THIRD PERIODIC REVIEW REPORT
FINAL

Carborundum Company
Facility Site ID#: 1012
Cleanup Site ID#: 3552

2100 Northwest 26th Avenue
Vancouver, Washington 98660

Southwest Regional Office
TOXICS CLEANUP PROGRAM

November 2022

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1.0 INTRODUCTION

This document is a review by the Washington State Department of Ecology (Ecology) of post-cleanup Site conditions and monitoring data to ensure that human health and the environment are being protected at the former Carborundum Site (Site). Cleanup at this Site was implemented under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC). The second periodic review was completed in December 2016. This periodic review will evaluate the period from December 2016 through December 2021.

Cleanup activities at this Site were conducted under the Independent Remedial Action Program (IRAP). The cleanup actions resulted in concentrations of polycyclic aromatic hydrocarbons (PAHs) and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) remaining at the Site in soil and groundwater that exceed MTCA Method A cleanup levels. The MTCA Method A cleanup levels for soil are established under WAC 173-340-740(2). The MTCA Method A cleanup levels for groundwater are established under WAC 173-340-720(3). WAC 173-340-420 (2) requires that Ecology conduct a periodic review of a Site every five years under the following conditions:

- Whenever the department conducts a cleanup action.
- Whenever the department approves a cleanup action under an order, agreed order or consent decree.
- Or, as resources permit, whenever the department issues a no further action opinion.
- And one of the following conditions exists:
    (a) Institutional controls or financial assurance are required as part of the cleanup.
    (b) Where the cleanup level is based on a practical quantitation limit.
    (c) Where, in the department's judgment, modifications to the default equations or assumptions using site-specific information would significantly increase the concentration of hazardous substances remaining at the site after cleanup or the uncertainty in the ecological evaluation or the reliability of the cleanup action is such that additional review is necessary to assure long-term protection of human health and the environment.

When evaluating whether human health and the environment are being protected, the factors the department shall consider include [WAC 173-340-420(4)]:

(a) The effectiveness of ongoing or completed cleanup actions, including the effectiveness of engineered controls and institutional controls in limiting exposure to hazardous substances remaining at the Site.

(b) New scientific information for individual hazardous substances of mixtures present at the Site.

(c) New applicable state and federal laws for hazardous substances present at the Site.

(d) Current and projected Site use.

(e) Availability and practicability of higher preference technologies.

(f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

The department shall publish a notice of all periodic reviews in the Site Register and provide an opportunity for public comment.

2.0 SUMMARY OF SITE CONDITIONS

2.1 Site History

The former Carborundum Site is located at 2100 NW 26th Avenue in the City of Vancouver in Clark County, Washington. A Vicinity Map is available as Appendix 6.1 and a Site Plan is available as Appendix 6.2. Remedial actions were conducted at the Site in the 1990s. A Restrictive Covenant was recorded for the Site on February 20, 1998 and Ecology issued a No Further Action determination on March 17, 1998.

The Site consists of approximately 34 acres of level ground located within the Port of Vancouver (Port). The Site is bounded by railroad tracks to the north, and freight warehouses and storage yards to the south, east, and west. There are two primary areas of interest on the Site: the Pond Area and the Plant Area. The Plant area includes about 13 acres and the Pond area about 8 acres.

2.2.1 Plant Area

The facility was initially constructed in 1949 by Carborundum Company, and eventually became a division of Sohio Electro Chemical Company, and then the Kennecott Corporation in 1986. The facility operated until 1982 when it was closed down and the property was purchased by the Port of Vancouver. The plant manufactured silicon carbide, an abrasive that was used in a variety of industrial and commercial processes.

In the fall of 1991, the Port contracted with Rhine Construction of Seattle, Washington, to demolish the former Carborundum Facility in order to use the Site as a freight receiving and storage yard. The demolition included removal of all aboveground structures and sufficient below ground structures to provide a buildable Site and placement of undersized concrete debris and soil in a permitted wetland fill area in the northwestern portion of the Port's property.

During part of that demolition of the Old Mix Building in early 1992, a black substance, believed to be a remnant of the Old Mix material or petroleum coke used to make it, was encountered and mixed with the demolition debris. Approximately 40 percent of this demolition debris was subsequently placed in an excavation near the Old Mix Building (OMB) and the adjoining portion of the former Furnace Building. The remaining debris was transported to a separate Fill Site in the northwest portion of the Port property, immediately south of Lower River Road. The demolition activities were halted when the demolition debris was found to be contaminated.

2.1.2 Pond Area

From the 1950s until the Carborundum plant closed, dust collected in the plant baghouse was slurried into two ponds located in the northwestern portion of the Site that is, the Pond area.

During this time approximately 65,000 tons of baghouse dust was disposed in the Pond area. The wastes were discharged under a Washington State Waste Discharge Permit.

2.2 Site Investigations

2.2.1 Plant Area

During demolition of the plant, debris from the Plant Area was sampled and analyzed and was found to contain PAHs. The Port then contracted with Hart Crowser and IAM Environmental in October 1992 to excavate the contaminated demolition debris from the fill area and transport it back to the Plant area. The contaminated demolition debris was placed in two stockpiles. Although a Hart Crowser report states that 9,500 cubic yards of material were transported, the firm's estimate was based on visual observation. A subsequent survey of the stockpiles indicated a volume of about 7,000 cubic yards. The stockpiles were covered with plastic, which was then secured by placing clean sand on top of the plastic covering.

Hart Crowser performed a preliminary assessment of the near surface soil conditions in the Plant Area in 1992. That investigation consisted of 18 soil samples taken from the area around the former OMB. Because the assessment was performed after placement of the stockpiles, soil samples were not collected from beneath the stockpile area. Sample results indicated the presence of PAHs and cPAHs in soil at concentrations exceeding MTCA Method A cleanup levels.

2.2.2 Pond Area

In 1984, Standard Oil drilled several borings in the Pond area, obtained samples of the baghouse dust material, and tested the samples to determine if the waste could be designated as an Ecology dangerous waste.

In 1986, Standard Oil performed soil and groundwater sampling and analysis in the Pond area. The purpose of the sampling and analysis was to:

- Assess whether there were groundwater impacts as a result of placing the baghouse dust in the ponds.
- Further assess whether the baghouse dust should be designated as a dangerous waste under Ecology's dangerous waste regulations.
- Establish an accurate volume estimate of the waste in the ponds.

The subsurface investigation consisted of nine soil sampling borings; three of these were converted to groundwater monitoring wells.

Ecology reviewed the Standard Oil Company 1986 report and responded in a June 11, 1986, letter to Sohio Electro Minerals Company, the owner at that time. Ecology concurred with the report's conclusions that the waste should not be designated as a dangerous waste and that the

ponds did not pose a threat to groundwater. Ecology recommended that the ponds be closed using an engineered cover with "good drainage at the perimeter."

In 1991, Ecology notified the Port that the former Carborundum ponds had been scored and ranked under the MTCA process. The Site was ranked as a 1 (with 1 being the highest relative risk and 5 being the lowest). The Site scored high primarily because of the detection of metals in unfiltered groundwater samples in the 1986 groundwater assessment and the presence of drinking water supply wells within about 1/2 mile of the Site.

Between November 1992 and June 1993, the Port placed an engineered fill over the ponds as part of constructing a parking lot. The engineered fill consisted of about 12 inches of sand covered by 8 to 18 inches of sandy silt, 4 inches of sand and gravel, and finally, about 3 inches of crushed rock. The Site was graded to provide drainage from the cap.

2.3 Remedial Activities

2.3.1 Plant Area

In early 1992, cPAH-contaminated material was inadvertently removed from the Carborundum plant area during plant demolition activities. These materials were placed in a fill area in the northwest portion of the Port property. The 7,000 cubic yards of CPAH-contaminated material was then excavated from the fill area and returned to the Carborundum Site in October 1992. At that time, the material was stockpiled on the Carborundum Site. The stockpiles contained approximately 7,000 cubic yards of soil and concrete debris with cPAH concentrations exceeding the cleanup level (18 mg/kg PAH).

After demolition was completed, subsurface soil with cPAH concentrations greater than the cleanup level of 18 mg/kg remained in the area of the OMB. The remediation activities included excavation of this soil to the cleanup level. The excavation of contaminated material was completed in two steps. The first step consisted of excavating visibly contaminated material (displaying the characteristic black color of the Old Mix or petroleum coke products) north of the former OMB. After the visibly contaminated material was removed, a step-wise sampling and excavation approach was used.

A total of 75 confirmation samples were analyzed for cPAHs. The results of the analysis indicated that residual floor and sidewall cPAH concentrations were generally less than 5 mg/kg, with a few sample results ranging from 5 to 20 mg/kg. Only one residual sample, located in the southeast portion of the excavation, exceeded the 18 mg/kg cleanup level. The preliminary (wet weight based) fast turnaround sample results for this sample indicated a cPAH concentration less than 18 mg/kg. However, final results (dry weight based) indicated a total cPAH concentration of 20 mg/kg. Exceedance of the cleanup level in this single sample was not believed to compromise the completeness of the excavation for the following reasons:

- It is the only sample out of 75 bottom and sidewall samples that exceeded the 18 mg/kg cleanup level.

- The measured 20 mg/kg total cPAH concentration equals the MTCA Method A cleanup level for industrial sites.
- The measured 20 mg/kg exceeds the site-specific cleanup level by only about 10 percent.

Based on these reasons and the overall results of the sampling and analysis, and consistent with WAC 173-340-740(7) (e), the excavation was considered to have achieved the remedial action goals.

Contaminated soils were treated with a thermal desorption process. The purpose of the thermal treatment process was to remove the cPAH contamination from the soil. A total of 16,173 tons of soil were loaded and hauled to the TPS Technologies, Inc., facility in Portland, Oregon, for thermal treatment. Approximately 8,100 tons (6,250 cubic yards) of treated soil was returned to the Port for the purpose of backfilling. The remaining approximate 8,100 tons of treated soil was transported to the St. Johns Landfill in Portland, Oregon, to be used for cover.

CH2M Hill conducted a groundwater assessment in 1994. Seven groundwater monitoring wells were installed at the Site, including four in the plant area and three in the pond area. Non-carcinogenic PAHs were detected only in the sample from monitoring well MW-AA, near where demolition debris had been placed. Carcinogenic PAHs were not detected in any of the groundwater samples. The concentrations of non-carcinogenic PAHs ranged from non-detected to 7 micrograms per liter (µg/L).

Additional sampling was conducted from the same wells between 1996 and 1997. Dissolved arsenic was detected in one of the wells at concentrations (0.006 µg/l) slightly exceeding MTCA Method A cleanup level (0.005 µg/l). Though cPAHs were not detected in any of the wells sampled in 1994, PAHs were detected at concentrations below MTCA Method A cleanup levels.

2.3.2 Pond Area

Between November 1992 and June 1993, the Port placed an engineered fill over the pond area as part of constructing a parking lot. The engineered fill consisted of about 12 inches of sand covered by 8 to 18 inches of sandy silt, 4 inches of sand and gravel, and about 3 inches of crushed rock. The Site was graded to provide drainage from the cap. In 2007 and 2009, Ecology approved the breaching and restoration of the cap as a part of improvement projects by the Port of Vancouver.

Groundwater monitoring was identified as an appropriate additional remedial action activity for the Pond Area soil. Groundwater monitoring is especially appropriate given the marginal exceedance of the cleanup level and the associated low risk in the absence of any remedial action. Groundwater samples were analyzed for polycyclic aromatic hydrocarbons (PAHs) and total metals. No PAHs were detected in either groundwater monitoring event. Chromium was detected in two wells at levels below MTCA Method A cleanup levels. No other metals were

detected. The soils and groundwater contaminant exceedances are presented in Table 1 and detailed results are available in Appendix 6.3.

Table 1. Soil and groundwater concentration exceedances.

Contaminant	Soil mg/kg	Groundwater µg/l	Cleanup Levels	
			Soil (mg/kg)	Groundwater (µg/l)
cPAHs	20	ND	18	0.1
Arsenic	5.3	6	20	5

2.4 Cleanup Levels

Remedial activities at the Site were evaluated with MTCA Method C cleanup levels for industrial soil and groundwater. It was determined that the Site use would remain industrial for the foreseeable future, and this Site use could not be changed without violating industrial zoning requirements. In addition, institutional controls in the form of a restrictive covenant would be implemented to further enforce continued industrial land use. These restrictions assured conformity with MTCA Method C cleanup requirements established in WAC 173-340-745.

Soil remains at the Site with cPAH concentrations greater than MTCA Method A cleanup levels but below MTCA Method C industrial cleanup levels.

2.5 Restrictive Covenant

Due to the use of MTCA Method C cleanup levels at the Site, the Site was only eligible for a no further action determination with the implementation of institutional controls in the form of a Restrictive Covenant. A Restrictive Covenant would serve to notify future property owners of soil contamination remaining at the Site and prevent disturbance and exposure of contaminated soils contained at the Site. Separate Restrictive Covenants were recorded for the plant and pond portions of the Site in 1998. The Restrictive Covenants impose the following limitations:

Section 1: The Site may be used only for industrial purposes.

Section 2: As of the date of this Restrictive Covenant, there are no structures on the Site. It is anticipated that some disturbances of the soil may be necessary for further use of the property consistent with the Port of Vancouver's industrial purposes. Any significant disturbance will be conducted in accordance with a Health and Safety Plan consistent with then current Ecology regulations. Any removal of contaminated soil will be reported to Ecology.

Section 3: The owner of the property must give written notice to Ecology, or a successor agency, of the owner's intent to convey any interest in the property.

Section 4: No conveyance of title, easement, lease or other interest in the property shall be consummated by the owner without adequate and complete provision for continued compliance with this Deed Restriction. The owner must notify and obtain approval from

Ecology, or its successor agency, prior to any use of the property that is inconsistent with the terms of this Restrictive Covenant. Ecology or its successor agency may approve any inconsistent use only after appropriate public notice and comment.

Section 5: The owner shall provide authorized representatives of Ecology, or its successor agency, the right to enter the property at a reasonable time, after prior notice to owner, for the purpose of evaluating the Cleanup Action, taking samples, inspection remedial actions conducted at the property, and inspecting records that are related to the Cleanup Action.

Section 6: No wells shall be hereafter installed on the subject property for the extraction of potable water for human ingestion.

Section 7: The Owner must restrict leases to uses and activities consistent with the Restrictive Covenant and notify all lessees of the restrictions on the use of the Property.

Section 8: The owner of the Site and the owner's assigns and successors in interest reserve the right under WAC 173-340-440(7) to record an instrument which provides that this Restrictive Covenant shall no longer limit use of the property or be of any further force or effect. However, such an instrument may be recorded only with the consent of Ecology, or its successor agency Ecology, or its successor agency, may consent to the recording of such an instrument only after appropriate public notice and comment.

The Restrictive Covenant is available as Appendix 6.4 and Appendix 6.5.

3.0 PERIODIC REVIEW

3.1 Effectiveness of Completed Cleanup Actions

Based upon the Site visit conducted on July 14, 2021, Site access is controlled and continues to be restricted from the general public. The Site is used for industrial purposes which are consistent with the Restrictive Covenant. The Site surface consists of asphalt, concrete, engineered cap and building structures. The Site is currently occupied by the Port of Vancouver and is used to store goods awaiting ground transport. The surface cover is in excellent condition and continues to prevent direct human exposure pathways (ingestion, contact) to contaminated soils. The cap inspection is being conducted by the Port on an 18-month frequency. In addition, restrictions on the Site groundwater use prevent the exposure pathway through ingestion. A photo log is available as Appendix 6.5.

The Restrictive Covenant for the Site was recorded and is in place. This Restrictive Covenant prohibits activities that will result in the release of contaminants contained as part of the cleanup without Ecology's approval, and prohibits any use of the property that is inconsistent with industrial zoning regulations.

3.2 New Scientific Information for Individual Hazardous Substances for Mixtures Present at the Site

Cleanup levels at the Site were based on regulatory standards rather than calculated risk for chemicals and/or media. These standards are sufficient to be protective of site-specific conditions.

3.3 New Applicable State and Federal Laws for Hazardous Substances Present at the Site

3.3.1 Modified Cleanup Levels

Initial cleanup at the Site was governed by Chapter 173-340 WAC (1996 ed.). Current WAC 173-340-702(12) (c) provides that,

"A release cleaned up under the cleanup levels determined in (a) or (b) of this subsection shall not be subject to further cleanup action due solely to subsequent amendments to the provision in this chapter on cleanup levels, unless the department determines, on a case-by-case basis, that the previous cleanup action is no longer sufficiently protective of human health and the environment."

Contamination remains at the Site above MTCA Method A cleanup levels, though the cleanup action is still protective of human health and the environment. Overall, the changes to the original standards have not resulted in the need to reduce cleanup levels or conduct additional remedial actions at the Site.

3.4 Current and Projected Site Use

The Site is currently used for industrial purposes. It is used primarily for the storage of goods received by the Port of Vancouver that are awaiting ground transport. Recently with Ecology's approval a new gearlocker building was completed in northern portion of the Site within the capped area (Photo 4, Appendix 6.6). The gearlocker building will be used by a Port of Vancouver stevedore for administration offices, storage of equipment and supplies for ship loading and unloading as well as maintenance. The Site and gearlocker building use does not likely have a negative impact on the risk posed by hazardous substances contained at the Site.

3.5 Availability and Practicability of Higher Preference Technologies

The remedy implemented included capping of hazardous substances and it continues to be protective of human health and the environment. While higher preference cleanup technologies may be available, they are still not practicable at this Site.

3.6 Availability of Improved Analytical Techniques to Evaluate Compliance with Cleanup Levels

The analytical methods used at the time of the remedial actions were capable of detection below MTCA Method A cleanup levels. The presence of improved analytical techniques would not affect decisions or recommendations made for the Site.

4.0 CONCLUSIONS

- The cleanup actions completed at the Site is protective of human health.
- Soils cleanup levels have not been met for cPAHs at the Site; however, under WAC 173-340-740(6) (d), the cleanup action is determined to comply with cleanup standards, since the long-term integrity of the containment system is ensured and the requirements for containment technologies have been met.
- The arsenic concentration of 0.006 µg/l in monitoring well MW-AA slightly exceed MTCA Method A cleanup level of 0.005 µg/l. The area of arsenic contaminated groundwater appears limited and is addressed by the Restrictive Covenant's limitation on groundwater extraction for human consumption.
- The Restrictive Covenant for the property is in place and will be effective in protecting public health from exposure to hazardous substances and protecting the integrity of the cleanup action.

Based on this review, Ecology has determined that the remedial actions conducted at the Site continue to be protective of human health and the environment. The requirements of the Restrictive Covenant are being satisfactorily met and no additional remedial actions are required at the Site at this time. It is the property owner's responsibility to continue to inspect the Site to assure that the integrity of the surface cover is maintained.

4.1 Next Review

The next review for the Site will be scheduled five years from the date of this periodic review. In the event that additional cleanup actions or institutional controls are required, the next periodic review will be scheduled five years from the completion of those activities.

5.0 REFERENCES

Hart Crowser. Soil Cover Construction Report. November 9, 1993.

CH2MHill. Groundwater Assessment. November 1994.

CH2MHill. Alternatives Assessment Report. March 1995.

CH2MHill. Independent Remedial Action Closeout Report. December 1995.

CH2MHill. December 1995 Groundwater Sampling Results. January 25, 1996.

CH2MHill. Quarterly Groundwater Sampling Results. June 17, 1997.

Department of Ecology. Restrictive Covenant. February 23, 1998.

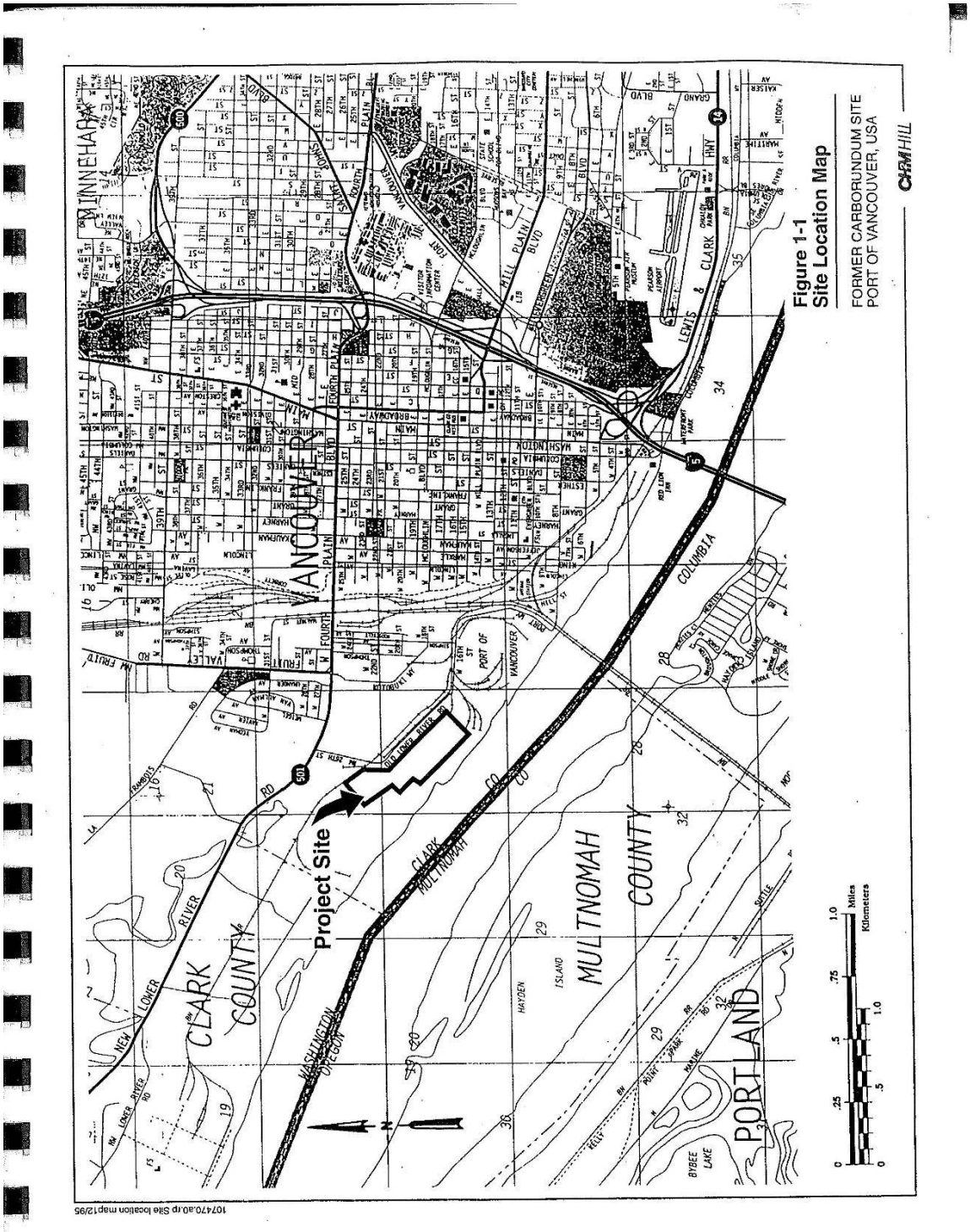
Department of Ecology. Approval Letter for Cap Breaching and Reconstruction-Valero Tank Project, Former Carborundum Pond Area. January 25, 2007.

Department of Ecology. Conditional Approval of Cap Disturbance and Contaminated Soils Removal in Two Areas of the Port of Vancouver subject to 1998 Restrictive Covenant. July 16, 2009.

Department of Ecology. Site Visit on July 14, 2021.

6.0 APPENDICES

6.1 Vicinity Map



6.2 Site Plan

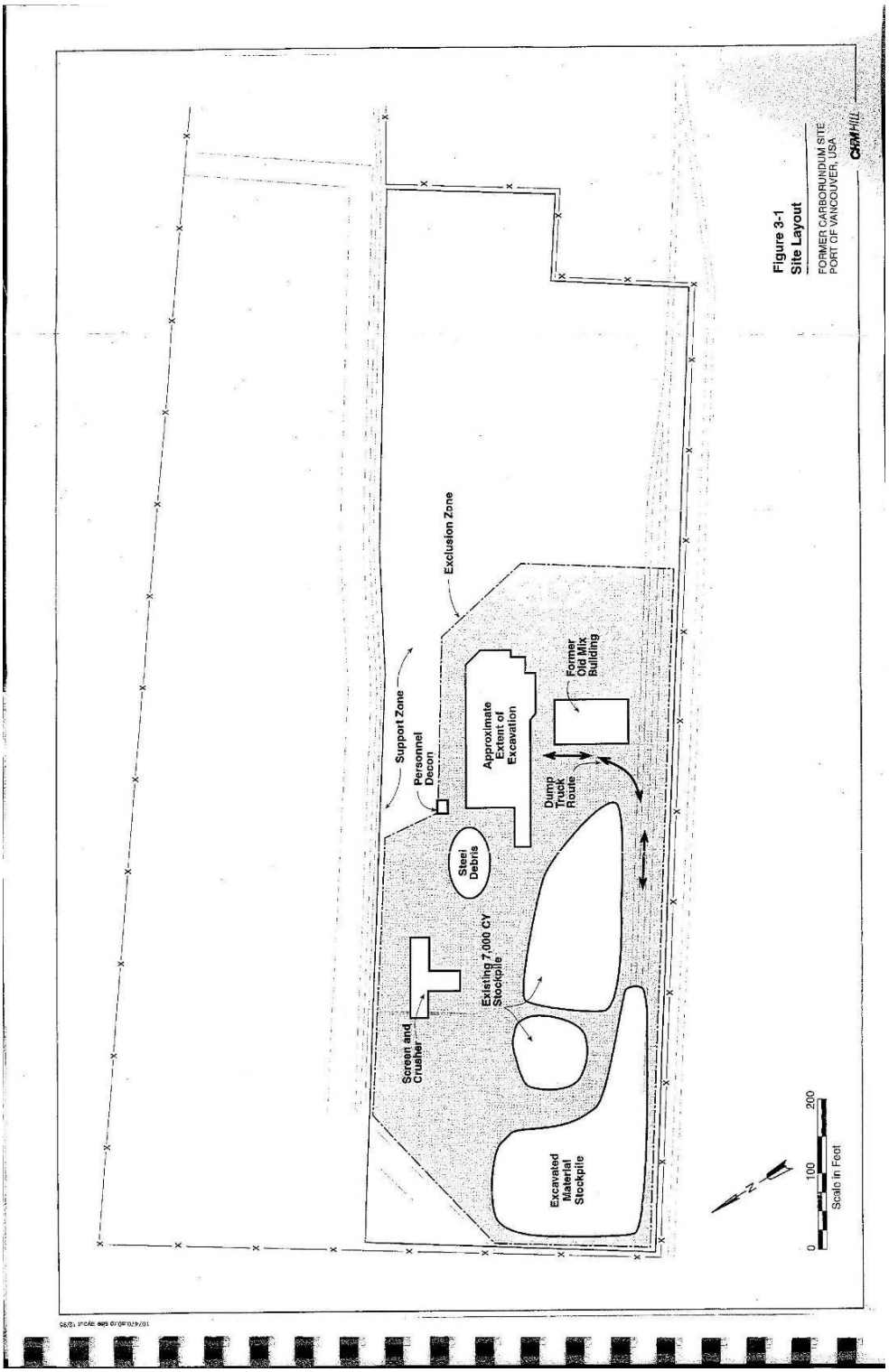


Figure 3-1
Site Layout
FORMER CARBORUNDUM SITE
PORT OF VANCOUVER, USA
CH2MHILL
Exclusion Zone
Support Zone
Personnel Decon
Approximate Extent of Excavation
Former Old Mix Building
Dump Truck Route
Steel Debris
Existing 7,000 CY Stockpile
Screen and Crusher
Excavated Material Stockpile
N
0
100
200
Scale in Feet

6.3 Groundwater and Confirmation Soil Sample Results

Table 2
Groundwater Analytical Results
Total and Dissolved Metals (mg/L)
Port of Vancouver Carborundum Facility

Analyte	Sample Date	Method Reporting Level (mg/L)	Monitoring Well										MTCA Cleanup Levels[1] (mg/L)
			MW-A	MW-A (duplicate)	MW-AA	MW-AA (duplicate)	MW-B	MW-C	MW-D	MW-E	MW-F	MW-G	MW-9	MW-12s	
Arsenic															
Total	10/26/94	0.005	0.009	0.009	---	---	ND	ND	ND	ND	ND	ND			0.005
Dissolved	10/26/94	0.005	0.009	---	---	---	---	---	---	---	---	---			
Total	6/1/95	0.005	0.009	0.009	---	---	---	---	---	---	---	---			
Dissolved	6/1/95	0.005	0.013	---	---	---	ND	0.006	ND	ND	ND	ND	ND	ND	
Total	12/11/95	0.005	---	---	0.007	---	---	0.01	---	---	---	---	---	---	
Dissolved	12/11/95	0.005	---	---	0.006	---	ND	0.01	ND	ND	ND	ND	ND	ND	
Cadmium								0.011							
Total	10/26/94	0.005	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
Total	6/1/95	0.01	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
Total	12/11/95	0.005	---	---	ND	---	0.02	ND	ND	ND	0.01	ND	ND	ND	
Chromium							ND	ND	ND	ND	ND	ND	ND	ND	0.005
Total	10/26/94	0.01	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
Total	6/1/95	0.01	ND	ND	---	---	0.02	ND	ND	0.01	0.01	ND	ND	ND	
Dissolved	6/1/95	0.01	---	---	---	---	ND	ND	ND	ND	ND	ND	---	---	0.05
Total	12/11/95	0.01	---	---	ND	---	---	---	0.01	ND	ND	ND	ND	ND	
Lead							ND	ND	ND	ND	ND	ND	ND	ND	
Total	10/26/94	0.002	ND	ND	---	---	0.006	ND	ND	ND	ND	ND	---	---	
Dissolved	10/26/94	0.002	---	---	---	---	ND	---	---	---	---	---	---	---	
Total	6/1/95	0.002	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	0.005
Total	12/11/95	0.002	---	---	ND	---	ND	ND	ND	ND	ND	ND	ND	ND	
Zinc							ND	---	---	---	---	---	---	---	
Total	10/26/94	0.01	0.06	0.06	---	---	0.08	ND	ND	ND	ND	ND	---	---	
Total	6/1/95	0.01	0.03	0.02	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
Dissolved	6/1/95	0.01	0.03	---	---	---	---	---	---	---	---	---	---	---	
Total	12/11/95	0.01	---	---	0.03	---	ND	ND	ND	ND	ND	ND	ND	ND	
Dissolved	12/11/95	0.01	---	---	0.02	---	---	---	---	---	---	---	---	---	

Notes:
[1]MTCA cleanup levels are from Table 1, WAC 173-340-720.
ND = Not detected above method reporting level.
--- = not analyzed

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Table 3
Groundwater Analytical Results
Polynuclear Aromatic Hydrocarbons
Port of Vancouver Carborundum Facility

Analyte	Sample Date	Method Reporting Level (µg/L)	Monitoring Well												MTCA Cleanup[a]
			MW-A (µg/L)	MW-A Duplicate (µg/L)	MW-AA (µg/L)	MW-AA Duplicate (µg/L)	MW-B[b] (µg/L)	MW-C (µg/L)	MW-D (µ/L)	MW-E (µg/L)	MW-F (µg/L)	MW-G (µg/L)	MW-9 (µg/L)	MW-12s (µg/L)	
Benzo(a)anthracene	10/26/94	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.0091	---	---	ND	ND	ND	ND	---	ND	ND	ND	ND	ND	
Benzo(a)pyrene	10/26/94	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.0091	---	---	ND	ND	ND	ND	---	ND	ND	ND	ND	ND	
Benzo(b)fluoranthene	10/26/94	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.0091	---	---	ND	ND	ND	ND	---	ND	ND	ND	ND	ND	
Benzo(k)fluoranthene	10/26/94	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.0091	---	---	ND	ND	ND	ND	---	ND	ND	ND	ND	ND	
Chrysene	10/26/94	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.0091	---	---	ND	ND	ND	ND	---	ND	ND	ND	ND	ND	
Dibenzo(a,h)anthracene	10/26/94	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.0091	---	---	ND	ND	ND	ND	---	ND	ND	ND	ND	ND	
Indeno(1,2,3-cd)pyrene	10/26/94	0.018	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.018	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.018	---	---	ND	ND	ND	ND	---	ND	ND	ND	ND	ND	
Total for carcinogenic PAHs:			**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	0.10
Acenaphthene	10/26/94	0.045	7.0	4.8	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.045	3	4	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.045	---	---	3.0	3.3	ND	ND	---	ND	ND	ND	ND	ND	
Acenaphthylene	10/26/94	0.18	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.18	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.18	---	---	0.30	0.48	ND	ND	---	ND	ND	ND	ND	ND	
Anthracene	10/26/94	0.0091	0.32	0.26	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.0091	---	---	0.019	0.02	ND	ND	---	ND	ND	ND	ND	ND	
Benzo(g,h,i)perylene	10/26/94	0.018	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.018	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.018	---	---	ND	ND	ND	ND	---	ND	ND	ND	ND	ND	
Fluoranthene	10/26/94	0.018	2.8	2.0	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.0018	2	2	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.0018	---	---	0.46	0.55	ND	ND	---	ND	ND	ND	ND	ND	
Fluorene	10/26/94	0.018	0.62	0.47	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.018	0	0	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.018	---	---	0.34	0.37	ND	ND	---	ND	ND	ND	ND	ND	
Naphthalene	10/26/94	0.045	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.045	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.045	---	---	ND	ND	ND	ND	---	ND	ND	ND	ND	ND	
Phenanthrene	10/26/94	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.0091	ND	ND	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.0091	---	---	0.28[c]	0.34[c]	ND	ND	---	ND	ND	ND	ND	ND	
Pyrene	10/26/94	0.0091	2.1	1.8	---	---	ND	ND	ND	ND	ND	ND	---	---	
	6/1/95	0.0091	2	2	---	---	ND	ND	ND	ND	ND	ND	ND	ND	
	12/11/95	0.0091	---	---	0.6	0.74	ND	ND	---	ND	ND	ND	ND	ND	

[a] MTCA cleanup levels are from Table 1, WAC 173-340-720.
[b] Method reporting limits are twice those listed because of the use of a dilution factor of 2.
[c] Estimated value, compound was also detected in Method Blank at low levels.
ND = Not detected above method reporting level.
--- = Indicates not measured.

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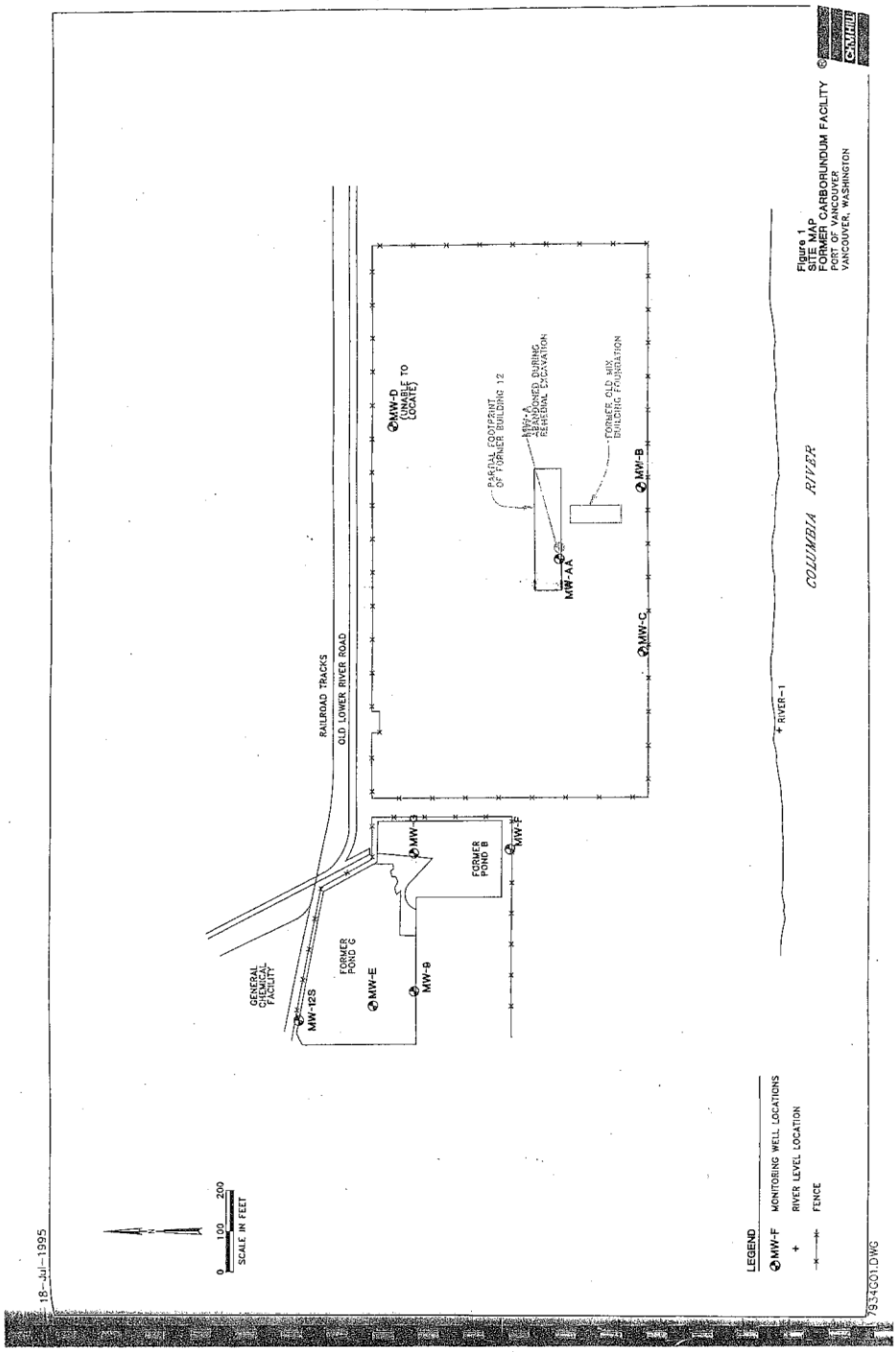
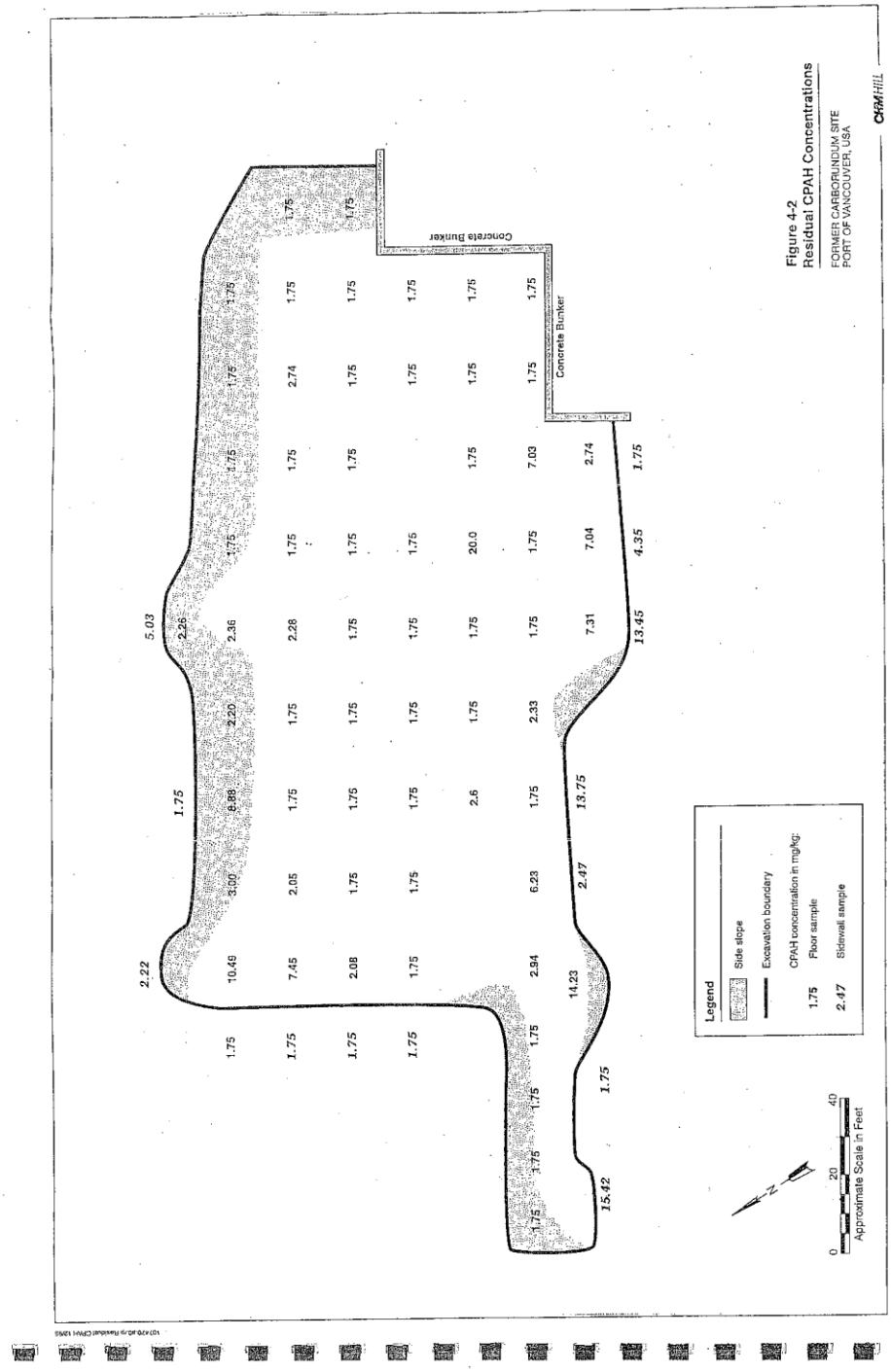
1/22/96

Groundwater Monitoring Well Locations



Confirmation Soil Sample Results



6.4 Environmental Covenant – Pond Site

RESTRICTIVE COVENANT

On the property known as the former Carborundum Ponds B and G
2101 West 16th Street, Vancouver, WA 98660

The Port of Vancouver is the fee owner of real property in the County of Clark, State of Washington (the "Site") which has been the subject of an independent remedial action under Chapter 70.105D RCW. The Site is legally described as follows:

That portion of the Charles Proulx and George Malick Donation Land Claims lying in the North half of Section 28 and the South half of Section 21, Township 2 North, Range 1 East, Willamette Meridian, City of Vancouver, Clark County, Washington, described as follows:

Beginning at a 2 inch iron pipe marking the Northwest corner of the Amos Short Donation Land Claim as shown in Book 39 of Surveys at Page 125, records of said county; thence along the West line of said Short Donation Land Claim South 02° 19' 42" West, 2181.82 feet; thence North 87° 40' 18" West, 776.51 feet to the South line of a 100.00 foot strip of land as conveyed to Clark County for purposes of a public highway and recorded in Volume 123 of Deeds at Pages 175 to 180, Records of said County; thence along said South line North 44° 38' 03" West, 1478.53 feet to the True Point of Beginning; thence South 43° 24' 10" West, 412.63 feet; thence North 11° 29' 57" West, 398.12 feet; thence North 43° 19' 34" West, 573.46 feet; thence North 42° 03' 26" East, 488.00 feet to the South right of way line of the Burlington Northern Railroad; thence along said South right of way line South 34° 22' 26" East 659.67 feet to the West right of way line of West 26th Street extension; thence along said West right of way line South 13° 20' 55" West, 221.74 feet to the South line of said 100.00 strip; thence along said South line South 44° 38' 03" East, 154.04 feet to the True Point of Beginning.

This Restrictive Covenant is required by Ecology as defined in WAC 173-340-440 because the remedial actions undertaken to clean the Site (the "Cleanup Action") resulted in residual concentrations of carcinogenic polycyclic aromatic hydrocarbons ("CPAHs") which exceed Model Toxics Control Act Method A cleanup levels for soil and groundwater established under WAC 173-340-720(2).

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The Cleanup Actions are described in the following reports:

The Standard Oil Company Technical Service Response No. 5427, October 7, 1984.

The Standard Oil Company Technical Service Response No. 5554, Project 1196-02, Vancouver SIC Plant Baghouse Slurry Pond Evaluation, April 14, 1986.

Hart Crowser, Inc., Fill Site Removal Report, Port of Vancouver, Washington, December 24, 1992.

Hart Crowser, Inc., Soil Cover Construction Report, Former Carborundum Waste Disposal Ponds, Port of Vancouver, Washington, November 9, 1993.

CH2M Hill Port of Vancouver, Former Carborundum Facility, Vancouver, Washington, Groundwater Assessment, November 1994.

CH2M Hill Alternatives Assessment Report Remediation of Contaminated Soils, Port of Vancouver, Former Carborundum Facility Port of Vancouver, USA, March 1995.

CH2M Hill, Independent Remedial Action Close-out Report, Former Carborundum Site, December 1995.

CH2M Hill, December 1995 Groundwater Sampling Results, January 25, 1996.

CH2M Hill, Port of Vancouver Former Carborundum Facility Test Pit Results, November 8, 1996.

CH2M Hill, Port of Vancouver Former Carborundum Facility Railroad Soil Remediation Alternatives, February 4, 1997.

CH2M Hill, Port of Vancouver Former Carborundum Facility Quarterly Groundwater Sampling Results, June 11, 1997.

(17/067855/070573/DFB/155422.2)9:42am 12/17/97

Restrictive Covenant (Carborundum Pond Site)
December 17, 1997
Page 4

Section 4: No conveyance of title, easement, lease or other interest in the property shall be consummated by the owner without adequate and complete provision for continued compliance with this Deed Restriction. The owner must notify and obtain approval from Ecology, or its successor agency, prior to any use of the property that is inconsistent with the terms of this Restrictive Covenant. Ecology or its successor agency may approve any inconsistent use only after appropriate public notice and comment.

Section 5: The owner shall provide authorized representatives of Ecology, or its successor agency, the right to enter the property at a reasonable time, after prior notice to owner, for the purpose of evaluating the Cleanup Action, taking samples, inspection remedial actions conducted at the property, and inspecting records that are related to the Cleanup Action.

Section 6: No wells shall be hereafter installed on the subject property for the extraction of potable water for human ingestion.

Section 7: The Owner must restrict leases to uses and activities consistent with the Restrictive Covenant and notify all lessees of the restrictions on the use of the Property.

Section 8: The owner of the Site and the owner's assigns and successors in interest reserve the right under WAC 173-340-440(7) to record an instrument which provides that this Restrictive Covenant shall no longer limit use of the property or be of any further force or effect. However, such an instrument may be recorded only with the consent of Ecology, or its successor agency. Ecology, or its successor agency, may consent to the recording of such an instrument only after appropriate public notice and comment.

PORT OF VANCOUVER

Date: February 20, 1998

By: _____
Title: _____

(17/067855/070573/DFB/155422.2)9:42am 12/17/97

Restrictive Covenant (Carborundum Pond Site)
December 17, 1997
Page 5

STATE OF WASHINGTON)
) ss.
County of Clark)

On this 20th day of February, 1998, before me, the undersigned, a Notary Public in and for the state of Washington, duly commissioned and sworn, personally appeared Byron H. Hanke, known to be the Executive Director of the Port of Vancouver, the municipal corporation that executed the foregoing instrument, and acknowledge the instrument to be the free and voluntary act and deed of that corporation for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute the instrument on behalf of the corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

NANCY I. BAKER
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
APRIL 1, 1999

NOTARY PUBLIC in and for the State of Washington, residing at Vancouver
My Commission Expires: 4/1/99

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6.5 Environmental Covenant – Plant Site

After Recording Return To:
David F. Bartz, Jr.
Schwabe, Williamson & Wyatt, P.C.
1211 SW Fifth Avenue, Suite 1700
Portland, OR 97204

98022230223

RESTRICTIVE COVENANT

DATED: 2/20, 1998

GRANTOR: PORT OF VANCOUVER
a Washington municipal corporation

GRANTEE: None

ABBREVIATED LEGAL DESCRIPTION: SEC 20 T2N R1E and SEC 28 T2N R1E

FULL LEGAL DESCRIPTION LOCATED ON: PAGE 1

ASSESSOR'S PROPERTY TAX PARCEL OR ACCOUNT NUMBER: 059115-010.0

REFERENCE NUMBERS OF RELATED DOCUMENTS: None

RESTRICTIVE COVENANT

On the former Carborundum Silicon Carbide Plant Site
2101 West 16th Street, Vancouver, WA 98660

The Port of Vancouver is the fee owner of real property in the County of Clark, State of Washington (the "Site") which has been the subject of an independent remedial action under Chapter 70.105D RCW. The Site is legally described as follows:

That portion of the Charles Proulx and George Malick Donation Land Claims lying in the North half of Section 28 and the South half of Section 21, Township 2 North, Range 1 East, Willamette Meridian, City of Vancouver, Clark County, Washington described as follows:

Beginning at a 2 inch iron pipe marking the Northwest corner of the Amos Short Donation Land Claim as shown in Book 39 of Surveys at Page 125, records of said county; thence along the West line of said Short Donation Land Claim South 02° 19' 42" West, 2181.82 feet; thence North 87° 40' 18" West, 776.51 feet to the South line of a 100.00 foot strip of land as conveyed to Clark County for the purposes of a public highway and recorded in Volume 123 of Deeds at Pages 175 to 180, Records of said County and the True Point of Beginning; thence along said South line North 44° 38' 03" West, 1478.53 feet; thence South 43° 24' 10" West, 542.38 feet; thence South 46° 35' 50" East, 41.00 feet; thence South 43° 24' 10" West, 222.58 feet to the inner harborline as shown in Book 20 of Surveys at Page 67, Records of said County; thence along said inner harborline South 46° 35' 50" East, 1436.66 feet; thence leaving said inner harbor line North 43° 24' 10" East, 714.31 feet to the True Point of Beginning.

This Restrictive Covenant is required by Ecology as defined in WAC 173-340-440 because the remedial actions undertaken to clean the Site (the "Cleanup Actions") resulted in residual concentrations of carcinogenic polycyclic aromatic hydrocarbons (CPAHs) which exceed Model Toxics Control Act

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Method A cleanup levels for soil and groundwater established under WAC 173-340-720(2).

The Cleanup Actions are described in the following reports:

The Standard Oil Company Technical Service Response No. 5427, October 7, 1984.

The Standard Oil Company Technical Service Response No. 5554, Project 1196-02, Vancouver SIC Plant Baghouse Slurry Pond Evaluation, April 14, 1986.

Hart Crowser, Inc., Fill Site Removal Report, Port of Vancouver, Washington, December 24, 1992.

Hart Crowser, Inc., Soil Cover Construction Report, Former Carborundum Waste Disposal Ponds, Port of Vancouver, Washington, November 9, 1993.

CH2M Hill Port of Vancouver, Former Carborundum Facility, Vancouver, Washington, Groundwater Assessment, November 1994.

CH2M Hill Alternatives Assessment Report Remediation of Contaminated Soils, Port of Vancouver, Former Carborundum Facility Port of Vancouver, USA, March 1995.

CH2M Hill, Independent Remedial Action Close-out Report, Former Carborundum Site, December 1995.

CH2M Hill, December 1995 Groundwater Sampling Results, January 25, 1996.

CH2M Hill, Port of Vancouver Former Carborundum Facility Test Pit Results, November 8, 1996.

CH2M Hill, Port of Vancouver Former Carborundum Facility Railroad Soil Remediation Alternatives, February 4, 1997.

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CH2M Hill, Port of Vancouver Former Carborundum Facility Groundwater Assessment Summary, June 17, 1997.

The above documents are on file at the State of Washington, Department of Ecology ("Ecology") Southwest Regional Office.

The Cleanup Action meets the Model Toxics Control Act Method C cleanup levels for industrial soil and groundwater established under WAC 173-340-700(3)(c) and 720(4) in conformity with the criteria established in WAC 173-340-745. Soil with CPAH concentrations greater than MTCA Industrial cleanup levels was removed from the plant footprint and the excavated area backfilled with clean soil. A layer of clean crushed rock overlies areas of soil with residual CPAH concentrations. A layer of soil with CPAH concentrations greater than eh cleanup level remains along the former railroad spur line located at the southern edge of eh site. The contaminated soil lies beneath about 3 feet of clean fill. Because the Site is located within the Port marine industrial area, access is limited. The Site is fenced and patrolled by Port security 24 hours a day. CPAH concentrations greater than MTCA levels and arsenic concentrations barely above MTCA levels have been detected in shallow groundwater in a small area within the Site. The Site is serviced by the City water system; therefore, use of groundwater is highly unlikely.

The Port of Vancouver makes the following declarations as to limitations, restrictions, and uses to which the Site may be put, and specifies that such declaration shall constitute covenants to run with the land, as provided by law, and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Site.

Section 1: The Site may be used only for industrial purposes. The substantial and disproportionate argument for allowing residual CPAH concentrations to remain includes the maintenance of a soil cap.

Section 2: As of the date of recording this instrument, there are no structures on the Site. It is anticipated that some disturbances of the soil may be necessary for further use

Restrictive Covenant (Carborundum Plant Site)
December 17, 1997
Page 5

or its successor agency. Ecology, or its successor agency, may consent to the recording of such an instrument only after appropriate public notice and comment.

PORT OF VANCOUVER

Date: February 20, 1998

By: _____
Title: _____

STATE OF WASHINGTON)
) ss.
County of Clark)

On this 20th day of February, 1998, before me, the undersigned, a Notary Public in and for the state of Washington, duly commissioned and sworn, personally appeared Byron H. Hanke, known to be the Executive Director of the Port of Vancouver, the municipal corporation that executed the foregoing instrument, and acknowledge the instrument to be the free and voluntary act and deed of that corporation for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute the instrument on behalf of the corporation.

WITNESS my hand and official seal hereto affixed the day and year first above written.

NANCY I. BAKER
NOTARY PUBLIC
STATE OF WASHINGTON
COMMISSION EXPIRES
APRIL 1, 1999

_____
NOTARY PUBLIC in and for the State of Washington, residing at Vancouver
My Commission Expires: 4/1/99

(17/067855/070573/DFB/155421.2)9:51am 12/17/97

6.6 Photo log

Photo 1. Former pond area and engineered asphalt cap and new building–from the Southeast.

Photo 2: Former pond area and engineered asphalt cap–from the North.

Photo 3. Former pond area and engineered asphalt cap–from the West.

Photo 4: Former pond area and engineered asphalt cap and new building–from the Southeast.

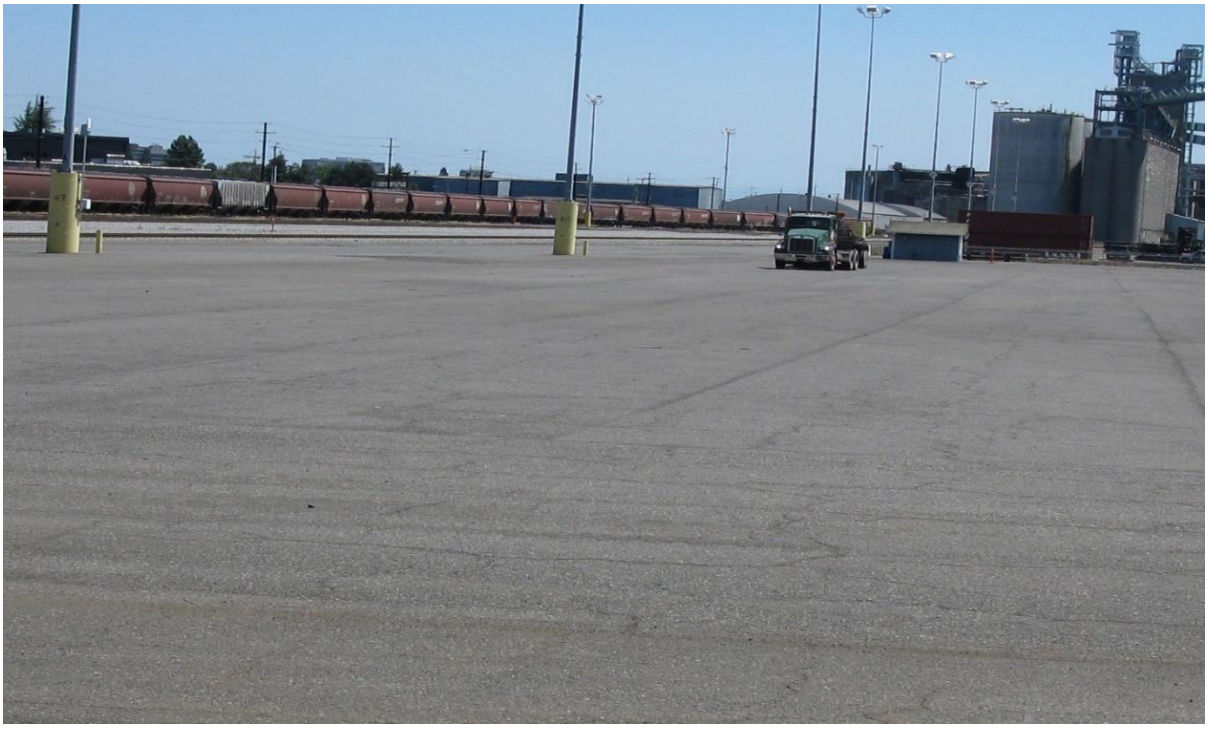

Photo 5: Former plant area and engineered asphalt cap–form the Northwest.

Photo 6. Former plant area and engineered asphalt cap/current storage area–from the East.

Photo 7. Former plant area and engineered asphalt cap/current storage area–from the Southwest.

Photo 8. Former plant area and engineered asphalt cap/current storage area–from the North.