above.

Porewater Timing (Comments on Appendix A – Tidal Evaluation Report)

Comment:

The 2012 Porewater Investigation Report is included as Attachment A-1 of Appendix A. This report concludes that seasonal influences on groundwater discharge are minimal compared to tidal fluctuations and that targeting porewater sampling during low tide events will capture the greatest groundwater discharge and potential Site influence. Data collection should focus on determining how the groundwater to surface water gradient varies seasonally and the timing of the highest gradients. This was not evaluated directly in the 2012 investigation. DEQ expects the highest gradients to be in the January to April period corresponding to the period of highest rainfall with some lag time for the response in groundwater.

Response:

The preferred in-water work window established by the Oregon Department of Fish and Wildlife (ODFW) to minimize impact to sensitive fish and wildlife resources in the vicinity of the site is between July 1 and September 15. A request to Oregon Department of State Lands (DSL), who will coordinate with ODFW for input, will be made as part of the removal-fill permit process to allow for the in-water scope of work to be completed between January and April as requested by DEQ. However, if the DSL exception is not granted, the ODFW preferred time window of July 1 to September 15 will be targeted for in-water work completion.

Sampling Locations (Comments on Appendix B – Sampling and Analysis Plan)

Comments:

10. *Section 3.1, Soil Investigation, East Parcel: Several lines of evidence indicate significant groundwater concentrations on the east parcel to the east of Transect B (Figure 5). These include concentrations of iron, manganese, iron, barium, lead and petroleum. Additionally, there is a large uncharacterized area in the northeastern portion of the exposure area. Recommend another soil boring in this area upgradient of MW-24 near TP-6 / MW-4B where sheen and staining have been observed in soil.*

15. *Section 7.3, Preliminary Potential Receptors and Exposure Pathways, references DEQ in 2010: The text states "in-water exposure of residential or recreational receptors is likely an insignificant human health risk based on zoning and land use (DEQ 2010). Development since 2010 has improved public access with the addition of the Riverwalk, a paved recreational pathway. As a result, the top of bank, mid bank, and down to low water should be evaluated for human exposure (recreational users) and ecological risk. The general area that should be evaluated for recreational users is shown below. Recommend adding bank samples (top of bank, mid, lower, and down to low water) for the evaluation of human exposure and ecological risk. These data quality objectives should be included in Section 3.3 for the Shoreline and Intertidal Evaluation and samples should be collected with adequate spatial coverage to characterize this area and use as exposure point concentrations.*

Response:

Arcadis proposes the drilling of an additional soil boring upgradient of MW-24 near TP-6/MW-4B and the collection of four north-south transects (top, mid, and lower) of bank soil samples as shown on **Figure B-1** and **Figure B-2**, respectively. Note that the final locations of the additional soil boring and the bank soil sample transects may be updated during field implementation based on potential refusal or utility conflicts.

As stated above, we acknowledge the other DEQ comments provided and look forward to addressing them in the RI Report and/or as part of a future deliverable. We remain committed to progressing the RI for this site in a timely manner. That said, it is respectfully noted that discussions surrounding the scope of the RIWP have been ongoing for over 9 years. We want to reiterate our desire to make progress in connection with the RI and data collection in accordance with the RIWP, including the revisions indicated in these responses to comments, will be performed expeditiously. We look forward to meeting with DEQ in the future once the initial RI results are available but in order to progress the site forward, we respectfully plan to move forward with the RI work without an additional meeting to discuss comments at this time.

Sincerely,
Arcadis U.S., Inc.

Eric Epple
Project Manager

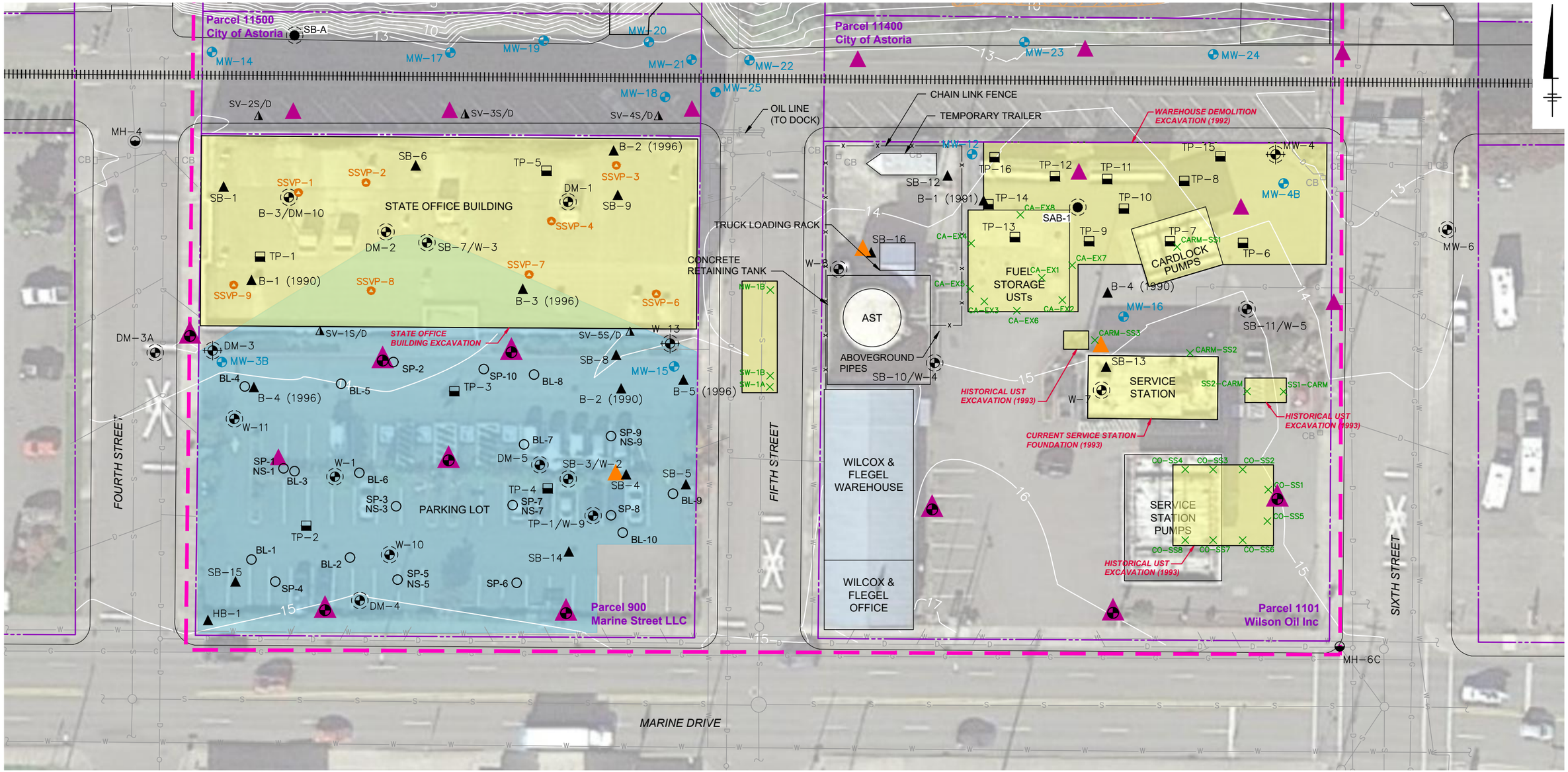
Email: Eric.Epple@arcadis.com
Direct Line: 206.578.5812

Anna Coates, R.G.
Department of Environmental Quality – Northwest Region
June 12, 2023

CC. James Kiernan, CEMC
Tim Bishop, CEMC
Jon-Erik Magnus, Rogers Joseph O'Donnell (RJO)
Kathy Schroeder, Property Owner
Steve Morrison, Morrison Companies
David Hutchinson, Chenowith Law

Enclosures:
Figure B-1 – Upland Investigation Scope
Figure B-2 – In-Water Investigation Scope

Figures



LEGEND:

- AREA OF INTEREST
- PROPERTY LINE
- MONITORING WELL
- SURFACE WATER STILLING WELL
- TEMPORARY MONITORING WELL
- CONFIRMATION SAMPLE
- PHYTOREMEDIATION SAMPLES
- ABANDONED MONITORING WELL
- SOIL BORING
- TEST PIT LOCATION
- MANHOLE SEDIMENT SAMPLE LOCATION
- SOIL VAPOR PROBE LOCATION
- SUB-SLAB VAPOR PROBE LOCATION
- TROLLEY TRACKS
- ELEVATION CONTOUR (FEET NGVD29)
- STORM SEWER
- SANITARY SEWER
- WATER SERVICE
- GAS SERVICE
- ELECTRIC SERVICE
- HISTORICAL EXCAVATION LIMITS
- APPROXIMATE EXTENT OF SOIL TREATMENT CELL (1996)
- PROPOSED SOIL BORING LOCATION
- PROPOSED MONITORING WELL CONVERTED FROM SOIL BORING
- SOIL BORING TO BE SAMPLED FOR POLYCHLORINATED BIPHENYLS

NOTES:

1. BASEMAP AND WELL LOCATIONS BASED ON SURVEYS PERFORMED BETWEEN MAY 31, 2005 AND MARCH 26, 2008 BY CHASE, JONES & ASSOCIATES INC. OF PORTLAND, OREGON.
2. PROPERTY LINES ARE ADAPTED FROM THE CLATSOP COUNTY INTERACTIVE WEBMAP ACCESSED AUGUST 18, 2022. HTTPS://DELTA.CO.CLATSOP.OR.US/APPS/CLATSOPCOUNTY
3. PIER LOCATIONS ARE BASED ON AERIAL PHOTOGRAPHS AND ARE APPROXIMATE.
4. UTILITY LOCATIONS DIGITIZED FROM DRAWINGS PROVIDED BY THE CITY OF ASTORIA AND ARE APPROXIMATE.

ABBREVIATIONS:

- AST = ABOVE GROUND STORAGE TANK
- NGVD29 = NATIONAL GEODETIC VERTICAL DATUM OF 1929
- UST = UNDERGROUND STORAGE TANK

0 40' 80'
GRAPHIC SCALE IN FEET

CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
FORMER CHEVRON BULK PLANT SITE NO. 100-1838
10 FIFTH STREET, ASTORIA, OREGON
REMEDIAL INVESTIGATION WORK PLAN
APPENDIX B SAMPLING AND ANALYSIS PLAN

UPLAND INVESTIGATION SCOPE

ARCADIS

FIGURE
B-1

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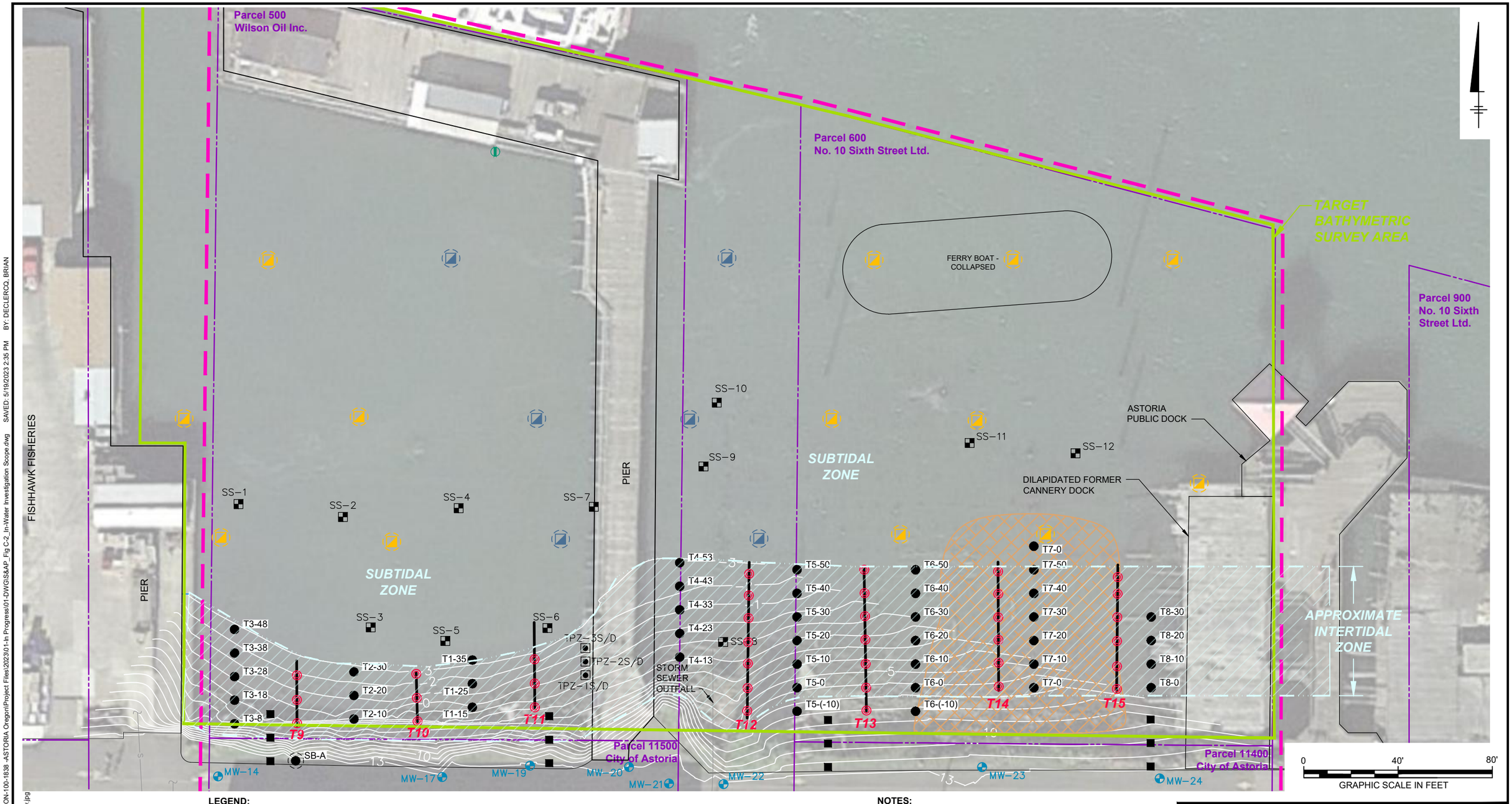
XREFS: X_RIWP_Base X_RIWP_Contours X_S&AP_Title
IMAGES: 2018 Google Earth Imagery.jpg



LEGEND:

- AREA OF INTEREST
- PROPERTY LINE
- TEMPORARY PIEZOMETER
- SEDIMENT SAMPLE
- SEDIMENT SCREEN SAMPLE LOCATION
- BANK SAMPLE
- 15 — ELEVATION CONTOUR (FEET NATIONAL GEODETIC VERTICAL DATUM OF 1929)
- APPROXIMATE EXTENT OF OBSERVED METAL DEPOSITS
- T9 — INTERTIDAL SURVEY TRANSECTÐ
- APPROXIMATE OBSERVATION POINTS FOR SHEEN AND PROBE MEASUREMENTS; COLLECTION LOCATIONS FOR SHALLOW SEDIMENT, CO-LOCATED POREWATER, AND DEPLOYMENT OF PASSIVE POREWATER SAMPLERS
- DEEP SEDIMENT AND CO-LOCATED GROUNDWATER LOCATION
- SHALLOW SEDIMENT AND CO-LOCATED POREWATER LOCATION
- STILLING WELL LOCATION

NOTES:

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CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
FORMER CHEVRON BULK PLANT SITE NO. 100-1838
10 FIFTH STREET, ASTORIA, OREGON
REMEDIAL INVESTIGATION WORK PLAN
APPENDIX B SAMPLING AND ANALYSIS PLAN

IN-WATER INVESTIGATION SCOPE

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FIGURE
B-2

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X_S&AP_Title
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