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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Region Office
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August 24, 2022

Kyle Sietawitch
Bridge Industrial
10655 NE 4th Street, Suite 500
Bellevue, Washington 98004
(ksietawitch@bridgeindustrial.com)

Re: Opinion pursuant to WAC 173-340-515(5) on Remedial Action for the following Hazardous Waste Site:

- **Site Name:** Maralco
- **Site Address:** 7730 S 202nd Street, Kent, Washington 98032
- **Facility/Site No.:** 2067
- **Cleanup Site ID No.:** 5055
- **VCP Project No.:** NW3339

Dear Kyle Sietawitch:

The Washington State Department of Ecology (Ecology) received your request for an opinion on the *Remedial Investigation Work Plan* for the Maralco site (Site) dated March 16, 2022 (*RIWP*). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70A.305 RCW.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Metals and petroleum hydrocarbons (diesel) in Soil.
- Metals, petroleum hydrocarbons (diesel and heavy oil), polycyclic aromatic hydrocarbons (PAHs), chloride and fluoride in Groundwater.
- Suspected metals, PAHs, chloride and fluoride in Surface Water and Sediment.

Enclosure A includes a detailed description and diagrams of the Site, as currently known to Ecology.

Please note a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcels associated with this Site are affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in the documents listed in **Enclosure B**. A number of these documents are accessible in electronic form from the Site web page[1]. The complete records are kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. Visit our Public Records Request page[2] to submit a public records request or get more information about the process. If you require assistance with this process, you may contact the Public Records Officer at publicrecordsofficer@ecy.wa.gov or 360-407-6040.

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis and Opinion

Under the Model Toxics Control Act (MTCA) WAC 173-340-350(7), the purpose of the remedial investigation (RI) is to collect data necessary to adequately characterize the Site for the purpose of developing and evaluating cleanup action alternatives. The site characterization may be conducted in phases.

The scope of work presented in the *RIWP* addresses RI activities that will be conducted before the contaminant source removal is initiated as an interim action (removal of the dross and washed oxide stockpile). The nature and extent of soil and groundwater contamination beneath the stockpile and existing building have not been investigated. The Site cannot be completely characterized with the stockpile and building present on the site, as they prevent access to the subsurface soil and groundwater. Because the scope of work presented in the *RIWP* only addresses the areas outside of the stockpile and building, the *RIWP* scope would not satisfy the work necessary to meet the requirements of MTCA WAC 173-340-350(7) for a complete RI.

Based on our meeting on August 4, 2022, Ecology understands that the purpose of the RIWP is to initiate preliminary RI activities where accessible on the Site, and that the RI will be completed following the planned interim action. Ecology agrees that the current *RIWP* is sufficient to investigate off-Property soil, sediment and groundwater; however, the *RIWP* only partially investigates soil and groundwater on the Property. Interim action under MTCA (WAC 173-340-430) will need to be conducted in order to complete Site characterization that satisfies WAC 173-340-350(7).

Considering the timeline and pace of the project, we have prepared these comments on the *RIWP* as the initial step in this VCP project. The reviewed *RIWP* proposes additional investigation to fill in data gaps from previous investigations. The following summarizes Ecology comments on Section 4.6 (Data Gaps) of the RIWP scope of work:

- **Indoor Stockpile Characterization** – Indoor waste samples will be analyzed for total metals, potassium, sodium, chloride cations/anions, TCLP, reactivity, corrosively, ignitability, pH, and total chromium, copper, nickel, and zinc. Fish toxicity will be completed for the most

[1] https://apps.ecology.wa.gov/cleanupsearch/site/5055
[2] https://ecology.wa.gov/Footer/Public-records-requests

contaminated samples if additional analysis is necessary (to be determined by the disposal facility).

Ecology Comments: None.

- **Potential Diesel Source** – Three geoprobe borings will be drilled in the diesel source area up to 20 feet below the ground surface (bgs), with the contingency to drill two additional "step out" borings based on field results (see **Enclosure A, Figure 9**). Soil will be analyzed for TPH-Dx and metals; groundwater will be analyzed for TPH-Dx (with silica gel cleanup), metals, chloride and fluoride.

  Ecology Comments: Silica gel cleanup should not be used for TPH-Dx analyses of groundwater samples unless uncontaminated background samples indicate that naturally occurring organic matter is a significant component of the TPH detected in the groundwater samples. If silica gel cleanup is used, groundwater samples should be split and analyzed both with and without silica gel cleanup. See Guidance for Remediation of Petroleum Contaminated Sites, revised June 2016[3].

  Evaluation of compliance with the Method A soil and groundwater cleanup levels for TPH-D and TPH-O requires adding concentrations of the two fractions and comparing the result to the cleanup level, per Implementation Memorandum #4, Determining Compliance with Method A Cleanup Levels for Diesel and Heavy Oil, Publication No. 04-09-086, June 2004[4], and Guidance for Remediation of Petroleum Contaminated Sites, Publication No. 10-09-057, revised June 2016[5]. In order to demonstrate compliance for groundwater, the combined laboratory detection limit for TPH-D + TPH-O needs to be less than the MTCA Method A cleanup level of 500 micrograms per liter (µg/L). PAHs have been identified in soil and groundwater in the area of the UST, so PAHs should be analyzed.

- **Extent of Metals Contamination in Groundwater** – MW-1, MW-2, MW-3A, MW-4A, MW-5A, and MW-6 will be assessed and decommissioned if necessary. Replacement wells will be installed; proposed replacement wells are MW-3R, MW-4R, MW-5R, and MW-6R (see **Enclosure A, Figure 9**). Two new additional monitoring wells will be installed east of the drainage ditch (one located along the north property boundary and one located along the south property boundary). Grab groundwater samples will be collected from direct-push borings drilled to 15 feet bgs located along the northwest property boundary (three borings) and across the BNSF railroad tracks west of the property (five off property borings). Soil and groundwater analysis in well borings will include metals, chloride, and fluoride. Groundwater samples from borings along the northwest property boundary will also be analyzed for TPH-Dx.

[3] https://apps.ecology.wa.gov/publications/SummaryPages/1009057.html
[4] https://apps.ecology.wa.gov/publications/SummaryPages/0409086.html
[5] https://apps.ecology.wa.gov/publications/SummaryPages/1009057.html

Ecology Comments: Depth of monitoring wells is not clear (QAPP Section 4.1.2 states 15 feet and QAPP Section 4.6 states 20 feet). Wells to an estimated depth of 15 to 20 feet bgs should be clarified, also noting that well depth and screen setting will be determined in the field, based on soil indications of seasonal high water table.

The groundwater flow direction is documented to be to the northwest; therefore, the location of MW-4R would be better positioned near the northwest corner of the property, downgradient of the former UST. Please note that groundwater level measuring points need to be surveyed to NAVD88 vertical datum, to facilitate preparation of groundwater piezometric surface maps.

Total and dissolved metals should be analyzed. Also, see prior Ecology comments regarding TPH-Dx.

- **South 202nd Street Right-of-Way Ditch** –Sediment samples are proposed for the ditch; however, locations and number of samples is not specified.

  *Ecology Comments: Show locations of the sediment samples and specify how many samples will be collected. Explain the sampling plan and rationale for sediment sampling. Transects are shown on Figure 8 of the RIWP (see **Enclosure A, Figure 10**), but sampling procedure is not explained in the text of the RIWP.*

- **Surface Water Investigation** – This element of the *RIWP* is missing as a data gap. The soil- and groundwater-to-surface water contaminant-transport pathways must be evaluated in the RI. Ecology requests updating the *RIWP* to include:

  - Establish surface water stations for monitoring water levels and collecting water samples when standing or flowing water is present in the stream channels of Wetlands A and C (see **Enclosure A, Figure 3b**). Elevations of surface-water staff gages should be surveyed to NAVD88 vertical datum.

  - Co-locate selected surface water and sediment stations, to facilitate evaluation of transport pathways.

  - Specify Site chemicals of concern (COCs) to be tested in surface water samples, to be consistent with COCs tested in soil, groundwater, and sediment samples.

  - Include surface water COCs in the table of Site preliminary cleanup levels.

  - Include historical surface water sample results in a summary table, along with a map showing sample locations.

The *RIWP* should also address the following:

1. Please discuss the planned interim action and provide a general description of the future scope of work, to complete Site characterization during and after interim action. This makes it clear that the intention of the *RIWP* is to continue progress on the RI, and that interim actions and completion of the RI will be forthcoming.

2. Mention future work, planning and reporting to tie in with Comment 1 above. Future plans and reports may include an Interim Action Cleanup Plan, Interim Action Cleanup Report, Remedial Investigation/Feasibility Study report (RI/FS), Performance Monitoring Reports, and a Final Cleanup Action Report.

3. A Terrestrial Ecological Evaluation (TEE) must be completed. A TEE is required per WAC 173-340-7490 to determine if cleanup levels that are protective of terrestrial species are applicable to the Site. The TEE form is available at the Terrestrial Ecological Evaluations webpage[6]. TEE cleanup levels must be considered when evaluating and selecting preliminary cleanup levels for the RI. After completion of the TEE, Tables 10, 11, and 12 of the *RIWP* should be revised to TEE cleanup levels as Applicable or Relevant and Appropriate Requirements (ARARs).

Please note that the final RI and feasibility study (RI and FS) should be completed in accordance with Ecology guidance documents[7].

Before further work is completed, Ecology encourages submitting an updated RIWP.

Ecology appreciates the efforts of your project team in continuing progress towards Site cleanup under the VCP.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70A.305.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised

[6] https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Terrestrial-ecological-evaluation
[7] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Voluntary-Cleanup-Program/Working-with-VCP

action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70A.305.080 and WAC 173-340-545.

3. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70A.305.170(6).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/vcp. If you have any questions about this opinion, please contact me by phone at (206) 556-5258 or by email at kim.vik@ecy.wa.gov.

Sincerely,

Kim Vik, VCP Site Manager
NWRO Toxics Cleanup Program

Enclosures (2): A – Description and Diagrams of the Site
B – Basis for the Opinion: List of Documents

cc: Grant Hainsworth – Crete Consulting, Inc. (grant.hainsworth@creteconsulting.com)
John P. Lyon – Property Owner (john.lyon@ryan.com)
Sam Alcorn- City of Kent (SAlcorn@kentwa.gov)
Sonia Fernandez – VCP Coordinator (sonia.fernandez@ecy.wa.gov)

Enclosure A

Description and Diagrams of the Site

Site Description

This enclosure provides Ecology's understanding and interpretation of Site conditions and forms the basis for the opinions expressed in this letter.

Site: According to MTCA, the Site is defined as all areas where contamination has come to be located. The Site is defined by the nature and extent of the following releases at 7730 S 202nd Street in Kent, King County, Washington (Property, **Figure 1**):

- Metals and petroleum hydrocarbons (diesel) released to the soil.
- Metals, petroleum hydrocarbons (diesel and heavy oil), polycyclic aromatic hydrocarbons (PAHs), chloride, and fluoride released to the groundwater.
- Suspected metals, PAHs, chloride, and fluoride to surface water and sediment.

Area and Property Description: The Property is comprised of one parcel (King County Parcel Number 631500-0300) covering 12.05 acres (**Figures 2 and 3**). The area is zoned as Heavy Industrial (I-3) by the City of Kent. The western portion of the Property is developed as the former aluminum smelter facility. Structures and features associated with the former smelter and currently on the Property include an abandoned 45,000 square-foot refinery building and associated structures (aboveground steel water tanks, concrete ponds, remnants of a truck scale), surrounding paved parking, and an abandoned former residence.

The former refinery building is abandoned; however, the building contains waste piles of dross and baghouse dust from former operations. The outdoor waste pile (approximately 25,177 cubic yards of dross and washed oxide) is present on the east side of the former refinery building. The eastern portion of the Property is undeveloped and contains and drainage ditch that transects the Property and a wetlands area.

The Property is bound by S 202nd Street and Puget Sound Pipe to the north, the Burlington Northern Santa Fe (BNSF) railroad and an undeveloped property to the west, KYC LLC (warehouse), Walman Optical Company (warehouse), and Knight Transportation (trucking) to the south; and 80th Avenue South, Toro (warehouse sales), and Stericycle (warehouse) to the East.

Property History: The Maralco Property was developed in 1980-1981. Prior to construction and operations of the Maralco facility, the Property was being used for agricultural purposes. Maralco was in the business of buying pure metals, including aluminum and scrap, melting and recycling the alloyed metal for sale to foundries. Maralco generated approximately 50,000 tons of "black dross", a by-product of the smelting operation. The smelting facility processed aluminum scrap into ingots for recycling.

After the smelting process, the salt flux became a waste product consisting of aluminum oxide and impurities from the molten salt smelting process called "black dross" (mixture of aluminum and metals, primarily arsenic, barium, copper, and mercury or "salt cake" (fluorides and chlorides). Washed oxides

(aluminum oxide) were produced when water-soluble components of the dross (typically salts) were removed from the dross as part of re-processing.

During the first year of operations, the black dross was hauled off the property for disposal. After 1981 the black dross was stored onsite in a consolidated stockpile located on the south and east sides of the facility building. The stockpiled black dross remained onsite since the plant closed in 1986.

A metal shed located at the northwest corner of the site ("chlorine area") is where chlorine gas was used to extract magnesium from the metal by the formation of magnesium chloride, which was discharged to the dross pile. Chlorine gas was handled from the shed to the rail cars. A release of chlorine gas in 1981 killed several trees about 100 feet north of the chlorine area. Due to this release, liquid chlorine entered a holding pond for storm water runoff from the parking locate located to the northwest of the Maralco building. This holding pond discharged to the north to the Christopher Ditch via a culvert. Following the release, chlorine handling was switched from rail cars to 1-ton containers of liquid chlorine.

During later operations, salt was recovered from the black dross in a process called "salt saver," in which the dross was mixed with water in three concrete holding ponds, where the potassium and sodium chloride were removed from the metal oxides by a series of washes. The brine was subsequently flashed over a bed of hot salt to remove the water and recover the salt for reuse. The insoluble metal oxide residues from the ponds were disposed onsite in the "oxide lagoon," an unlined lagoon between the refinery building and the dross pile. Berms of the "oxide lagoon" were formed of black dross.

The residence that is located northeast of the refinery building along the north property boundary was reportedly used as a metallurgical laboratory for "several years." Hydrofluoric acid was utilized in the laboratory to perform extractions. Other common acids used for metal extraction included nitric and hydrochloric acid. The former residence building originally used a septic system, but has since been connected to the City sewer. It is unknown where the septic tank and drainfield was located or if it was removed.

Maralco ceased operations in 1983 and filed for bankruptcy. The Maralco Site came to the attention of the US Environmental Protection Agency from the City of Kent. The abandoned aluminum recycling facility was identified as a potential environmental and health hazard by the City of Kent Fire Department during a routine annual fire inspection. Ecology became involved with the Site in 1986, and initiated an interim remedial action in 1987 to prevent the leaching of the "black dross" to surface waters. Ecology covered the dross pile with sheeting to divert rainfall, and constructed containment ditches (re-directed runoff) and fences to minimize off-site migration and to stabilize the site until further remedial action could occur.

The former 35,000-gallon diesel underground storage tank located north of the refinery building was removed in 1995. There have been several investigations conducted on the property since 1987; the most recent investigation was conducted in 2022.

Property Current Use: The Property is currently being leased by the adjacent business to the north (Puget Sound Pipe). Puget Sound Pipe uses the paved parking area to store piping.

Sources of Contamination. The Property was historically used as an aluminum smelter. Dross was generated during the smelting process was stockpile on the Property where contaminants were able to leach through the underlying soil and groundwater and ultimately to the sediment and surface water in the adjacent drainage ditch. The main dross pile is located east of the refinery building and it adjacent to a stockpile of washed oxide (also referred to as aluminum oxide).

Another smaller dross pile was located south of the former residence. The stockpile locations are shown on **Figures 4 and 5**. In addition to the dross piles, the former diesel UST has released contaminants to soil and groundwater. Other potential sources of contamination on the Property include the holding pond, lagoon, chlorine area, and operations at the former residence (**Figure 6**).

Physiographic Setting. The Property is situated in the Green River Valley at an elevation of approximately 50 feet above mean sea level (amsl) in the center, and 25 feet amsl on the periphery. The land surface in the immediate area is relatively flat (**Figure 2**).

Surface/Stormwater System. The nearest major surface water is the Green River, which is approximately 1 mile to the northwest Property. Two intermittent streams converge in the north central portion of the property. One stream originates from the south and the other stream originates from the northeast corner of the property. The stream (also referred to as the "drainage ditch" and "Christopher Ditch") conveys off the property to the northwest, beneath the BNSF railroad, to a wetland (west of the railroad) that is owned and managed by the King County Drainage District #1 (**Figures 3a and 3b**).

Wetland delineation work completed at the Site in November 2020 documented that Site Wetland A receives seasonal discharge from shallow groundwater and intermittently flows following precipitation events. Adjacent Wetland C received discharge from Wetland A, and was observed to have an unconstructed, or slightly constricted, surface outlet that is permanently flowing.

The surface water discharge from Wetlands A and C flows into South Fork Mill Creek west of the Site. Prior to Ecology's site stabilization work in 1987, the runoff from the buildings and parking lot was directed to the storm sewer system, and all other site runoff, including runoff from the black dross and aluminum oxide piles, was directed to the onsite stream.

Ecological Setting. The land surfaces on the Property and adjacent properties are primarily covered by buildings and asphalt or concrete pavement with landscaped areas. The western portion of the property, east of the drainage ditch, was used for the former Maralco operations. The eastern portion of the Property is undeveloped and contains an intermitted stream (drainage ditch) and wetlands.

The U.S. Fish and Wildlife Service – National Wetland Inventory (NWI) identified the drainage areas on the Maralco site as wetlands (MKES, 1991a). The most recent wetland study (Soundview, 2022a) identifies the onsite wetland (known as Wetland A) as an Ecology Category III regulated wetland (see **Figure 3b**). The onsite stream (Christopher Ditch, also known as Stream Z) is identified as an Ecology Type 3 regulated stream. The size of the onsite wetland is documented to be 34,360 square feet (sq ft).

Geology. The site is located in the lower Green River Valley (Kent Valley), which was formerly a deep marine embayment that has been filled with sediments since the end of the most recent glaciation (Vashon Glaciation). The valley extends north to Renton and south to Auburn and is bounded by glacial drift uplands to the west and east.

Soils beneath the site are composed of fluvial fine- to medium-grained sands, interbedded with discontinuous clayey sands and clays. The site is underlain by 1 to 2 feet of brown gravelly fill. Beneath the fill is native soil consisting of dark brown fine silty sand and interbedded silty sand and clay layers to an observed depth of 17 feet below the ground surface (bgs). The native soil is consistent with alluvium and floodplain deposits. Based on subsurface investigations, the dross material on the ground surface may extend up to 5 feet bgs (current property grade), suggesting it may have been placed in low-lying areas.

Groundwater. Based on previous investigations, groundwater is present beneath the Property at approximately 3 to 7 feet bgs. The potentiometric surface is affected by seasonal rainfall. The surface water drainage ditches on the property also appear to affect the potentiometric surface. Recharge of the shallow groundwater beneath the site is from precipitation and the drainage ditches. Shallow groundwater flow beneath the site is influenced by the Green River. The regional groundwater flow has been documented to be to the north-northwest towards the Green River (**Figure 7**).

Water Supply. Drinking water for the area is supplied by the City of Kent. The City of Kent obtains the drinking water from upland springs and wells on the Kent East Hill and from wells located in the Green River Valley. The City of Kent also purchases water from the City of Tacoma, which is sourced from the Green River watershed. None of these water supply sources are located within a 1-mile radius of the Property. The Property is also located outside the 10-year time of travel wellhead protection area of all water supply wells.

Ecology Involvement with the Maralco Site

The following is a summary of Ecology's involvement with the Site.

Year	Involvement
1983	Maralco files for bankruptcy in May 1983.
1986	Ecology orders Maralco to conduct interim action regarding the dross pile. No action conducted by Maralco.
1987	Ecology conducts interim action to stabilize the dross pile. Ecology constructs containment ditches (re-directed runoff) and fences to minimize off-site migration and to stabilize the site. Ecology files a "Notice of Claim of Lien" against Maralco.
1988	Ecology files claim in the bankruptcy. Ecology agrees to conduct a remedial investigation on or before 1991.

Year	Involvement
1989	Ecology enters into a tri-party agreement.
1991	Morrison-Knudsen Environmental Services (MKES) conducts an RI/FS on behalf of Ecology.
1995	Ecology lists Maralco as a LUST site based on findings from the UST removal.
2005	Site enters into VCP (NW1399) with Brown Dog Investments (majority lien holder).
2007	Discussions with Brown Dog Investments regarding potential Prospective Purchaser Consent Decree (PPCD).
2008	VCP NW1399 terminated due to fees not paid.
2011	Site enters into VCP (NW2356) with Brown Dog Investments.
2013	VCP NW2356 terminated due to absence of progress towards Site cleanup.
2022	Site enters into VCP (NW3339) with Bridge Industries, prospective purchaser of the Property.
2022	Ecology reviews City of Kent SEPA Checklist (prepared by Bridge Industries) and submits comments.

Release and Extent of Contamination (Soil, Groundwater, Sediment and Surface Water)

Environmental assessments and investigations have been conducted on the Site since 1987. Available soil, groundwater, sediment, and surface water sampling locations are depicted on **Figure 8.** Site investigations are summarized in chronological order.

Ecology and Environment, Site Assessment Report, October 1987 (E&E, 1987)

Smelter by-products including black dross (C1 and G2), aluminum oxide (C2), KBI dross (C3), and baghouse dust (C4) were assessed. Soil (S1-S5), sediment (B1-B4), and surface water (A1 and A2) were also collected. In addition, were collected from the eastern dross pile (G1) and from the water in the wash ponds (G3). Samples collected from the refinery waste (C1 through C4, G1, and G2) contained elevated concentrations of metals (highest metals were antimony, chromium, copper, lead, nickel, and zinc).

Soil sample results showed metals concentrations consistent with background levels. Sediment samples collected within the stream that transects the Property adjacent to the black dross pile (B2) and immediately downstream of the Property (B1) contained elevated concentrations of metals (copper, chromium, zinc) which indicated impact by black dross material. Off-site migration of contamination via the creek was reported. Water samples collected from the holding pond and the creek showed elevated

concentrations of metals (lead, arsenic, antimony) above "Drinking Water Standards" and "Water Quality Criteria."

Morrison-Knudsen Environmental Services, Phase I Remedial Investigation, February 1991 (MKES, 1991a)

Investigation of the Property included characterization of the exterior dross pile (labeled BD) and the washed oxide pile (labeled BO), investigating groundwater (install and sample groundwater monitoring wells MW-1 through MW-4 to 17 feet bgs), sampling surface soil in the former dross storage area, sampling surface water along the drainage ditch, and sampling sediment in the NW holding pond. The areas of the former eastern dross pile (estimated at 290 cubic yards) and the former residence were also investigated.

Soil sample results from former residence and eastern dross pile showed high levels of metals. Surface soil sample results indicated elevated concentration of metals near the dross piles, in the drainage areas, and within the yard of the former residence (area of the former eastern dross pile). Elevated metals concentrations were also found in sediment samples collected along the drainage ditch south and east of the main dross pile. Very high metals concentrations was also found in sediment from the area of the holding pond (storm water pond) located northwest of the refinery building (SW-7) and the drainage ditch located off the property, north of the holding pond (SW-8).

Surface water samples contained elevated levels of metals (especially sodium and potassium). Surface water was reported to have high specific conductivity, salinity, and chloride; these results are attributed to the salt content of the black dross. The concentrations of metals in sediments and the chloride content of the surface water in the sample location off the property and downstream to the northwest (SW-8), indicated that the high salinity material has been transported off the property via the north running culvert between the holding pond (stormwater pond) and the drainage ditch northwest of the property.

Groundwater samples indicated metals impact in wells MW-1, MW-3, and MW-4. The groundwater beneath the dross piles is suspected to have high salinities.

The investigation showed that dross was entering on-site streams and that surface water was transporting the material off-site. MKES documented that approximately 19,325 cubic yards (20,781 tons) of black dross and 1,074 cubic yards (1,160 tons) of washed oxides were present on the Property. Testing of 13 black dross samples for leachable metals indicated that the black dross was not a characteristic hazardous waste.

The following interim actions were conducted by MKES in October 1991.

- Fencing and gates were installed around the perimeter of the property to limit access.

- Soil and sediment (up to 2 feet bgs) were removed from the holding pond (also documented as the "stormwater collection pond") located in the northwest corner of the Property. Dross-like

material was noted during excavation. Confirmation soil samples were not collected. Excavated material was placed in drums and stored onsite.

- The refinery building roof drains were redirected to prevent stormwater from discharging onto the dross piles.

- The exterior black dross pile and the site were graded to prevent ponding of stormwater on the surface and direct drainage to the storm sewer system; the piles were covered with plastic.

- Source control measures were conducted including washing the asphalt lot surfaces, cleaning storm drains.

MKES, Feasibility Study, March 1991 (MKES, 1991b)

MKES assessed the toxicity of the black dross and conducted a pilot study of washing the black dross material to remove sodium and potassium and recycling the resulting aluminum oxide (to serve as an interim remedial action). TCLP metals results for dross samples were either below the dangerous waste level for lead, or not detected above the laboratory reporting limits (all other metals). Approximately 2,179 tons of black dross was processed and left onsite during the pilot study. MKES reported that washing the dross, recovering the washed oxide, and discharging wastewater was feasible and that this technology could remediate the dross stockpile in approximately 13 months.

Enviros UST Decommissioning, 1995 (Enviros, 1995)

A 35,000-gallon diesel UST was removed from the Property. Diesel was not detected in soil samples collected from the base, north sidewall and east sidewall of the excavation. Diesel was detected (96 mg/kg and 6,300 mg/kg) on the west and south sidewalls, respectively. The south sidewall sample (PE-1 collected from 8 to 10 feet bgs) exceeded the CUL for diesel. The stockpile soil samples ranged from 1,200 to 2,100 mg/kg diesel in soil. The stockpiled soils were returned to the excavation. Groundwater samples were not collected.

URS Corporation (URS), Black Dross Pile Characterization, 2000 (URS, 2004)

URS collected dross samples from depths of 5 feet bgs or less, with the exception of one sample collected at 9.5 feet bgs. Samples were analyzed for TCLP metals and for toxicity using fish bioassays. The results indicated that portions of the dross pile "should not be designated as a toxic dangerous waste." No other information was provide in the summary by URS.

Environmental Management Resources (EMR) Former UST Investigation, 2003 (Stantec, 2015)

EMR conducted an investigation of the former UST area and noted that two 1.5-inch-diameter copper pipes extended from the UST area to the southeast toward the main building, suggesting that diesel may have been used to fuel one or more furnaces within the building. These pipes were only removed to the edge of the UST excavation and capped.

Soil and groundwater samples were collected from two direct-push borings (SB-1 located in the center of the former UST excavation and SB-2 located along the southern edge of the former UST excavation). Soil sample results did not exceed the CULs for "petroleum." The groundwater sample collected from SB-1 exceeded the CULs for "petroleum."

EMR, Wetland Delineations, 2003 (EMR, 2003a)

EMR conducted a wetland assessment on the site. Entering the property near the northeast corner is Christopher Ditch, listed as a Minor Stream by the City of Kent. The stream flows southwest onto the property for about 450 feet, then turns toward the northwest where it flows off the property through a drain pipe. An unnamed minor stream enters the property from the central south portion of the property and flows north into Christopher Ditch.

The wetlands of the property are found along the sides of and in Christopher Ditch and its tributary. The wetlands (designated as Wetland A) encompasses approximately 49,227 sq ft and is a Category 2 wetland under the Kent City Code. According to EMR, this wetland required a 50-foot buffer plus a 15-foot setback (building setback) from the outer edge of the buffer. Christopher Ditch requires a 25-foot buffer from the stream. It was noted that the 50-foot wetland buffer extends 25 feet beyond the stream's buffer; therefore, the stream's buffer is superseded by the greater wetland buffer. The report also identified dominant vegetation types on the property.

EMR, Remedial Investigation/Feasibility Study, 2003 (EMR, 2003b)

EMR collected dross samples from four boring (DP-1 through DP-4), collected soil samples from one boring (DP-5), installed an additional monitoring well (MW-5), and collected groundwater samples from the new well MW-5 and existing wells MW-2 through MW-4). Elevated concentrations of aluminum, arsenic, barium, chromium, lead, chloride, and fluoride were present in groundwater, but only arsenic exceeded the CUL. Soil sample did not contain metals above the CULs. The black dross piles contain aluminum, copper, barium, and mercury above CULs, but leachability testing indicated that the black dross is not a characteristic hazardous waste. The remedial alternative presented were on-site containment of all black dross.

URS Draft Cleanup Action Plan, 2004 (URS, 2004)

URS completed an inventory of the stockpiled waste collected in baghouses located in the southwest corner of the facility building. The total estimated volume was 1,100 cubic yards. A report by URS (*Black Dross Report*, dated 2000) was referenced [this report is not available to Ecology].

Data gaps that URS documented included:

- Characterization of dross in the lower portion of the pile;
- Characterization of wastes remaining in the refinery building, including baghouse dust and KBI dross;
- Extent of dross impact to soil and sediment, especially soil and sediment beneath the dross piles (complete assessment may require the removal of the dross pile first);

- Occurrence of dissolved metals, salts, and volatile organic compounds (VOCs) in groundwater (the City of Kent had expressed concern that groundwater has not been previously analyzed for VOCs); and
- Extent of soil and groundwater impacts in the vicinity of the former UST. Contaminated stockpiled soil was returned to the UST excavation. A groundwater sample collected in 2003 by ERM contained petroleum hydrocarbons above the CUL.

Stantec Limited Phase II Investigation (Stantec, 2017)

The results of the investigation indicated that metals, chloride, fluoride, and benzo(a)pyrene exceeded the screening levels for groundwater (based on sampling one well), surface water and sediment on the property.

Aerotech Stockpile Survey and Assessment (Aerotech, 2017a)

Aerotech collected 32 discrete samples from the stockpiled dross and surveyed the site with an aerial drone to estimate the quantity of material stockpiled and its density of the purposes of estimating disposal costs. Samples of the dross were collected from eight locations (EX1 through EX8). Four samples were collected from each location at 2, 5, 7, and 10 feet below the top of the dross stockpile. The density values ranged from 0.78 to 1.14 tons per cubic yard. The estimated volume of dross on the property was 25,177 cubic yards.

Aerotech Groundwater Well Survey (Aerotech, 2017b)

Aerotech conducted a survey of the existing monitoring wells on the site to assess locate, assess, and document the status of the wells (MW-1 through MW-5). Wells MW-3 and MW-4 could not be located and were presumed to be destroyed. MW-1 could not be accessed due to dense vegetation, so the status could not be verified. MW-2 was located and no remarks were made regarding usability. MW-5 was located and found to be unusable and was recommended to be decommissioned.

Aerotech Groundwater Monitoring Well Installation (Aerotech, 2017c)

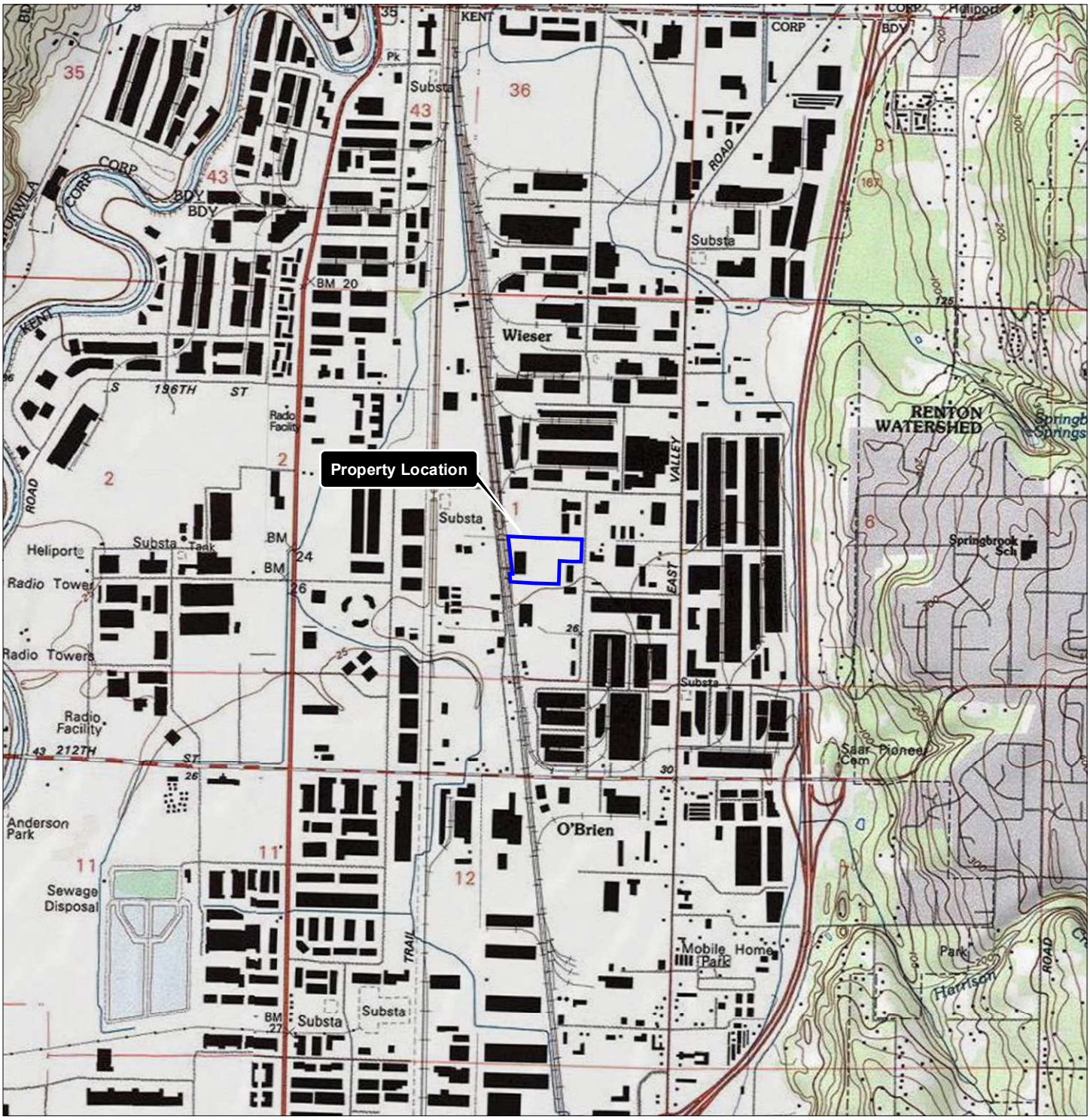
Replacement groundwater monitoring wells (MW3A, MW4A, MW5A, and MW6) were installed to approximately 16 feet bgs. Groundwater from MW3A and MW6 contained concentrations of fluorides above the Method B CUL. Concentrations of chlorides were above the Maximum Contaminant Level for groundwater in MW4A and MW6. Groundwater from MW5A contained arsenic and aluminum above the respective MTCA Method A or B CULs. All other results were either not detected at the method reporting limits or were below applicable CULs. Shallow soil samples were collected from the borings (samples collected at 5 to 6.5 feet bgs) and analyzed for metals. None of the results were above the CULs.

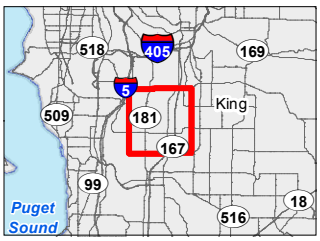
Soil and Groundwater Sampling Locations Proposed in the RIWP

Figure 9 shows proposed locations of soil samples, direct-push groundwater samples, and replacement monitoring wells. **Figure 10** shows proposed sediment and ditch sample locations.

Site Diagrams

U:\GIS\other PCs\185750123 CityofKent EPA Brownfields\07 gis\mxds\Fig1 CityofKent.mxd Revised: 2015-06-23 By: lrieschke





Notes

1. Coordinate System: NAD 1983 HARN StatePlane Oregon North FIPS 3601 Feet Intl
2. Data Sources Include: Stantec, King County, Esri
3. Background: 7.5' USGS Topographic Quadrangle

Legend

Property Location

Figure 1

Reference: "Phase I Environmental Assessment", Stantec, July 20, 2015.

Figure No.
1

Title
Property Location Map

Client/Project
City of Kent EPA Brownfields
Phase I ESA - 7730 S. 202nd St.
Kent, WA

185750123
Prepared by LKR on 2015-06-22
Technical Review by CP on 2015-06-23
Independent Review by XX on 2015-XX-XX

0 1,000 2,000 Feet
1:24,000 (at original document size of 8.5x11)

N

Stantec

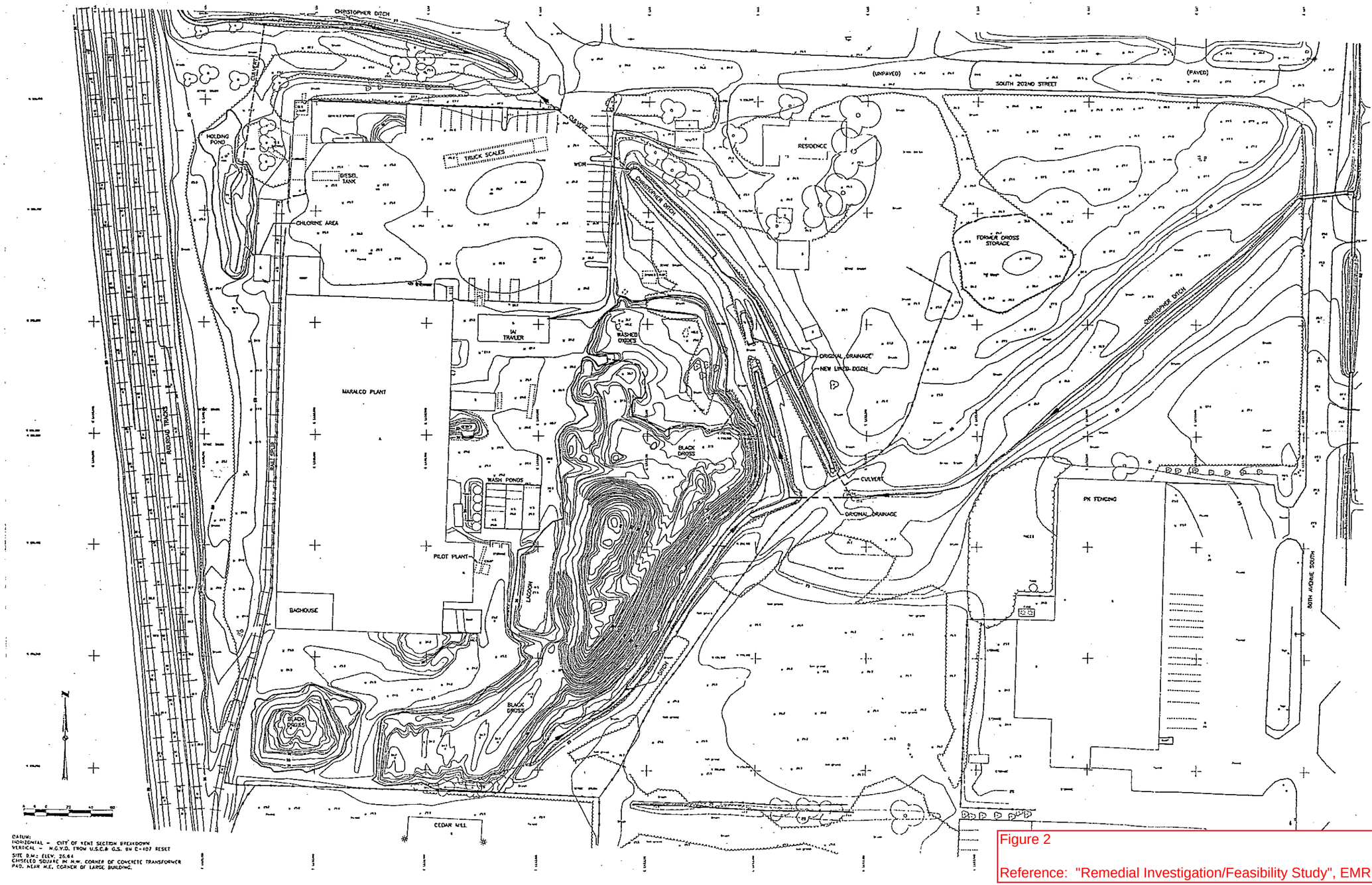


Figure 2

Reference: "Remedial Investigation/Feasibility Study", EMR, May 16, 2003.

EMR INCORPORATED

MARALCO SITE - KENT, WASHINGTON

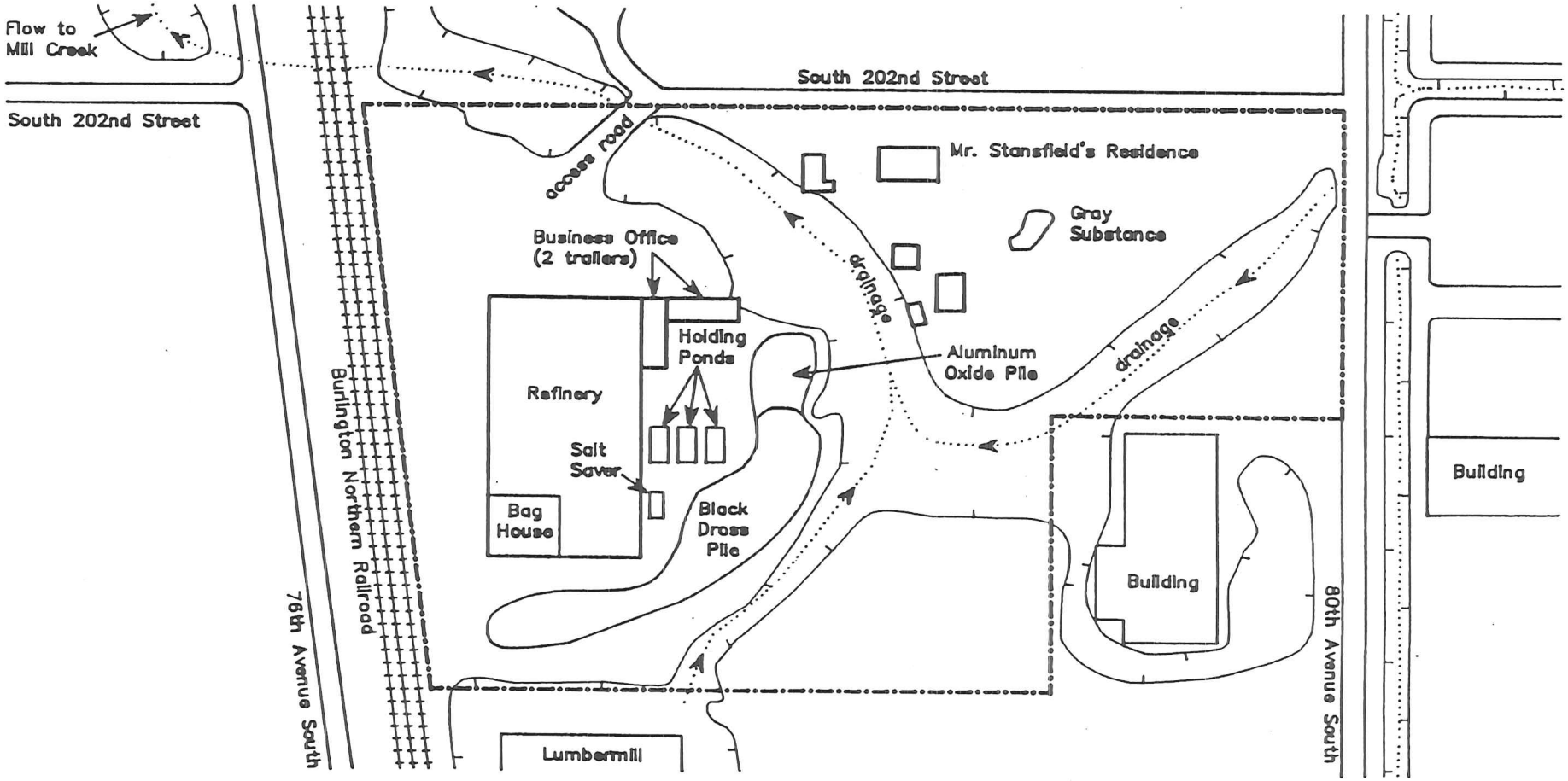
1990 TOPOGRAPHIC 1' CONTOUR MAP

Drawn By:	KAM
Checked By:	CNM
Project No:	MARALCO 6070.001-1
File Name:	MARALCO6070-1-156
Revision No.:	
Date:	05/07/03
Scale:	AS SHOWN

FIGURE 4-6

Plot Date:

Xrefs:



ecology & environment, inc.	
Job: T10-8705-003	Waste Site: WA0518
Drawn by: D. P.	Date: Oct. 8, 1987

Figure 3a

Reference: "Site Assessment Report", E&E, October 1987.

FIGURE 2
SITE MAP

MARALCO - EXISTING CONDITIONS

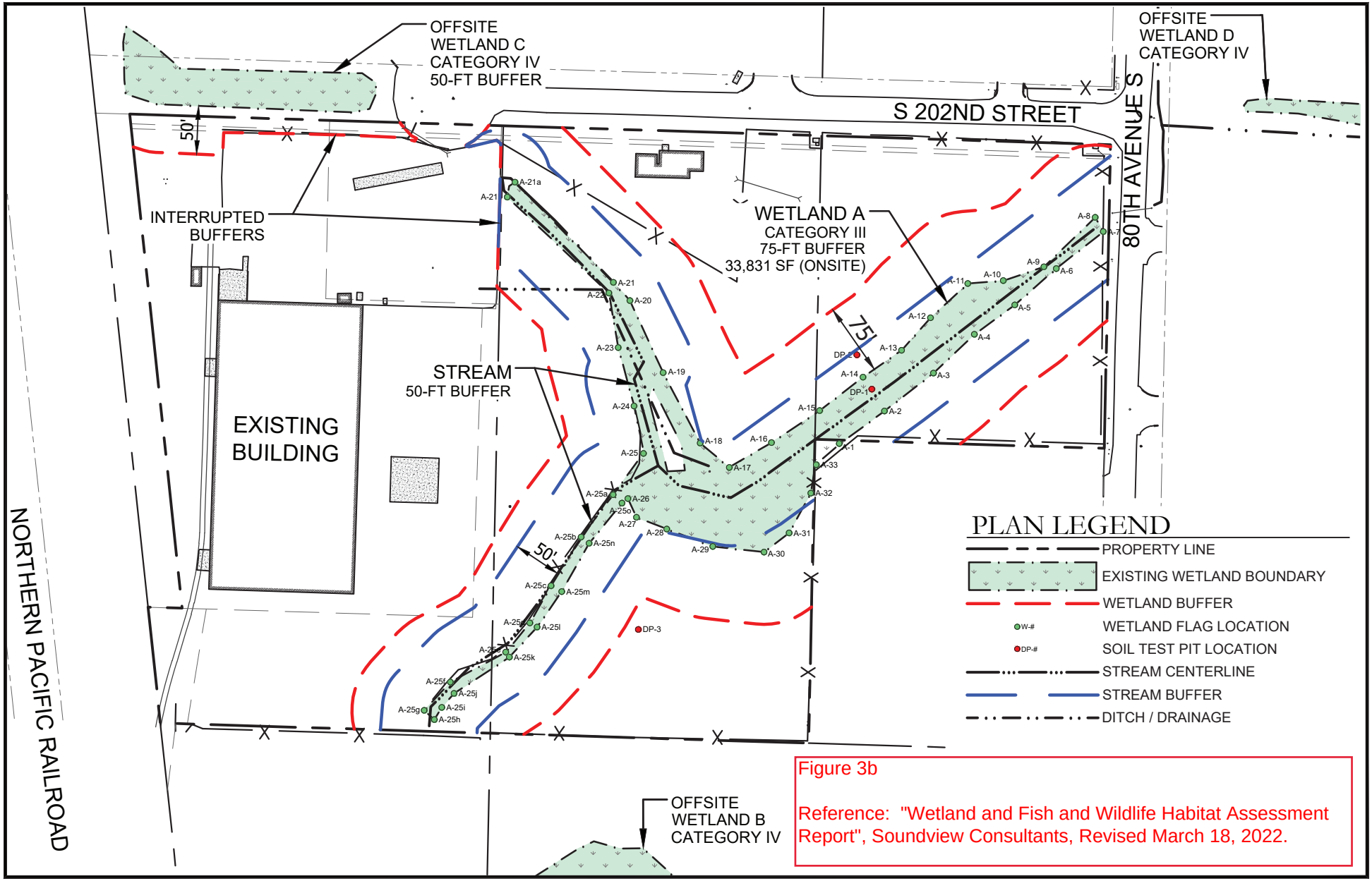


Figure 3b

Reference: "Wetland and Fish and Wildlife Habitat Assessment Report", Soundview Consultants, Revised March 18, 2022.

0 70 140 280

GRAPHIC SCALE
1"= 140'

MARALCO
7730 202ND STREET
KENT, WA 98032

KING COUNTY
PARCEL NUMBER(S):
6315000300

Soundview Consultants LLC
Environmental Assessment • Planning • Land Use Solutions
2907 HARBORVIEW DRIVE, SUITE D
GIG HARBOR, WASHINGTON 98335
P. 253.514.8952
F. 253.514.8954
WWW.SOUNDVIEWCONSULTANTS.COM

DATE: 3/25/2022
JOB: 1582.0022
BY: MW
SCALE: AS SHOWN
SHEET: 2

C:\Users\Matt\Desktop\1582.0022 (2022-03-24) base.dwg
Plotted March 28, 2022

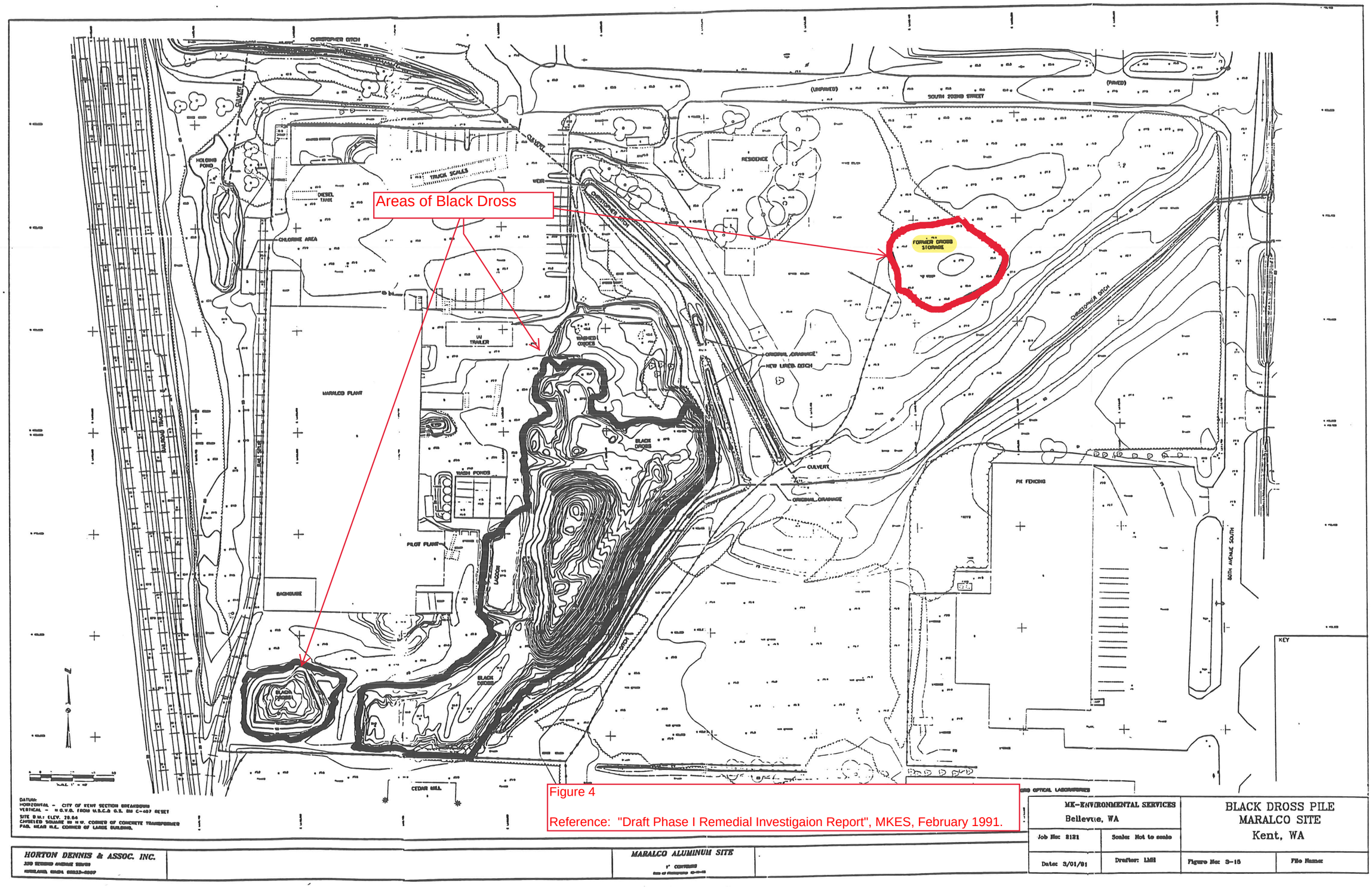


Figure 4

Reference: "Draft Phase I Remedial Investigaion Report", MKES, February 1991.

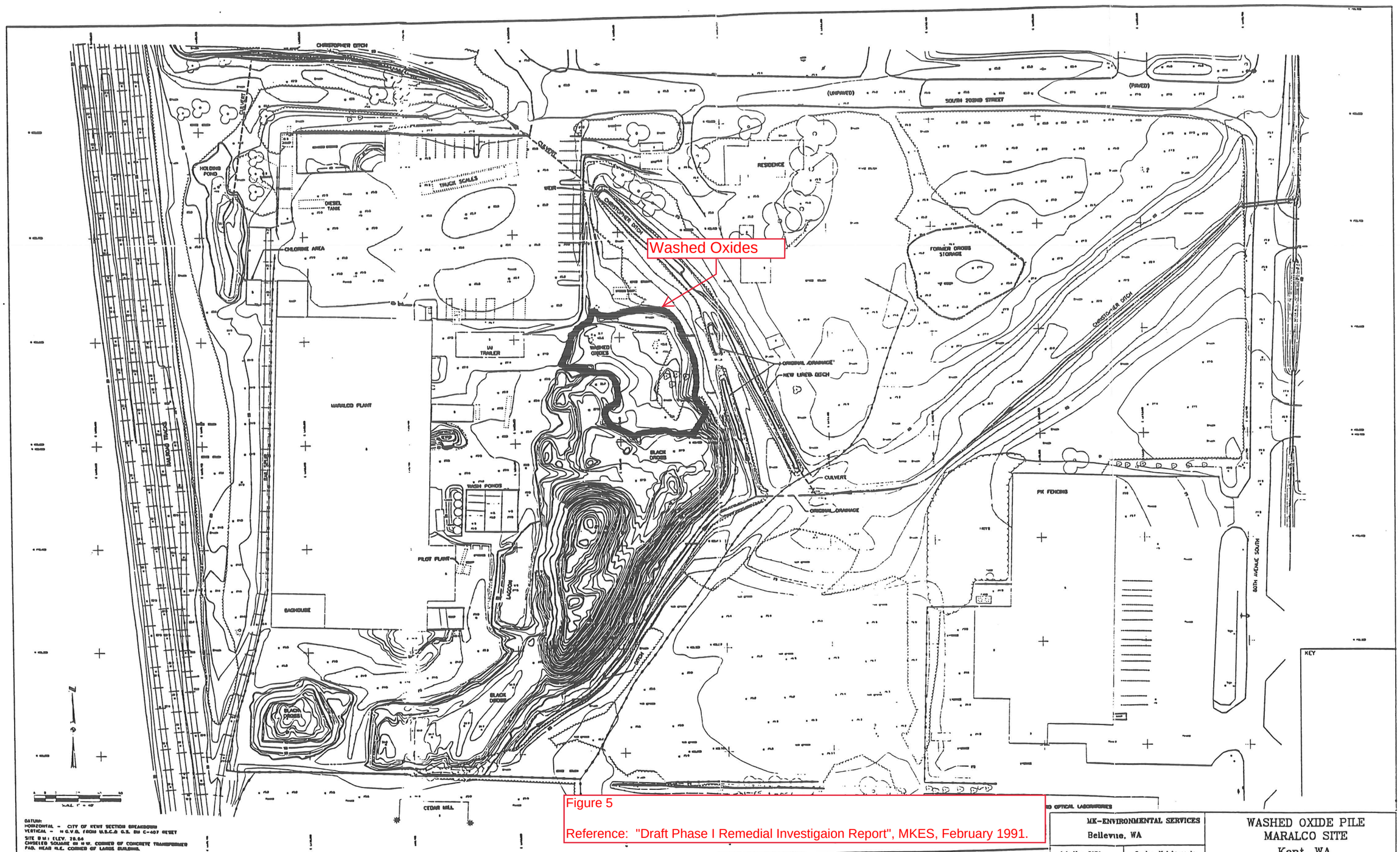


Figure 5

Reference: "Draft Phase I Remedial Investigaion Report", MKES, February 1991.

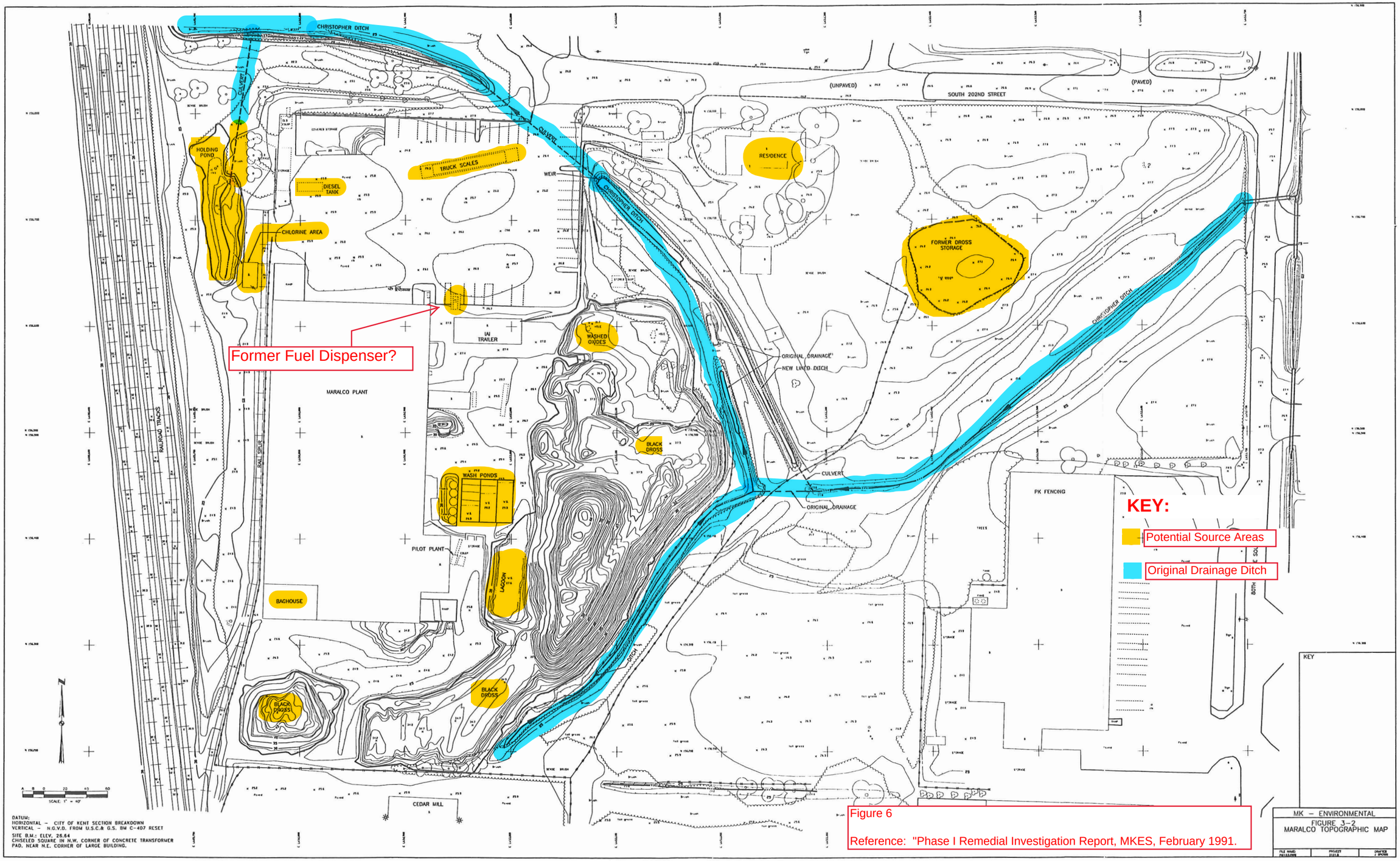


Figure 6

Reference: "Phase I Remedial Investigation Report, MKES, February 1991.

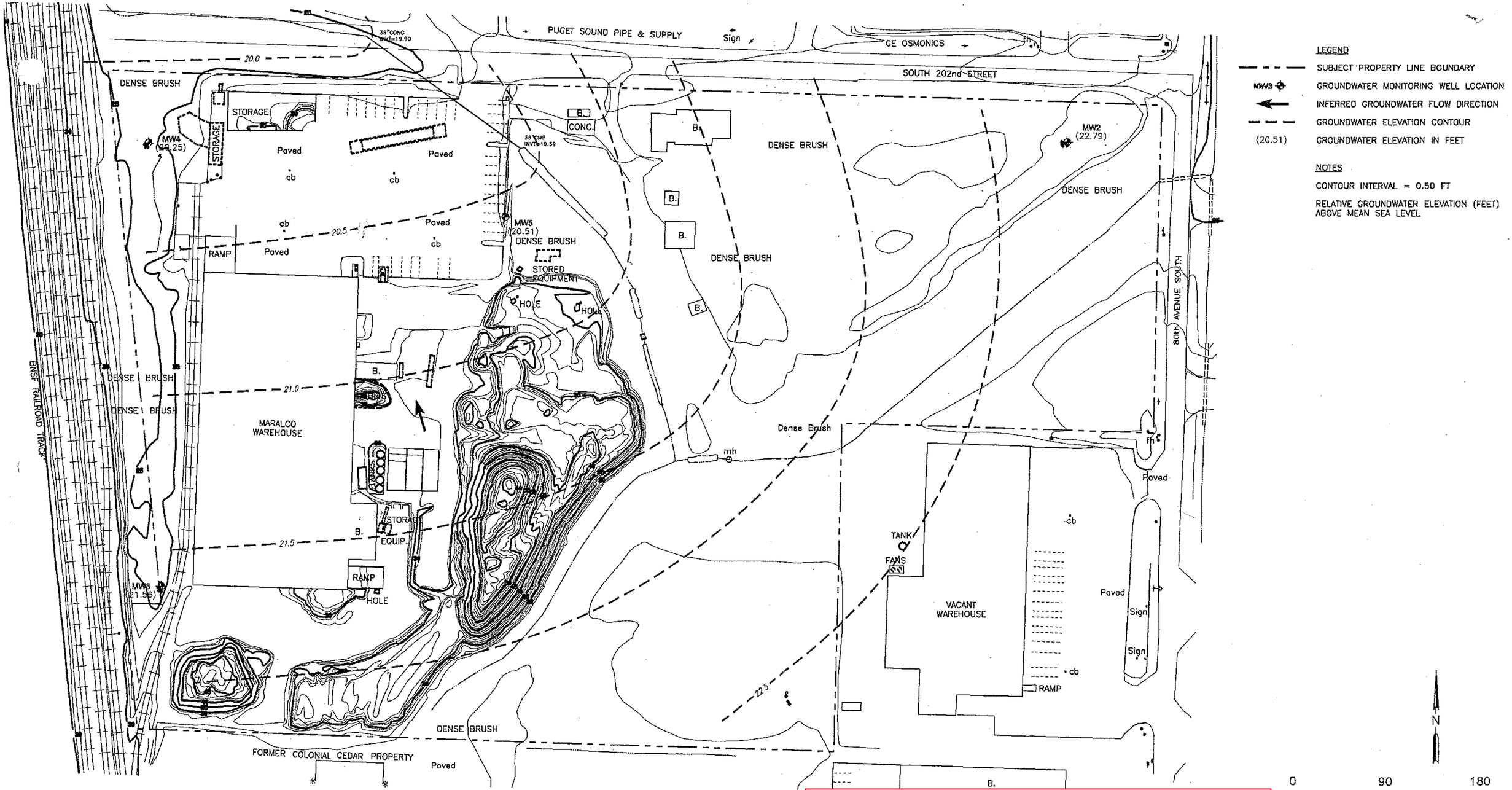


Figure 7

Reference: "Remedial Investigation/Feasibility Study", EMR, May 16, 2003.

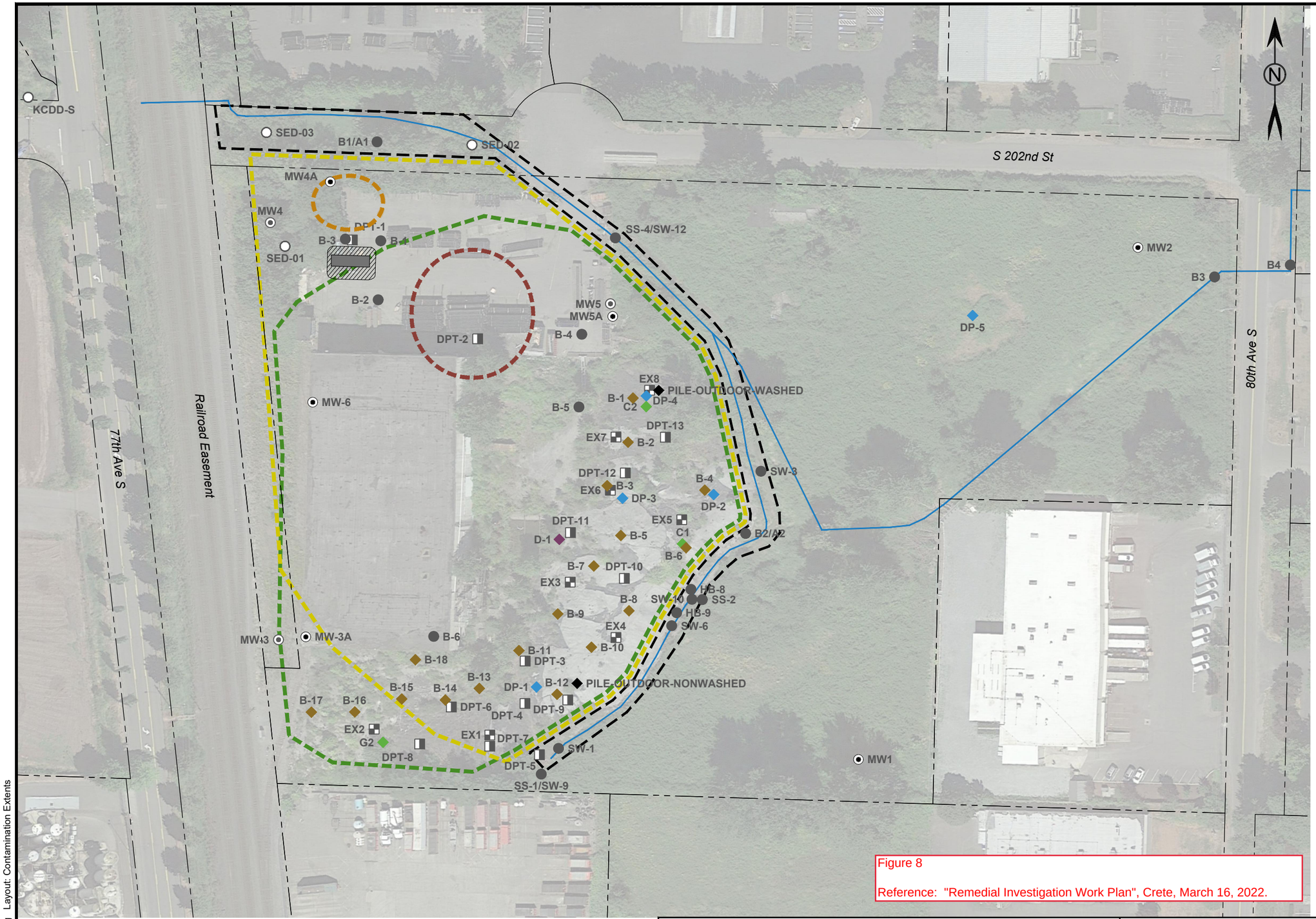
EMR INCORPORATED

MARALCO SITE - KENT, WASHINGTON

JANUARY 2003 GROUNDWATER POTENTIOMETRIC MAP

Drawn By:	KAM
Checked By:	CNM
Project No:	MARALCO 6070.001-1
File Name:	MARALCO6070-1-151
Revision No.:	
Date:	05/07/03
Scale:	1" = 90'-0"

FIGURE 4-1



LEGEND

- Estimated Extent of Diesel in Groundwater
- Estimated Extent of Fluoride in Groundwater
- Estimated Extent of Chloride in Groundwater
- Estimated Extent of Metals in Groundwater
- Estimated Extent of Sediment Impacts
- Approximate Ditch Location
- Sediment Sample (Crete, 2021)
- DPT Locations (Crete, 2021)
- Test Pits (Aerotech, 2017)
- Monitoring Wells (Aerotech, 2017)
- Former Monitoring Wells
- Historic Boring and Sediment Sample Locations
- Dross Grab (Crete, 2021)
- Dross Composite (Stantec, 2017)
- URS Dross (URS, 2006)
- DP Dross (EMR, 2003)
- E&E Dross (E&E, 1987)
- Former UST
- Former Excavation Location
- Parcel Boundary

0 100 200
SCALE IN FEET

Figure 8

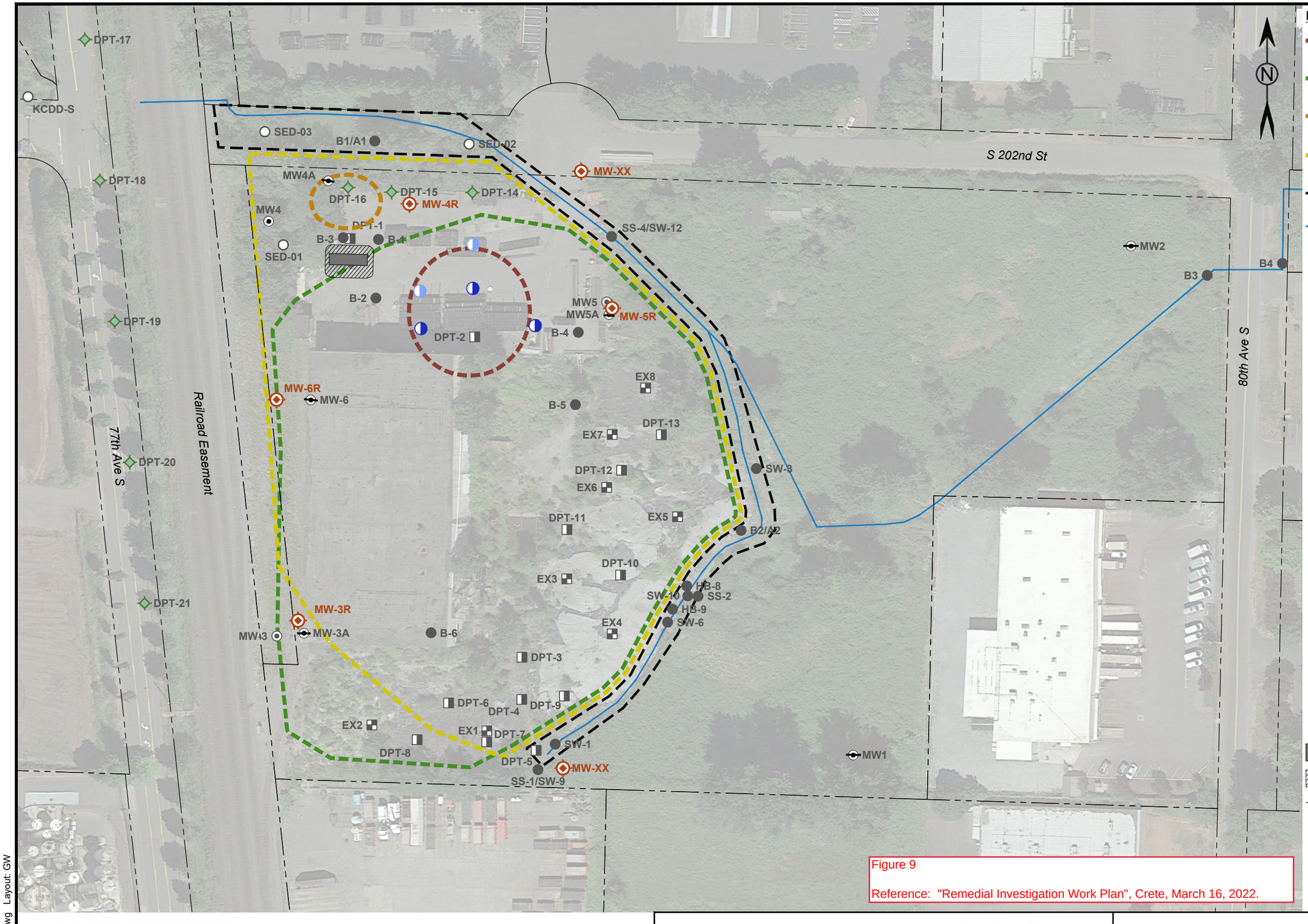
Reference: "Remedial Investigation Work Plan", Crete, March 16, 2022.

CRETE CONSULTING, INC.

Maralco Property
7730 South 202nd Street, Kent, Washington
March 2022

Figure 6
Extent of Groundwater and Sediment Contamination

File: Maralco Site.dwg Layout: Contamination Extents



LEGEND

- Estimated Extent of Diesel in Groundwater
- Estimated Extent of Fluoride in Groundwater
- Estimated Extent of Chloride in Groundwater
- Estimated Extent of Metals in Groundwater
- Estimated Extent of Sediment Impacts
- Approximate Ditch Location
- Proposed Monitoring Well
- Geoprobe soil borings to 20 ft bgs (based on depth of UST)- collected in the vicinity of the former UST. Samples spaced 50ft step out, additional step outs may be collected based on field results - light blue shows second step out. Select locations will include grab groundwater samples. ANALYSIS - Soil - TPH-Dx and Metals/GW - TPH-Dx, metals, and chloride/fluoride
- Groundwater Grab borings to 15 ft (based on point of compliance) analysis - Soil and GW- Metals and chloride/fluoride Select locations along the northern property boundary will include TPH-Dx for GW samples
- Sediment Sample (Crete, 2021)
- DPT Locations
- Test Pits (Aerotech, 2017)
- Monitoring Wells (Aerotech, 2017)
- Monitoring Well to be Abandoned
- Former Monitoring Wells
- Historic Boring and Sediment Sample Locations
- Former UST
- Former Excavation Location
- Parcel Boundary

0 100 200
SCALE IN FEET

Figure 9

Reference: "Remedial Investigation Work Plan", Crete, March 16, 2022.

CRETE CONSULTING, INC.

Maralco Property
7730 South 202nd Street, Kent, Washington
March 2022

Figure 7
Proposed Soil and Groundwater Sample Locations

File: Maralco Site.dwg Layout: GW

Transection A-A'
Sample A-1 through A-5

Transection B-B'
Sample B-1 through B-5

SED-03
B1/A1
SED-02
S 202nd St
MW-XX
DPT-18
MW4A
DPT-16
DPT-15
DPT-14
MW-4R
MW4
DPT-1
B-3
B-1
SED-01
SS-4/SW-12
B-2
MW5
MW5A
MW-5R
B-4
DPT-2
DPT-19
Railroad Easement
77th Ave S
MW-6R
MW-6
EX8
PILE-OUTDOOR-WASHED
B-1
DP-4
C2
B-5
DPT-13
EX7
B-2
DPT-12
B-3
EX6
DP-3
B-4
DP-2
DPT-20

Figure 10

Reference: "Remedial Investigation Work Plan", Crete, March 16, 2022.

LEGEND

- Transect Line
- Approximate Ditch Location
- Proposed Monitoring Well
- Proposed Geoprobe Borings
- Groundwater Grab borings
- Sediment Sample (Crete, 2021)
- DPT Locations
- Test Pits (Aerotech, 2017)
- Monitoring Wells (Aerotech, 2017)
- Monitoring Well to be Abandoned
- Former Monitoring Wells
- Historic Boring and Sediment Sample Locations
- Former UST
- Former Excavation Location
- Parcel Boundary

LEGEND

Samples collected along the transections will be collected at three intervals - 0-0.5, 0.5-1 and 1-1.5 ft bgs. Samples will be collected at the mid point of the drainage channel, along the base of the channel, and mid way up on the sides of the channel for a total of 5 sample locations.

0 50 100
SCALE IN FEET

CRETE CONSULTING, INC.

Maralco Property
7730 South 202nd Street, Kent, Washington
March 2022

Figure 8
Proposed Sediment / Ditch Sample Locations

File: Maralco Site.dwg Layout: Sediment

Enclosure B

Basis for the Opinion:
List of Documents

1. Ecology and Environment (E&E). 1987. *Technical Assistance Team, Site Assessment Report, Maralco Aluminum, Kent, Washington,* October 1987.

2. MK-Environmental Services (MKES). 1991a. Draft Report, Phase I Remedial Investigation Report, Maralco Site, Kent, Washington, February 1991.

3. MKES. 1991b. *Draft Report, Phase I Feasibility Study Report, Maralco Site, Kent, Washington,* March 1991.

4. URS Corporation (URS). 2000. *Black Dross Pile Characterization, Maralco Aluminum Site, Kent, Washington.* August 31, 2000.

5. Environmental Management Resources, Inc. (EMR). 2003a. Revised Wetlands Delineations for Maralco Site, Kent, Washington, April 2003.

6. EMR. 2003b. *Draft Remedial Investigation/Feasibility Study for the Former Maralco Site,* May 2003.

7. URS. 2004. *Draft Cleanup Action Plan, Maralco Redevelopment Project,* November 12, 2004.

8. Enviros, Inc. 2005. *Final Report, Underground Storage Tank Decommissioning at the Maralco Aluminum Site, 7730 South 202 Street, Kent, Washington,* July 31, 1005.

9. URS. 2005. *Sampling and Analysis Plan/Quality Assurance Project Plan, Maralco Restoration Project, 7730 South 202nd Street, Kent, Washington.* September 2005.

10. URS. 2006. *Draft Dross Sampling and Waste Determination, Maralco Restoration Project, Kent, Washington.* April 27, 2006.

11. URS. 2011. *Proposal, Environmental Services, Maralco Restoration Project, 202nd Street, Kent, Washington*. November 14, 2022.

12. Stantec. 2015. *Phase I Environmental Site Assessment Report, Former Maralco Aluminum Site, 7730 South 202nd Street, Kent, Washington,* July 20, 2015.

13. Stantec. 2017. *Limited Phase II Environmental Site Assessment Report, Former Maralco Aluminum Site, Kent, Washington*. February 27, 2017.

14. Aerotech Environmental Consulting (Aerotech). 2017a. *Stockpile Survey and Assessment, Former Maralco Aluminum Site, 7730 South 202nd Street, Kent, Washington 98032,* May 31, 2017.

15. Aerotech. 2017b. *Groundwater Well Survey, Former Maralco Aluminum Site, 7730 South 202nd Street, Kent, Washington,* June 7, 2017.

16. Aerotech. 2017c. *Groundwater Monitoring Well Installation Report, Former Maralco Aluminum Site, 7730 South 202nd Street, Kent, Washington 98032,* August 15, 2017.

17. Aerotech. 2017d. *Site Summary Report, Former Maralco Aluminum Site, 7730 South 202nd Street, Kent, Washington 98032,* October 31, 2017.

18. Soundview Consultants LLC. 2022a. *Wetland and Fish and Wildlife Habitat Assessment Report,* July 26, 2021; Revised March 18, 2022.

19. Soundview Consultants LLC. 2022b. *Conceptual Mitigation Plan, Maralco,* April 1, 2022.

20. City of Kent, Washington. 2022. Revised Notice of Application, Permit Application Number: KIVA #RPSW-2221350 / ENV-2022-4, to Bridge Maralco Site SEPA (permit application date April 29, 2022), Project for grading property for future construction, May 6, 2022.