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Geologic and Environmental Consulting Services

Joseph B. Hunt, LHG
Voluntary Cleanup Program
Washington Department of Ecology
Southwest Region - Toxics Cleanup Program
PO Box 47775
Olympia, Washington 98504-7775

November 27, 2023

Transmitted via email to: Johu461@ecy.wa.gov

Subject: **Response to January 5, 2023, Ecology Further Action Letter**
North Star Casteel (Formerly Varicast Inc.)
1200 West 13th Street
Vancouver, Washington
VCP Identification: SW1712

Dear Mr. Hunt:

Martin S. Burck Associates, Inc. (MSBA) presents the following information regarding the site referenced above, in response to the comments prepared by the Washington Department of Ecology (Ecology) in a Further Action letter dated January 5, 2023. The Ecology comments were in response to MSBA's Draft *Excavation and Cleanup Report* (Cleanup Report), dated May 20, 2022. The Cleanup Report concluded that the remedial actions and investigation results warranted a conditional no further action (NFA) determination. MSBA has included the Ecology comments (*italicized text*) above each MSBA response (**green text**) in the order they appeared in the letter.

MSBA submitted the Draft Remedial Investigation/Feasibility Study (Work Plan) to the Ecology Project Manager at the time, Mr. Nicholas Acklam, on March 3, 2021. The Work Plan was detailed and included a map of the proposed sample locations with the anticipated depths (Figure 5, Attachment A) to ensure that Ecology was in agreement with the closure strategy prior to initiating the remaining cleanup and sampling activities. MSBA and Mr. Acklam agreed to discuss the Work Plan via phone calls and emails as opposed to a formal Opinion Letter due to time constraints associated with the cleanup schedule.

MSBA discussed the sample locations with Mr. Acklam who provided comments regarding the Work Plan in an email dated April 2, 2021 (Attachment B). On April 12, 2021, MSBA discussed the Work Plan with Mr. Acklam in greater detail and as a result, mutually agreed on several modifications. On April 15, 2021, MSBA submitted an email summarizing the Work Plan modifications that were agreed to (Attachment B). The modifications requested by Mr. Acklam included collecting a groundwater sample downgradient of AOPC-5 (MW-2) and sampling

monitoring well MW-1. Mr. Acklam did not request or mention the possibility of additional groundwater samples beyond sampling MW-1 and MW-2 and appeared to be satisfied with the existing Environmental Partners Inc (EPI) groundwater data from throughout the site. Mr. Acklam also did not request additional soil sampling at areas not previously investigated. The work was performed following Ecology's approval.

MSBA updated Mr. Acklam and received input throughout the cleanup and sampling activities. A total of 183 soil samples (not including duplicates) and 10 groundwater samples have been collected at the site. In our opinion, the site has been adequately characterized. All contaminants encountered appeared to originate at or near the surface and were relatively limited in depth. This was substantiated by the soil data generally showing decreasing concentrations with depth and is consistent with the conceptual model for foundries in general. After reviewing the information provided in our responses below, we respectfully request that Ecology reconsider requiring the significant additional sampling that was requested in the January 2023 Further Action letter.

Ecology Comment #1:

1. Historical Aerial Evaluation. *Please present a historical aerial photo correlation with past facility layouts, operations, and RI sample boring locations. Such correlation is key to assess other Site areas as potential sources beyond that which is currently represented. Based on Ecology's review of several of the aerial photos provided in the reports to date, the following observations were evident:*

- ***1935:*** *Maintenance Building present. Long large rectangular building present adjacent to western Site-boundary occupying southern perimeter—may have extended on-Site. Circular line of what appears to be large ASTs or silos aligned north-south at west end of what is now foundry building. Structure at northeast corner.*

MSBA: EPI completed Phase I and Phase II Environmental Site Assessments at the site, which included an EDR Environmental Database Report and a detailed review of the site history, aerial photographs, and historic uses. MSBA reviewed EPI's methods and findings and concluded that the investigation was thorough. The "long large rectangular building" you refer to is present on a 1928 Sanborn map (Attachment C) and is labeled California Packing Corporation Plant. This building is located west of the site boundary some distance and does not overlap. It is also at a lower level than the site with a railroad spur and a steep embankment separating the two. The nearby foundry building was also present in 1928 (Sanborn map). Due to the poor quality of the 1935 aerial photo and the red EDR outline, the west side of the foundry is obscured and the building itself is difficult to discern.

The circular features you mention as possible ASTs or silos, are well within the footprint of the foundry building and may represent cupolas protruding through the roof for passive ventilation. Cupolas are also labeled on the 1928 Sanborn map and were commonly used in foundries to allow heat to escape through the ceiling/roof. In addition, it appears that sample AOPC3-02 was collected at the approximate location you're describing (Attachment D). The approximate sample locations are depicted on the 1935 aerial photograph presented in Attachment D. In our opinion, the sample coverage is sufficient and meets the criteria for an investigation based on the former site features and site utilization as described. The larger off-site structure to the northeast is labeled as prune storage on the 1928 Sanborn map

and was not related to the foundry. The structures at the north end of the site are residences based on the presence of residences at that general location on the 1928 Sanborn map and a notable increase in residences shown on the 1966 Sanborn map.

• ***1948:*** *Another north-south oriented building just west of AOPC 8 (Maintenance Shop Building) occupying area of Site that is now vacant between AOPC 5 (Southwest Compressor) and AOPC 8—no investigation there to date.*
MSBA: An overlay of the approximate sample locations depicted on the 1948 aerial is presented in Attachment D. Sample HA-26 was collected in the vicinity of the building described. The building looks to be in a similar location to the one depicted on the 1928 Sanborn map, which is labeled as Interstate Manufacturing Company, Pattern Shop and Woodworking. In our opinion, the former presence of a building does not warrant any additional investigation.
Also, another north-south oriented building east of and the length of 80 feet along uninvestigated swath of land adjacent to Lincoln Ave. **MSBA: This appears to be the current office building. The 1966 Sanborn map also lists the building as an office (Attachment C).** *Many other structures in northern half of Site that is now mostly devoid of structures and relatively uninvestigated.* **MSBA: These are former residences as shown on the 1928 and 1966 Sanborn maps (Attachment C).** *AOPC 3 – Foundry building extended to western Site-boundary in area that is now vacant and uninvestigated.* **MSBA: The red property boundary shown on the aerial images presented in the Phase I Environmental Site Assessment Report by EPI was included with the EDR aerial image package and appears to be somewhat inaccurate and inconsistent. For example, it extends into Lincoln Ave in the 1948 and 1951 aerial images. Numerous samples were collected from within the footprint of the foundry building and MSBA disagrees that the area is uninvestigated.** *Also structures are off-Site along western boundary beyond foundry building that may be associated with foundry—should verify as Site would need to be extended in that direction if so.* **MSBA: MSBA is not aware of any evidence or site history that indicates the off-site buildings were related to the site. As mentioned previously, the 1928 Sanborn map depicts a California Packing Corporation Plant west of the foundry. The 1966 Sanborn map depicts two buildings west of the foundry used for beer storage. As mentioned before, the foundry is situated at a higher level and separated by a railroad spur and a steep embankment.**

• ***1951:*** *Foundry building appears to extend on to neighboring property along the western Site-boundary. Same structures in northern half of Site that is now vacant and relatively uninvestigated.* **MSBA: As mentioned previously, the red property boundary shown on the aerial images was generalized by EDR and included with the aerial image package. This boundary is somewhat inaccurate and its position varies from map to map (i.e. the boundary extends into Lincoln Ave in the 1948 and 1951 aerial images). The western extent of the foundry building is defined by the steep embankment and there is no evidence it has extended across the property line. The structures on the northern half of the site were residences, as shown on the 1928 and 1966 Sanborn maps (Attachment C).**

• ***1955:*** *Basically, same configuration of buildings; although, sister building appears adjacent to foundry building and extends off-Site to the west.* **MSBA: The image resolution is low on this aerial image, but we do not see a new sister building adjacent to the foundry or extending off-site. The absence of the building extending off-site is also supported by the 1966 Sanborn Map. The 1955 aerial image did not have the approximate property boundary in red, which I've added to the version shown in Attachment D.**

• ***1960/63:*** *Same configuration but more buildings appear in northern half of property that are currently uninvestigated.* **MSBA: As mentioned previously, the 1966 Sanborn map provides the best evidence of the residences that were located on the northern half of the property.**

These observations appear to indicate that large areas of the site between the AOCs remain both laterally and vertically uninvestigated when historical aerial photographs indicate prior activities. Additional soil and groundwater sampling should be conducted in these areas to assess the presence/absence of contamination due to past practices and/or unknown activities.

MSBA: MSBA disagrees that large areas remain uninvestigated, especially the residential area to the north. As previously discussed, a very thorough review of the site history and utilization was conducted by EPI. The areas of potential concern based on that review were identified and investigated. MSBA, in collaboration with Ecology oversight, performed additional investigations and cleanup as needed. At no time during this collaborative process did Ecology request, imply, or infer that any other areas warranted investigation. These areas were eliminated based on their lack of direct utilization with respect to the foundry process. The previous investigations identified the areas of potential environmental concern and the regulatory extent of the documented contaminants was defined both laterally and vertically.

Ecology Comment #2:

Insufficient RI Borings/AOPC. *Existing deeper soil boring and interval sampling via HSA (excluding hand auguring) at the Site was not performed to a level that would be considered as adequately defining the nature and extent of contamination both in the existing source areas and in the intervening uninvestigated areas. The following soil borings by SB boring number and depth, per AOC, were completed:*

• ***AOPC 1*** *– Metal Receiving Area: SB-9/10 (52'/48'); SB-15 (5')*

• ***AOPC 3*** *– Foundry Buildings: SB-12/13/14 (5')*

• ***AOCP 4*** *– Stormwater Drain Main Yard: SB-5 (56')*

• ***AOCP 5*** *– Southwest Compressor: SB-2/3 (45'/50'); SB-18 (5')*

• ***AOC-6*** *– Southwest Drywell: SB-1 (40')*

• ***AOC-7*** *– South Compressor: SB-4 (55'); SB-19 (5')*

- ***AOC-8*** *– Maintenance Shop Building: SB-17 (5')*
- ***AOC-9*** *– Welding Station Building: SB-16 (5')*
- ***AOC-10*** *– Stormwater Retention Structure: SB-7 (48')*
- ***AOC-13*** *– Foundry Waste: SB-6 (56'); SB-11 (5')*
- ***AOC-14*** *– North Compressor: SB-8 (22')*

AOCs 2 (Electric Arc Furnace), 11 (Oil-Sand Storage and Baghouse), 12 (Northwest Petroleum Storage), and 15 (Clark County Transformer) were investigated via only shallow hand augering and/or surface/near surface sampling.

Ecology suggests additional soil boring with interval soil sampling via either direct-push or HSA to better characterize both the lateral and vertical extent of COC impact. Such characterization should be conducted in the vadose zone to groundwater and within both the AOCs and the uninvestigated areas based on correlation with said AOC or other operations as discussed above in the historical aerial photo assessment. Such characterization should be detailed along the southern Site border to assess any potential comingling of contaminants between North Casteel and the adjoining Emerald Petroleum property.

In addition, despite the removal actions completed to date, additional removal and/or other remedial activities may need to occur based on deeper soil boring and groundwater data obtained during subsequent investigation.

MSBA: The 2021 cleanup and sampling activities were performed following Ecology's approval of the Work Plan. MSBA also updated Mr. Acklam and requested input throughout the process. A total of 183 soil samples and 10 groundwater samples have been collected at the site. In our opinion, the site characterization is sufficient and meets the regulatory requirements based on our experience with similar sites.

The Emerald bulk plant site (Cleanup Site #605) is located immediately south of the former Varicast site and has monitoring wells located adjacent to the site. A groundwater flow direction rose diagram prepared for the Emerald site indicates the most prominent flow direction is toward the southeast. The Emerald site appears to be downgradient of the former Varicast site. The adjacent downgradient Emerald site monitoring well data confirms that COCs (including cVOCs) are not comingling or migrating from the former Varicast site. The groundwater data from on-site borings also supports this conclusion.

MSBA does not agree that additional removal and/or remedial activities are warranted. The releases at the site occurred at the surface. The investigation confirmed the highest concentrations were closer to the surface and decreased with depth. The regulatory extent of the documented contaminants was defined both laterally and vertically. The excavation cleanup was conducted based on the investigation results as proposed in the Work Plan and the compliance objectives were satisfied.

Ecology Comment #3:

3. Metals. *RCRA 8 metals are not typically representative of either remedial investigation or foundry operations. Ecology recommends analyzing soil for each AOPC for Priority Pollutant 13 metals including antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc—with copper, nickel, and zinc representing additional exposure sources for both human and ecological species. In addition, aluminum, tin, titanium, platinum, iron, cobalt, and manganese should also be analyzed as accessory metals.*

MSBA: The Work Plan presented the proposed analytical strategy in Section 9.3 and Appendix E of the report. Mr. Acklam approved the Work Plan and did not mention sampling for additional metals. MSBA contends that the metals analyzed are adequate to assess compliance and analyzing for additional metals is not necessary.

Ecology Comment #4:

4. Groundwater Assessment. *The former and existing monitoring well network is not sufficient to assess seasonal groundwater chemical and hydraulic conditions across the Site. Further, RI HSA groundwater grabs are typically turbid and may not be representative of intrinsic groundwater conditions across a full seasonal cycle. Please obtain groundwater samples from permanent, developed, and surveyed monitoring wells across the Site. For metals, please collect samples using low flow groundwater sampling methodology and analyze samples for both total and dissolved metals as well as turbidity.*

Please also obtain groundwater elevation data from the well network such that both groundwater gradient and flow direction can be quantitatively calculated and determined over a complete annual seasonal cycle. The monitoring well network should extend across the Site-proper in assumed upgradient, crossgradient, and downgradient directions to better characterize all existing AOCs and intervening areas as well as provide for evaluation of soil contamination and source areas that are inaccessible due to existing building footprints, beyond the finite soil data sets that currently exist. Such groundwater characterization should be detailed along the southern Site border to assess any potential comingling of contaminants between North Casteel and the adjoining Emerald Petroleum property. Groundwater samples should be analyzed for the full suite of site COCs including TPH as GRO/DRO/ORO, Priority Pollutant metals, VOCs, and SVOCs including PAHs, and PCBs.

MSBA: As mentioned previously, MSBA discussed the Work Plan with Mr. Acklam, who requested a groundwater sample downgradient of AOPC-5 (subsequently advanced as MW-2) and sampling monitoring well MW-1. Mr. Acklam did not request or mention any additional soil borings and appeared to be satisfied with the existing EPI groundwater data throughout the site. On June 11, 2021, MSBA notified Mr. Acklam that MW-1 could not be located and may have been abandoned prior to MSBA's involvement. Mr. Acklam stated that MW-1 did not require reinstallation since the

previous results were below the Method A cleanup levels. MSBA sent a follow-up email later that day to summarize the discussion (Attachment B). MSBA concludes that the current level of groundwater characterization is sufficient to establish compliance based on the data, especially considering the depth to groundwater (34.5 to 54 feet bsg) and the removal of contaminants exceeding the CULs with the exception of two shallow areas capped with concrete at S24-0 (< 1 foot) and S25 (0 - 3.5 feet).

Ecology Comment #5:

5. *EPI and MSBA determined that site COC were limited to a depth of 5-6 feet bgs sub-slab or less based on the surficial nature of the past operational releases. This assumption discounts the potential for vertical mobilization through the soil column from chronic and long-term historical use and surface recharge from rain and snowmelt in open soil at the Site. In addition, chlorinated VOCs (cVOCs) can often be used as metal degreasers in foundries and have been detected in Site soil.*

In sufficient quantities, VOCs can form dense nonaqueous phase liquids within environmental media. Further Site-wide evaluation of cVOCs in soil, and especially groundwater, is necessary. To that end, the groundwater investigation should be expanded via collection of samples from wells that are screened through the first saturated cohesive (or most cohesive) horizon.

MSBA: The vertical extent of COCs in soil was defined at all locations based on confirmation soil samples. Groundwater is relatively deep and ranges from 34.5 to 54 feet bsg. A total of 10 groundwater samples have been collected throughout the site and VOCs and cVOCs were not detected at concentrations exceeding the Method A CUL. In addition, cVOCs were detected in soil at concentrations exceeding the CUL at a maximum depth of 2 feet bsg and the concentrations decreased with depth. The concentrations in soil were relatively low and not sufficient to form dense non-aqueous phase liquids. The adjacent downgradient Emerald site monitoring well data confirms that COCs (including cVOCs) are not migrating from the site or comingling, which is also consistent with the on-site groundwater data. In addition, consultants for the Emerald Site, Leidos Engineering LLC, completed a *Tetrachloroethene Source Evaluation* dated April 28, 2014. The evaluation cited three additional confirmed PCE release sites nearby and five additional sites as possible PCE sources. The site was not considered a potential source, likely because cVOC releases are not typically associated with foundries.

Ecology Comment #6:

6. Conceptual Site Model (CSM). *The CSM should be updated based on collection of additional deeper soil and groundwater data. Although sub-slab areas may have formerly harbored Site COC to a depth of 6 feet bgs, Ecology does not concur that Site COCs are generally limited to 6 feet bgs based on past operations. The CSM should also include an evaluation of off-Site receptors potentially exposed via historical emission of hazardous air pollutants (HAP) that are typical of foundry operations.*

MSBA: The vertical extent of COCs in soil was defined at all locations based on confirmation soil samples and was generally limited in depth as expected based on the surface releases. As discussed previously, the Work Plan was submitted prior to the cleanup activities performed by MSBA and

Ecology provided oversight. Based on Ecology's review of the Work Plan, off-site receptors were not a concern and therefore, were not investigated. MSBA is not aware of any evidence that off-site impacts have occurred. However, if necessary due to your concerns, a Property NFA would be accepted as opposed to a Site NFA.

Ecology recommends that the CSM also be depicted schematically and include primary and secondary sources, migration pathways, exposure pathways, and receptors of concern. Receptors should also include trespassers. Potential exposure pathways for both human and ecological receptors should include dermal contact, inhalation, and ingestion. Vapor intrusion is not considered an exposure pathway but represents a migration pathway for conveyance of Site COCs to the available receptors. Ecological risk is neither a migration nor an exposure pathway and should not be listed as such.

MSBA: The CSM will be revised to incorporate your comments and a schematic CSM will be included. Since the remaining CUL exceedances are limited to areas capped with concrete, the requested changes to the CSM would not result in changes to MSBA's conclusion that there is no elevated risk to human health and safety. In addition, the Ecological risk assessment will be relocated in the report, however, since the site meets the requirements for exclusion from an ecological evaluation in accordance with WAC 173-340-7491 (1)(b), MSBA concludes that no further assessment is needed.

Ecology Comment #7:

7. Vapor Investigation (VI). *VI assessment should be expanded beyond sub-slab surveys and should be updated once additional soil and groundwater data are collected.*

MSBA: The VI assessment was performed based on specific and direct input from Mr. Acklam during the 2021 cleanup and sampling activities (Attachment B). The results indicate there is no elevated risk to human health and safety and additional vapor sampling is not needed.

Ecology Comment #8:

8. Off-Site Emissions Assessment. *Foundries have historically constituted sources of HAP emissions including both metals and organic compounds. To assess the potential for historical HAP emissions to have impacted off-Site properties, please conduct an off-property evaluation of relevant COC to assess whether such emission impacts have occurred.*

MSBA: As mentioned previously, the Work Plan was submitted prior to the cleanup activities performed by MSBA and Ecology provided oversight. Based on Ecology's review of the Work Plan, off-site receptors were not a concern and therefore, were not investigated. MSBA is not aware of any evidence that off-site impact has occurred. In addition, Ecology completed compliance inspections at the site historically, which included requests for sampling waste streams at the site. A March 10, 2010 letter from Ecology regarding the sampling of furnace dust, wheelabrator shot, and sand states "all waste streams have been determined to be non-hazardous."

Remarks/Signatures

The information/conclusions contained in this response were arrived at in accordance with currently accepted professional geological and environmental practices at this time and location, no warranties are intended or implied. This response was prepared solely for North Star Casteel; Martin S. Burck Associates, Inc. is not responsible for the independent interpretations, conclusions, or actions of others derived from or based on the information presented herein.

Information and opinions presented in this response are based on the collection and review of data from limited portions of the site subsurface and surroundings. Martin S. Burck Associates, Inc., is not responsible for conditions that may exist in portions of the site that were not investigated, for conditions that were not reported or properly presented, and for future activities or investigations that may alter the current condition or understanding of the site.

Please contact me at (541) 387-4422 if you have any questions regarding this response.

Sincerely,

Martin S. Burck Associates, Inc.

Prepared By:

Josh Owen — 11/27/23
Senior Project Manager — Date

Reviewed By:

Martin S. Burck, LG/RG — 11/27/2023
Licensed/Registered Geologist: OR WA CA — Date

Attachment A Figure 5: Remedial Plan Map (Work Plan, dated March 3, 2021)
Attachment B Correspondence with Ecology
Attachment C Sanborn Maps
Attachment D Supplemental Modified Aerial Images

State of Washington MSB 1321 Licensed Geologist Martin S. Burck

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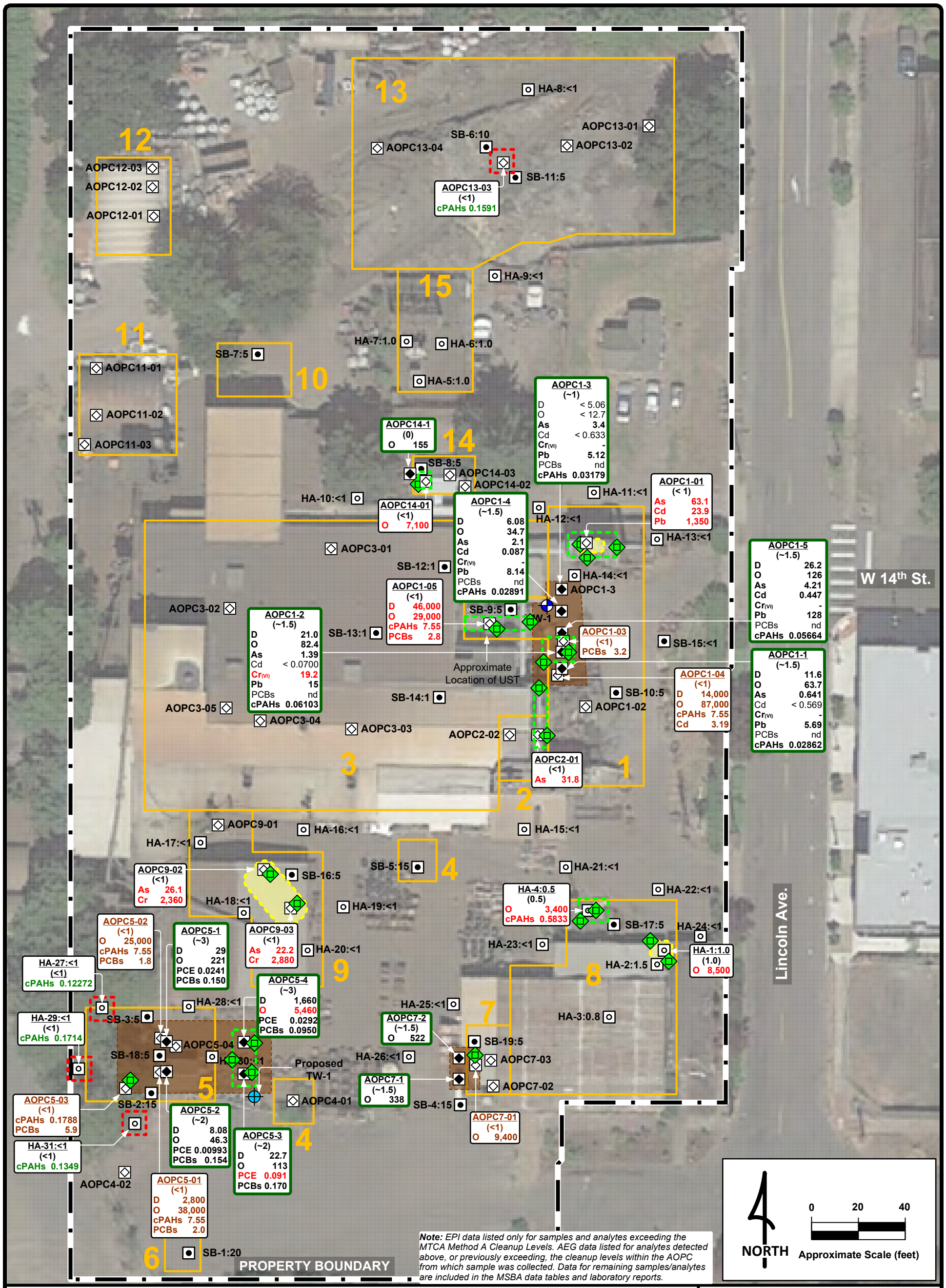
Attachment A

Figure 5 Remedial Plan Map (from Work Plan dated March 3, 2021)



Note: *EPI data listed only for samples and analytes exceeding the MTCA Method A Cleanup Levels. AEG data listed for analytes detected above, or previously exceeding, the cleanup levels within the AOPC from which sample was collected. Data for remaining samples/analytes are included in the MSBA data tables and laboratory reports.*

LEGEND

- AEG/Magna Soil Removal Area
- Proposed Targeted Soil Removal Area
  - Green = Previously Proposed Area
  - Red = Additional Proposed Area
- Proposed Residual COCs Cap Area
- Additional Proposed Soil Sample Location
- **MW-1** Monitoring Well Location and ID
- **SB-2** EPI HSA Soil Boring Sample Location and ID (2017-2018)
- **HA-31** EPI Hand Auguer Soil Boring Sample Location and ID (2017-2018)
- **AOPC4-02** EPI Near Surface Soil Sample Location and ID (2017)
- **AOPC5-1** AEG/Magna Soil Sample Location and ID (2018)

AOPC5-01 (<1)	
	Soil Sample ID
	Sample Depth (feet below surface grade)
D 2,800	Diesel (NWTPH-Dx) (ppm)
O 38,000	Oil (NWTPH-Dx) (ppm)
cPAHs 7.55	TEF Adjusted Total Carcinogenic PAHs (8270) (ppm)
PCBs 2.0	Polychlorinated Biphenyls (8082A) (ppm)

PCE 0.091	Tetrachloroethylene (8260C) (ppm)
As 1.39	Arsenic (6020A) (ppm)
Cd < 0.0700	Cadmium (6020A) (ppm)
Cr(VI) 19.2	Hexavalent Chromium (3060A/7196A) (ppm)
Cr 2,880	Total Chromium (6020A) (ppm)
Pb 15	Lead (6020A) (ppm)
Green Outline	Sample Collected by AEG Following Excavation Cleanup
Brown Text	Represents Soil Removed During Excavation Cleanup
Red Value	Concentration Exceeds Method A Cleanup Level
Green Value	Concentration Exceeds Method A Cleanup Level, but is Below Method B Cleanup Level
(<)	Not Detected Above Method/Reporting Limit, as listed
(nd)	None Detected
(-)	Not Analyzed
14	Area of Potential Concern (AOPC) and ID
Proposed TW-1	Proposed Soil Boring Location and ID

Revised: 4/15/2021 11:13 AM

MSBA
Martin S. Burck Associates, Inc.
Geologic and Environmental Consulting Services

FIGURE 5

REMEDIAL PLAN MAP

North Star Casteel Property
1200 West 13th Street
Vancouver, WA 98660

S:\Project Files\North Star Casteel\Figures\RIFS, Work Plan\F 5 Remedial Plan R2.vsd

Attachment B

Correspondence with Ecology

Correspondence Regarding Work Plan

Josh Owen

From: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Sent: Thursday, April 15, 2021 3:05 PM
To: Josh Owen
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Thanks Josh – I will take a look at your comments and get back to you with any questions or comments.

From: Josh Owen <jowen@msbaenvironmental.com>
Sent: Thursday, April 15, 2021 3:01 PM
To: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Hi Nick,

Per our discussion Monday afternoon, MSBA will proceed with the cleanup activities proposed in the draft Remedial Investigation/Feasibility Study (RI/FS) dated March 3, 2021 and incorporate the changes listed below. I've added the strategy we discussed in brown text after each of your comments. I will incorporate the revisions based on your comments and finalize the RI/FS.

Please let me know if any of the responses are not consistent with your recollection of the strategies we discussed.

Thanks,
Josh

From: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Sent: Friday, April 2, 2021 3:37 PM
To: Josh Owen <jowen@msbaenvironmental.com>
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Hi Josh,

Below are some of my initial thoughts:

Soil:
Based on some of the uncertainties with the historical data, it will be important when collecting additional confirmation data that the full nature and extent (lateral and vertical) are adequately defined.
MSBA Response: We discussed that your primary concerns are related to the 2018 AEG samples. MSBA will collect additional confirmation soil samples to fully delineate the extent and eliminate potential data gaps.

Groundwater:
Include analysis for TPH, VOCs, and cPAHs at MW-1 during the next round of sampling.

Collect a grab groundwater sample from area AOC-5 and analyze for TPH, VOCs, and cPAHs. Collect additional VOC data at depth in soil.
MSBA Response: We will analyze the additional analytes in the MW-1 groundwater sample as requested. We discussed that you would like a groundwater sample located downgradient of 2018 AEG samples AOPC5-3 and AOPC-4. A GeoProbe or hollow-stem auger boring will be advanced at the proposed TW-1 location shown on the attached figure. The anticipated depth to groundwater is approximately 40 feet bsg. Soil and groundwater samples will be collected from the boring. The soil sample will be collected at/above the groundwater interface.

Air:
Based on current contamination this pathway appears to be potentially complete.
MSBA Response: I noted that following the proposed cleanup activities, residual contaminants beneath the welding station building will be limited to arsenic and chromium, which are non-volatile and do not present an unacceptable risk for vapor intrusion. MSBA anticipates that post cleanup PHC exceedances will be limited to oil at HA-1:1.0 (8,500 ppm). Since oil is semi-volatile and no VOCs were detected in the sample, it appears that soil at this location will also not present an unacceptable risk for vapor intrusion. I asked if you were in agreement with my rationale that the vapor inhalation exposure pathway will be incomplete following the cleanup activities and you mentioned you would get back to me regarding that.

Proposed Cleanup levels:
Currently you are proposing a mixture of Method A & B cleanup levels within the same media (soil). MTCA does not allow for mixing of cleanup levels within the same media. If you choose to develop MTCA Method B cleanup levels at the site please note that when using Method B cleanup standards for multiple hazardous substances, it is necessary to assess the hazard index and the total excess cancer risk under WAC 173-340-705. Adjustments to the final CULs may need to be made to assure the hazard index does not exceed a value of HQ=1, and to assure the total excess cancer risk does not exceed a value of 1×10-5.
MSBA Response: You mentioned that during a recent Ecology meeting it had been discussed that a combination of Method A and Method cleanup B levels could not be used to establish compliance. Therefore, we will use Method A cleanup levels. MSBA had previously proposed using the Method B level for PAHs (0.19 ppm), however, the Method A level (0.1 ppm) will now be used. Four additional excavation areas have been added to the attached figure with red dashed lines to remove PAHs based on the switch from Method B to Method A cleanup levels.

Long Term:
If areas of the site remain with contamination at concentrations greater than applicable cleanup levels, then an environmental covenant would be required.
MSBA Response: Agreed.

Please let me know if you have any questions.

Thanks,
Nick

From: Josh Owen <jowen@msbaenvironmental.com>
Sent: Monday, March 29, 2021 12:43 PM
To: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Hi Nick,

Correspondence Regarding Groundwater Sampling

Josh Owen

From: Josh Owen
Sent: Friday, June 11, 2021 4:44 PM
To: Acklam, Nicholas (ECY)
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Hey Nick,

Based on our phone call this afternoon, we will not re-install and sample former monitoring well MW-1 since it did not previously exceed the MTCA Method A cleanup levels. We will proceed with advancing a boring in AOPC 5 for the collection of a groundwater sample. You also requested that we make an additional attempt to locate the former MW-1 location so that it can be abandoned in accordance with the Ecology Water Resources Program requirements.

Please let me know if this is not consistent with your recollection of the strategy we discussed.

Thanks,
Josh

From: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Sent: Tuesday, April 20, 2021 10:00 AM
To: Josh Owen <jowen@msbaenvironmental.com>
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Hi Josh

Regarding the air pathway - if diesel concentrations are above 250 mg/kg, then 15 feet of vertical separation is needed in order to screen out the VI pathway (see Attachment B in Implementation Memo No. 14). My recommendation would be to obtain a soil gas sample to confirm the TPH screening level is not exceeded. Let me know if you have an questions or would like to discuss.

Thanks,
Nick

From: Josh Owen <jowen@msbaenvironmental.com>
Sent: Thursday, April 15, 2021 3:01 PM
To: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Hi Nick,

Per our discussion Monday afternoon, MSBA will proceed with the cleanup activities proposed in the draft Remedial Investigation/Feasibility Study (RI/FS) dated March 3, 2021 and incorporate the changes listed

Correspondence Regarding Vapor Sampling

Josh Owen

From: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Sent: Thursday, July 15, 2021 3:15 PM
To: Josh Owen
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Hi Josh,

I would recommend collecting the sub-slab sample for APH TPH fractions per Implementation Memo-21 (EC5-8 aliphatics, EC9-12 aliphatics, and EC9-10 aromatics) plus oxygen, carbon dioxide, methane (these parameters can be useful in making a weight of evidence approach if needed) instead of TO-17 (can be a tricky method). By sampling for APH TPH fractions we can compare the results directly to the cleanup levels in Implementation Memo 18.

I'd also recommend a second sample under the building near S45.

Due to the possibility of diluting the collected soil gas sample with atmospheric air, soil gas samples should not be collected from depths shallower than five feet below ground surface. This will also minimize barometric pumping effects.

Thanks,
Nick

From: Josh Owen <jowen@msbaenvironmental.com>
Sent: Tuesday, July 13, 2021 5:30 PM
To: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Hi Nick,

We've got a few more excavation areas to expand at this site and a few more samples, but the work is nearing completion. Following the cleanup activities, there are not many areas with diesel greater than 250 ppm. I put the attached draft map together showing the remaining diesel concentrations exceeding 250 ppm. I was thinking since the concentrations are so much higher in AOPC 8 that the one subslab vapor sample would be sufficient. We would then extrapolate based on those results regarding the other areas. Are you in agreement with that strategy?

I would run the vapor sample for diesel only using method TO-17 and use 2-propanol for leak testing. I selected subslab sampling versus subsurface vapor samples since the impacted soil is relatively shallow at this site and in most cases subsurface samples would be under the contamination.

Thanks,
Josh

From: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Sent: Wednesday, July 7, 2021 7:15 AM
To: Josh Owen <jowen@msbaenvironmental.com>
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Hi Josh,

The 250 ppm is related just to the diesel range, not oil.

Thanks,
Nick

From: Josh Owen <jowen@msbaenvironmental.com>
Sent: Tuesday, July 6, 2021 4:51 PM
To: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Hey Nick,

It looks like the 250 ppm limit with respect to the VI pathway is related to diesel, not oil-range. Is that correct? We do have some samples with diesel greater than 250 ppm in remaining soil at this site, but the majority are oil-range detections.

Thanks,
Josh

From: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Sent: Tuesday, April 20, 2021 10:00 AM
To: Josh Owen <jowen@msbaenvironmental.com>
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Hi Josh

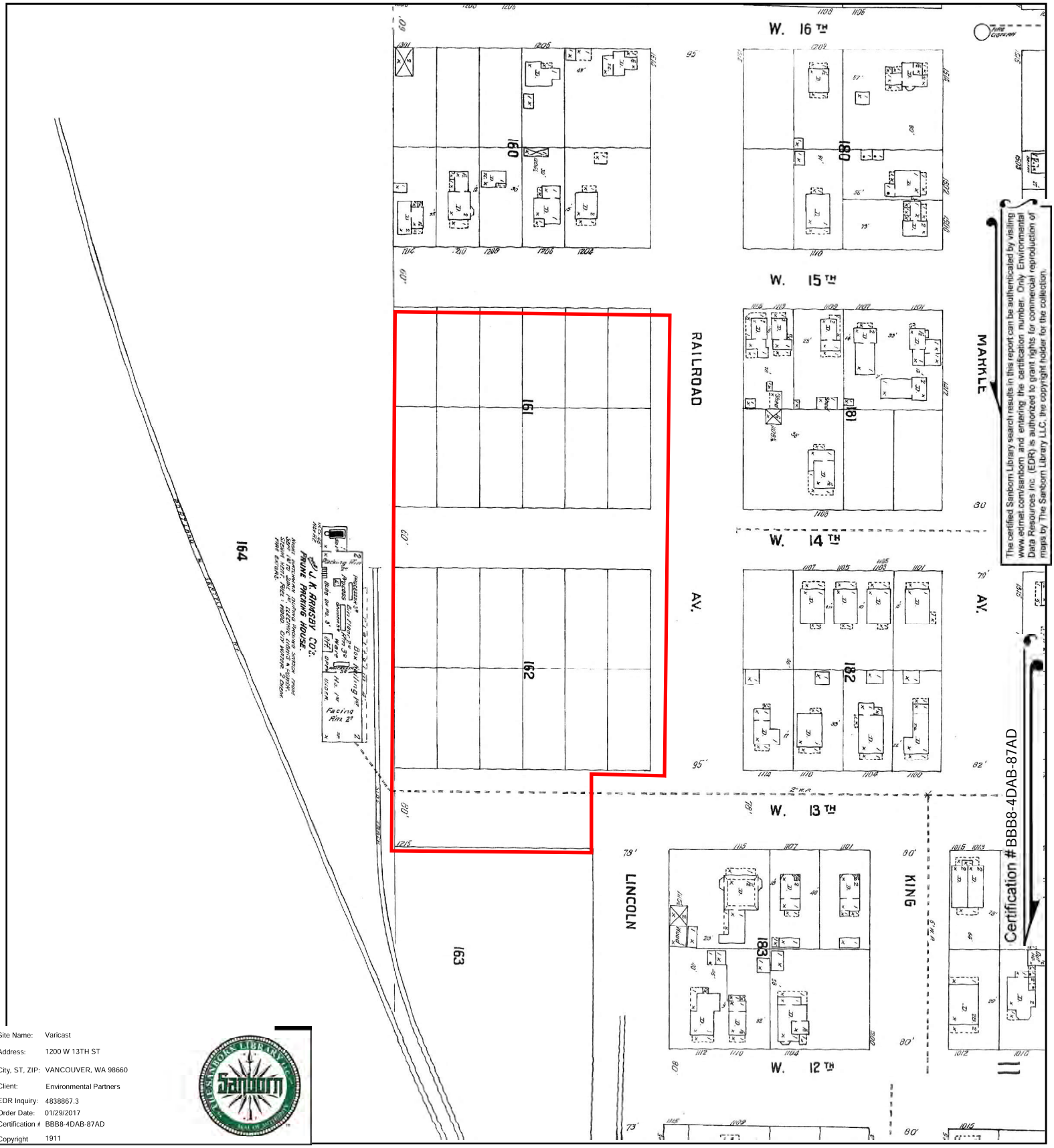
Regarding the air pathway - if diesel concentrations are above 250 mg/kg, then 15 feet of vertical separation is needed in order to screen out the VI pathway (see Attachment B in Implementation Memo No. 14). My recommendation would be to obtain a soil gas sample to confirm the TPH screening level is not exceeded. Let me know if you have an questions or would like to discuss.

Thanks,
Nick

From: Josh Owen <jowen@msbaenvironmental.com>
Sent: Thursday, April 15, 2021 3:01 PM
To: Acklam, Nicholas (ECY) <nack461@ECY.WA.GOV>
Subject: RE: North Star Casteel (VCP #SW1712): Draft RI/FS Report

Attachment C

Sanborn Maps



Site Name: Varicast
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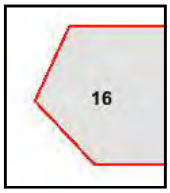
City, ST, ZIP: VANCOUVER, WA 98660
Client: Environmental Partners
EDR Inquiry: 4838867.3
Order Date: 01/29/2017
Certification #: BBB8-4DAB-87AD
Copyright: 1911

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

0 Feet 150 300 600

Volume 1, Sheet 16



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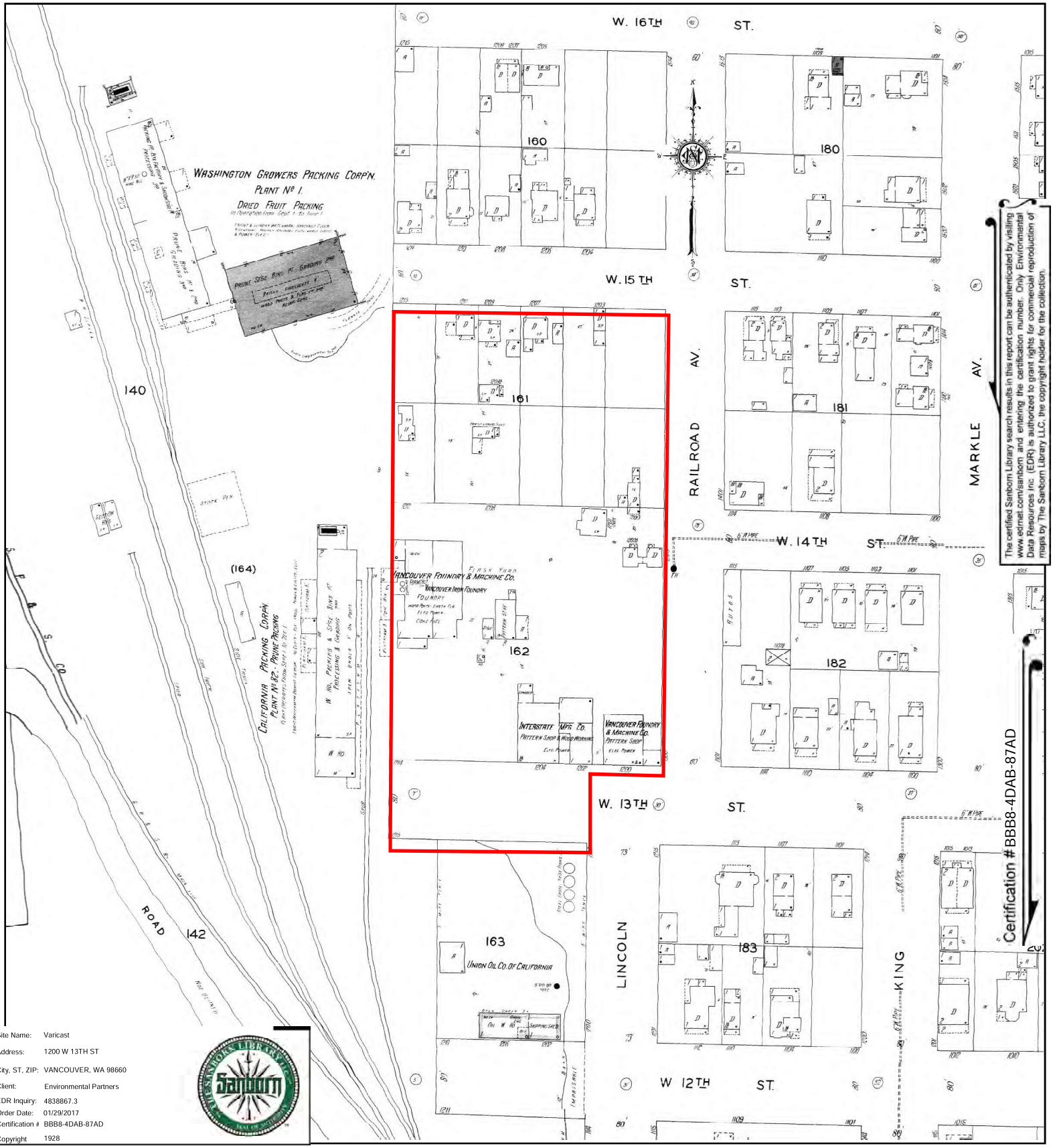

Certification #BBB8-4DAB-87AD

Site Name:	Varicast
Address:	1200 W 13TH ST
City, ST, ZIP:	VANCOUVER, WA 98660
Client:	Environmental Partners
EDR Inquiry:	4838867.3
Order Date:	01/29/2017
Certification #	BBB8-4DAB-87AD
Copyright	1928

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

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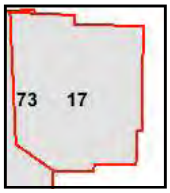

Volume 1, Sheet 17
Volume 1, Sheet 73

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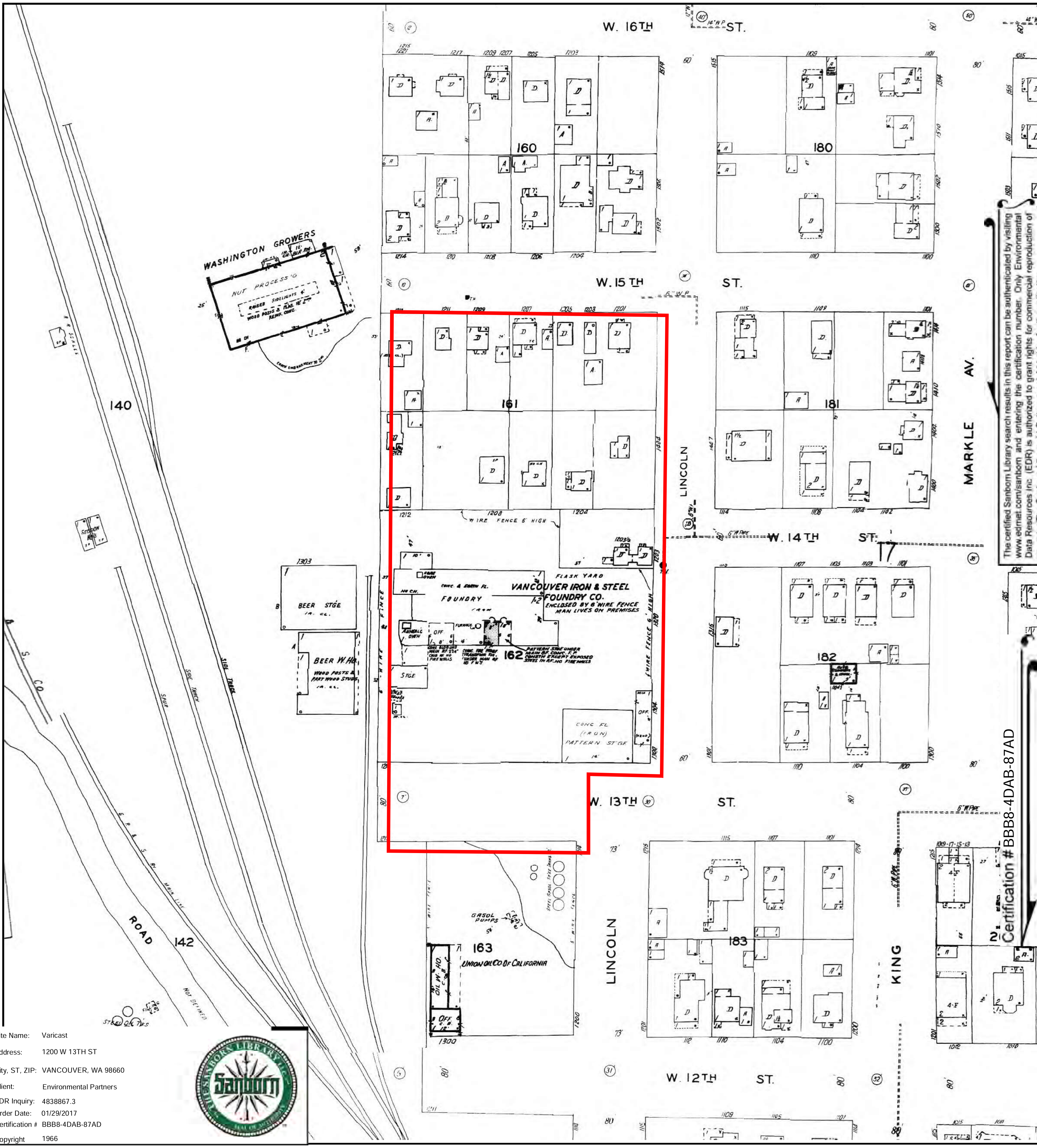
Certified Sanborn® Map

1966



Site Name: Varicast

Address: 1200 W 13TH ST

City, ST, ZIP: VANCOUVER, WA 98660

Client: Environmental Partners

EDR Inquiry: 4838867.3

Order Date: 01/29/2017

Certification # BBB8-4DAB-87AD

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

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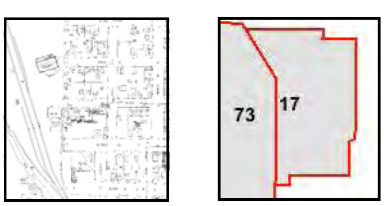
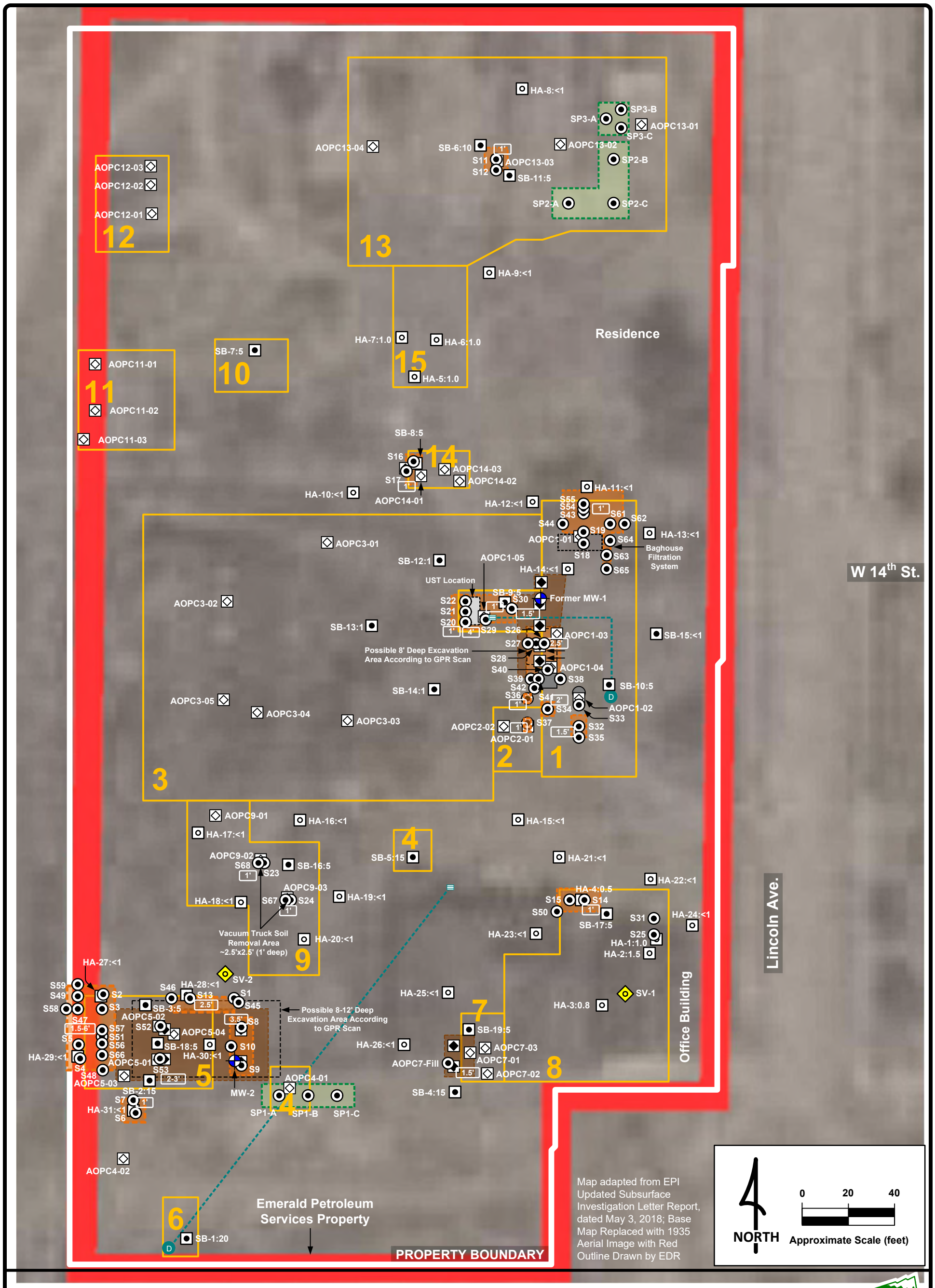


Volume 1, Sheet 73
Volume 1, Sheet 17

N

Attachment D

Supplemental Modified Aerial Images



LEGEND

S16	MSBA Soil Sample Location and ID (2021)
SV-1	MSBA Subslab Vapor Sample Location and ID (2021)
SB-2	EPI Hollow Stem Auguer Soil Boring Sample Location and ID (2017-2018)
HA-31	EPI Hand Auguer Soil Boring Sample Location and ID (2017-2018)
AOPC4-02	EPI Near Surface Soil Sample Location and ID (2017)
AOPC5-01	AEG/Magna Soil Sample Location and ID (2018)
MW-2	Monitoring Well Location and ID

	Approximate Site Boundary (Drawn by EDR)
	Area of Potential Concern (AOPC) and ID
1'	AEG/Magna Soil Removal Area and Depth
1'	MSBA Soil Removal Area
	MSBA Soil Stockpile Area and Depth
D	Stormwater Utility Location Catch Basin Dry Well

Revised: 10/18/2023 3:15 PM

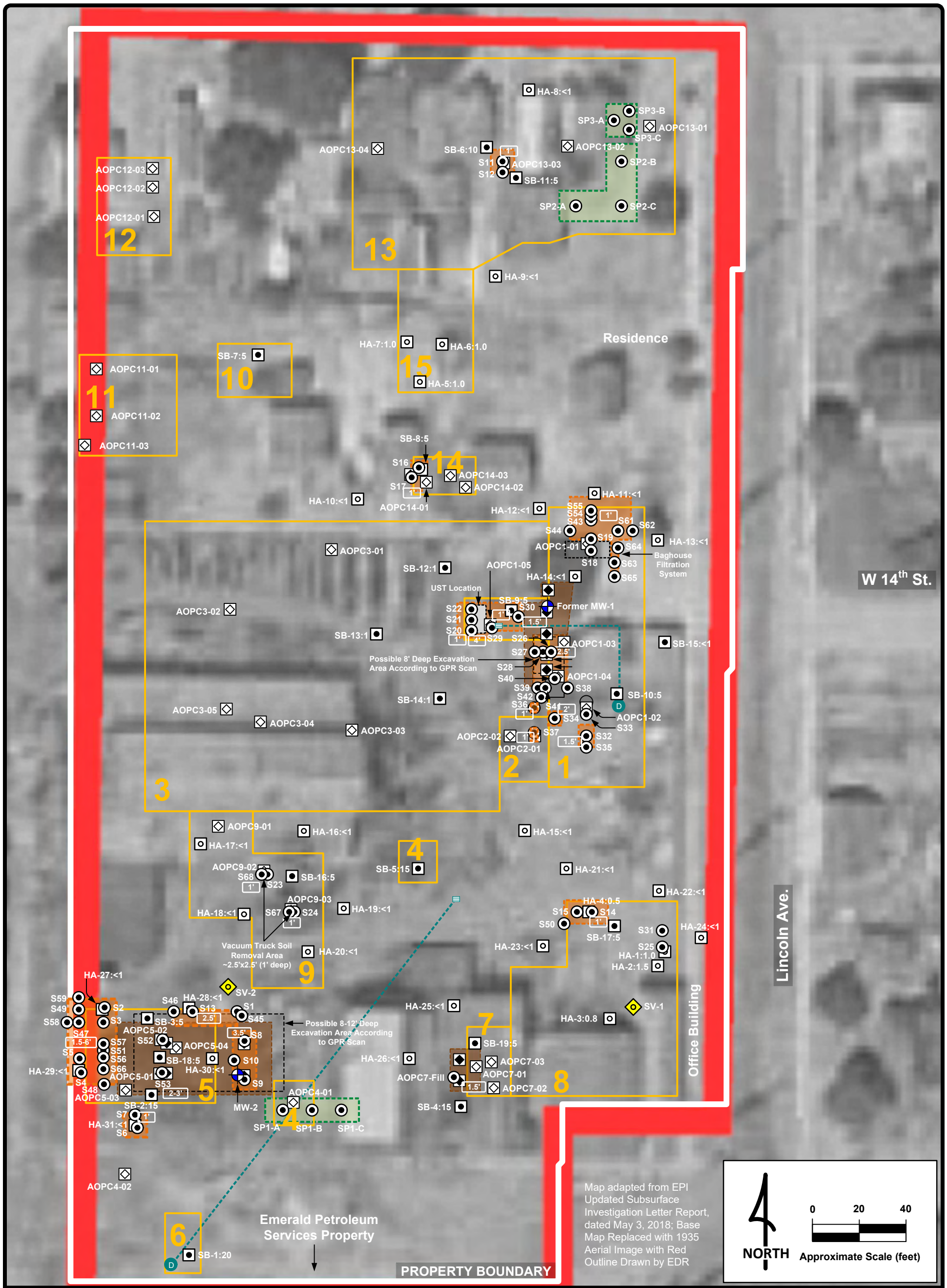
MSBA
Martin S. Burck Associates, Inc.
Geologic and Environmental Consulting Services

FIGURE 1

1935 AERIAL IMAGE WITH SAMPLE LOCATIONS

North Star Casteel Property
1200 West 13th Street
Vancouver, WA 98660

S:\Project Files\North Star Casteel\Figures\Response to Ecology\1935 Overlay.vsd



LEGEND

S16	MSBA Soil Sample Location and ID (2021)
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HA-31	EPI Hand Auguer Soil Boring Sample Location and ID (2017-2018)
AOPC4-02	EPI Near Surface Soil Sample Location and ID (2017)
AOPC5-01	AEG/Magna Soil Sample Location and ID (2018)
MW-2	Monitoring Well Location and ID

- Approximate Site Boundary (Drawn by EDR)
- Area of Potential Concern (AOPC) and ID
- AEG/Magna Soil Removal Area and Depth
- MSBA Soil Removal Area
- MSBA Soil Stockpile Area and Depth
- Stormwater Utility Location
  - Catch Basin
  - Dry Well

Revised: 9/26/2023 12:53 PM

MSBA
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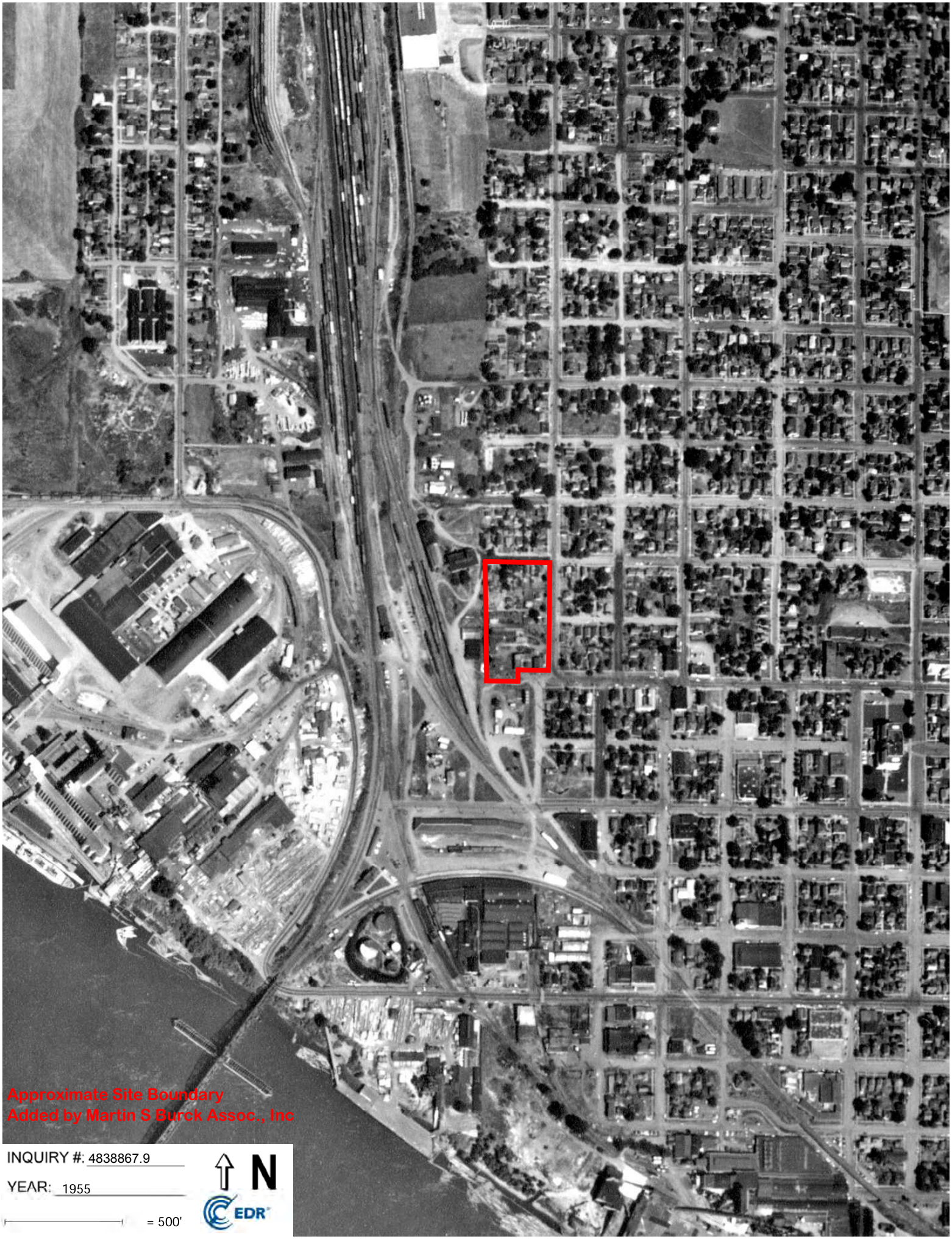
Geologic and Environmental Consulting Services

FIGURE 2

1948 AERIAL IMAGE WITH SAMPLE LOCATIONS

North Star Casteel Property
1200 West 13th Street
Vancouver, WA 98660

S:\Project Files\North Star Casteel\Figures\Response to Ecology\1948 Overlay.vsd


Approximate Site Boundary
Added by Martin S Burck Assoc., Inc
INQUIRY #: 4838867.9
YEAR: 1955
= 500'
N
EDR