



**PERIODIC REVIEW REPORT
FINAL**

**BPA TACOMA OCCIDENTAL SLUDGE
Facility Site ID#: 1262**

**Taylor Way & E West Road
Tacoma, WA 98421-3505**

Southwest Region Office

TOXICS CLEANUP PROGRAM

March 2015

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1.0 INTRODUCTION

This document is a review by the Washington State Department of Ecology (Ecology) of post-cleanup conditions and monitoring data to ensure that human health and the environment are being protected at the BPA Tacoma Occidental Sludge site (Site). Cleanup at this Site was implemented under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC).

Cleanup activities at this Site were completed under the Consent Decree Number 97 2 06046 5 dated March 3, 1997. The cleanup actions resulted in concentrations of arsenic and lead in soil and cis-1,2-dichloroethene (DCE) and vinyl chloride (VC) in groundwater that exceeds MTCA Method C and Method B cleanup levels respectively. The MTCA Method C cleanup levels for soil are established under WAC 173-340-745(2). The Method B cleanup levels were established under WAC 173-340-720(4). 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 (NFA) 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 or 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 BPA Tacoma Occidental Sludge Site is located at the corner of Taylor Way and East-West Road (current Highway 509) in the Tideflats area of Tacoma, Washington. The Property consists of approximately 21-acres of the Bonneville Power Administration (BPA) Tacoma-Covington right-of-way adjacent to the BPA Tacoma Substation. The Site includes a never-occupied City of Tacoma (City) right-of-way which runs through the property. The property is undeveloped land which is zoned M-3 heavy industrial. A Site vicinity map and a Site Plan are available as Appendix 6.1 and Appendix 6.2, respectively.

The BPA Tacoma Substation was constructed and first operated in 1942 and was expanded through 1968. The area was used as a dairy farm before the BPA Substation was constructed.

In an effort to fill low lying areas of the property adjacent to the Substation, BPA allowed fill material to be placed on the Site in the late 1960's and 1970's. During this time approximately 18,000 cubic yards of lime sludge from the Occidental Chemicals Corporation (OCC, then Hooker Chemical Company) manufacturing facility were placed on the Site.

It is believed that the lime sludge originated from settling ponds at the OCC. These ponds were used to settle brine sludge generated from the manufacturing process and wastes from the manufacture of solvents. The ponds were periodically drained and scraped and the sludge was disposed of off-site. These sludge contained the inorganic salts of calcium (hydroxide and chloride) with fractional percentages of asbestos, chlorinated volatile organic compounds (VOCs), and lead. The lime sludge was placed in a low-lying area along the southern edge of the BPA site extending almost the entire length of the site in an east-west direction.

In addition to the lime sludge placed on the Site, approximately 400 cubic yards of baghouse dust and a bead-like waste product called "shot" were disposed of on the Site. This material was deposited near the southeastern edge of the Site and contained high concentrations of arsenic, and lead as well as other metals. The majority of this waste was not mixed with the nearby lime waste.

Surface water occurs on-site as a result of direct precipitation. A swale extending the length of the Site from east to west is the predominant drainage feature on-site. The swale discharges via a culvert under the East-West Road (Highway 509) to the Fife ditch. It is unlikely that a large quantity of water actually leaves the Site via this swale since it is clogged with vegetation and debris.

The shallow geology at the Site consists of four units: Upper sand, Upper Silt, Lower Sand and Lower Silt. The Upper Sand consists of fill derived primarily from dredged material that was placed on top of the native tidal flats. This unit varies in thickness from 1 to 5 feet on the Site.

The Upper silt unit is approximately 10 feet thick in the Site and represents the native tidal flat material and acts as an aquitard limiting the water movement from the Upper Sand to the lower sand. The thickness of the lower sand unit ranges from 5 to 13 feet with silty sand to a cleaner medium fine-to-medium sand. The lower sand unit consists of gray silt with trace of organic matter. The thickness and continuity of this unit on-Site are unknown.

The groundwater occurs at or near the ground surface during the wet season and 6 to 8 feet below ground surface (bgs) during the dry season. Thus groundwater is only seasonally present in the upper sand. When it is present, it flows primarily laterally to the swale that drains to the east toward Fife ditch. In the lower sand, the groundwater generally flows to the east toward the Fife Ditch.

2.2 Cleanup Levels

The Site is zoned as M-3 for heavy industrial use in the Tideflats area of Tacoma. MTCA Method C and Method B cleanup levels were determined to be appropriate for soil and groundwater respectively at this Site. The soil and groundwater cleanup levels are presented in Table 1 and Table 2 below.

Table 1: Soil Cleanup Levels

CONTAMINANT	CLEANUP LEVEL (milligrams/Kilogram)
Tetrachloroethene	0.5
Trichloroethene	0.5
Dichloromethane	0.5
Hexachlorobenzene	0.00005
Hexachlorobutadiene	0.06
Cis-1,2-dichloroethene	7
Vinyl Chloride	0.002
Arsenic	188
Lead	1000

Table 2: Groundwater Cleanup Levels

CONTAMINANT	CLEANUP LEVEL (micrograms/Liter)
Tetrachloroethene	5
Trichloroethene	5
Dichloromethane	5
Cis-1,2-dichloroethene	70
Vinyl Chloride	0.02
Arsenic	0.05
Lead	5

2.3 Site Investigations and Feasibility Study

2.3.1 1984 Site Investigation

In 1984, five soil samples were collected from the identified sludge disposal area at the west end of the Site. These samples were collected from depths of 8 to 12 inches below the ground surface. These samples were analyzed for chloroform, trichloroethylene (TCE), and tetrachloroethylene (PCE), compounds known to be present in OxyChem lime sludge. The analyses of these soil samples did not indicate the presence of the above chemicals, at a detection limit of 0.40 mg/Kg. It was, therefore, concluded that the analyses did not confirm the report of past disposal of OxyChem like sludge at the Site and no further work was deemed necessary at that time. The soil sampling locations and results are presented in Appendix 6.3.

2.3.2 1990 and 1991 Site Investigation

As a result of the detection of compounds associated with the OxyChem lime sludge in groundwater and a soil sample(s) collected at the adjacent Port-of-Tacoma East-West Road property, the OCC conducted additional investigations on the BPA Property in October 1990 and early 1991 to:

- To further characterize the materials at the Site;
- To determine whether OxyChem lime sludge was disposed of at the Site; and
- If such sludge was disposed of at the Site, to determine what additional actions are required, if any.

As a part of above investigations, a total of 31 test pits were excavated and eight boreholes were installed to delineate the limits of sludge waste/top fill and also to collect soil and/or sludge samples. Four shallow and two deep groundwater monitoring wells (MWs) were also installed for the groundwater investigation. Also surface water samples were collected. Some of the initial test pit and MWs, and surface water sampling locations are included in Appendix 6.3.

The vertical and horizontal delineation of the top fill/waste limits was accomplished by the excavation of 31 test pits and drilling of eight boreholes. The test pits and the boreholes logs showed that the top fill materials encountered included gray waste material (sludge), log yard wastes (logs, wood fragments, bark), and fill soils, mainly sand. The thickness of the fill material was ranged from 0.5 to 6 feet.

During this investigation, six sludge, six groundwater, and two surface water samples were collected for the analysis of Site Specific Parameters (SSP: pH, PCE, TCE, vinyl chloride (VC), chloroform, hexachlorobutadiene, and hexachlorobenzene), and/or cis- and trans-1,2-dichloroethene (cis-and trans-DCE).

In February 1991, the Port of Tacoma (Port) conducted a site investigation along the East-West boundary located between East-West Road and the southern end eastern edges of the BPA site.

This investigation included the installation of five downgradient groundwater monitoring wells and the excavation of four test pits. Results of groundwater samples showed significant concentrations of volatile organic compounds (VOCs) attributable to the BPA Site.

In October 1991, the Port also conducted an investigation on the Taylor Way property that is located cross-gradient to the BPA Tacoma Sludge Site at the intersection of Taylor Way and East-West Road in Tacoma. The investigation included installation and sampling of monitoring wells and examination of test pits. Results of groundwater samples showed no impacts.

In 1992, the Department of Ecology sampled the baghouse dust/shot material on the eastern edge of the Site. Samples contained concentrations of arsenic and lead up to 7,410 milligrams per kilogram (mg/Kg) and 16,000 mg/Kg, respectively. A sample collected from sediments in the drainage swale adjacent to the baghouse dust/shot material contained 2,500 mg/Kg of arsenic.

2.3.3 Preliminary Evaluation of Remedial Alternatives

In 1993, the OCC hired Conestoga-Rovers & Associates (CRA) for conducting a preliminary evaluation of remedial alternatives to determine the types of cleanup options available for the site. The study estimated the total volume of sludge at the Site to be 18,000 cubic yards, with 14,200 cubic yards of that amount to be covered with other fill (buried) and the remaining 3,800 cubic yards exposed. The report described the characteristics of the exposed and buried portions of the sludge. The exposed sludge contained tetrachloroethylene (PCE) near the detection limit of 0.01 mg/Kg; no VOCs at a detection limit of 0.01 mg/Kg; a pH of 9 to 12; and 2 to 15 percent asbestos. The buried sludge contained detectable levels of numerous chlorinated solvent VOCs and a pH of 12.

2.3.4 Final Remedial Investigation / Feasibility Study and Remedial Action

From 1994 – 1996, BPA and OCC contracted with CH2M Hill to complete additional investigations and compile all the existing information for the Site into a Remedial Investigation/Feasibility Study (RI/FS). The Site investigations conducted under this study included additional lime sludge, shot and soil sampling in five test pits from across the sludge fill area and two trenches in the area of buried sludge at the eastern end of the Site. Investigation also included additional sampling of drainage sediments and the installation and sampling of three down-gradient monitoring wells along the southern and eastern edges of the Site.

The maximum concentrations of VOCs and metals detected during all of the above investigations in different media associated with the BPA Site are presented in Table 3 below.

Table 3: Maximum Concentrations of VOCs and Metals

CONTAMINANT	SLUDGE (mg/Kg) (buried)	SLUDGE (mg/Kg) (exposed)	SURFACE WATER (µg/L)	GROUNDWATER (µg/L)
Vinyl Chloride	0.015	ND	ND	190
Trichloroethylene	7.1	ND	ND	58
Tetrachloroethylene	57	0.029	11	ND
Hexachlorobutadiene	8.8	ND	ND	ND
Methylene Chloride	0.22	ND	ND	ND
Hexachlorobenzene	1.6	ND	ND	ND
Cis-1,2- dichloroethene	0.6	ND	ND	1800
(ND = not detected)				
CONTAMINANT	DRAINAGE SEDIMENT mg/Kg	DUST/SHOT mg/Kg	SLUDGE mg/Kg	GROUNDWATER (µg/L)
Arsenic	2,550	10,300	20.6	16.3
Lead	184	16,000	484	5.5

The feasibility study (FS) portion of the document examined the technologies potentially available for remediation of the Site. Applicable technologies were formulated into the following three remedial alternatives:

Alternative 1: Consolidation and capping/off-site disposal / Natural attenuation

Alternative 2: Consolidation and capping / Natural attenuation

Alternative 3: Complete Removal and off-site disposal Natural attenuation.

After a detailed evaluation, Alternative 2 was selected as the appropriate remedy for the Site. The Site remedy consisted of:

- Excavation of impacted fill materials, Sludges, baghouse dust/shot and drainage sediments from across the Site.
- Placement of the excavated materials in an on-Site engineered landfill (containment facility).
- Regularly scheduled inspection and maintenance of the on-Site landfill and associated perimeter drainage swales, Site security features and long-term groundwater monitoring.

In March 1997, OCC and BPA entered into a Consent Decree Number 97 2 06046 5 with the Washington State Department of Ecology (Ecology) to implement the selected remedy. The remedy was implemented during April 1997 through July 1998 and the remedial action was considered complete on August 24, 1998. The location of on-Site engineered landfill and a cross-section of the cap are presented in Appendix 6.4.

2.3.5 Conformational Groundwater Monitoring

The compliance groundwater monitoring (CGWM) started in September 1998 at the completion of the remedial action (RA). A total of twenty two (22) groundwater monitoring events have been conducted between September 1998 and January 2014. The CGWM was conducted on a semiannual basis until September 2003. In November 2003 Ecology approved a reduction in monitoring points (from 7 to 2) and monitoring frequency from semiannual to annual. Ecology also approved modifications to the analyte list for compliance monitoring in March 1999 and November 2003. Currently the CGWM include the hydraulic (water level measurements) and water quality monitoring. Site-wide hydraulic monitoring is performed in 7 wells and water quality monitoring in two down-gradient wells. The water quality water samples are analyzed for PCE, TCE, DCE, VC and methylene chloride.

The results of the last five years of groundwater monitoring data shows that cis 1,2-DCE and VC concentrations exceeded their cleanup levels in monitoring well 1-20 and/or 7-26. Results of the latest monitoring conducted in November 2013 show the exceedence of cis 1,2-DCE and VC concentrations in well 7-26. The fluctuations in concentrations of cis 1,2-DCE and small increase of VC at well 1-20 do not at time suggest a systematic increase in concentrations has been observed. Nonetheless, the comparison of compliance monitoring analytical data to the cleanup standards shows overall decreasing trends over the entire monitoring period of 16 years. The monitoring well locations, groundwater flow direction, concentration trends and the latest results are included in Appendix 6.5.

2.4 Restrictive Covenant

The required RC (now referred to as an environmental covenant) was recorded as a part of the Quit Claim Deed for the Site on 1-19-2001 and the implementation of the Remedial Action (RA) was considered completed on August 24, 1998. The Covenant was required because the RA resulted in residual concentrations of arsenic and lead concentrations exceeding MTCA Method A and C cleanup levels in soils at the Site. The Environmental Covenant (EC) imposes the following limitations:

Section 1: The Site may be used only for Industrial uses as defined in and allowed under the City of Tacoma's Zoning Regulations codified in the Tacoma City Codes as of the date of this EC.

Section 2: Any activity on the Site is prohibited that may interfere with or reduce the effectiveness of the Cleanup Action, operation and maintenance, monitoring, or other activity required by the Decree. Any activity on the Site that may result in the release of hazardous substance that was contained as a part of the Cleanup Action is prohibited.

Section 3: The owner of the Site must give written notice to the Department of Ecology (Ecology), or to a successor agency, of the Owner's intent to convey any interest in the Site. No conveyance of title, easement, lease, or other interest in the Site shall be consummated by the Owner without adequate and complete provision for the continued operation, maintenance and monitoring of the Cleanup Action.

Section 4: The Owner must notify and obtain approval from Ecology, or to a successor agency, prior to any use of the Site that may be inconsistent with the terms of this EC. Ecology, or its successor agency, may approve such a use only after public notice and comments.

Section 5: The Owner shall allow authorized representatives of Ecology, or of a successor agency, the right to enter the Site at reasonable times for the purpose of evaluating compliance with the Cleanup Action Plan and the Order, to take samples, to inspect Cleanup Actions conducted at the Site, and inspect records that are related to the Cleanup Action.

Section 6: The Owner of the Site and owner's assigns and successors in interest reserves the right under WAC 173-340-430 and WAC 173-340-440 to record an instrument which provides that this EC shall no longer limit use of the Site or be of any further force or effect. However, such an instrument may be recorded only with the consent of Ecology, or of the successor agency. Ecology or a successor agency may consent to the recording of such an instrument only after public notice and comment.

The EC is available in Appendix 6.6.

3.0 PERIODIC REVIEW

3.1 Effectiveness of completed cleanup actions

Based upon the Site visit conducted on May 5, 2014, landfill cap at the Site continues to eliminate direct exposure pathways (ingestion, contact) to contaminated sludge, sediment, asbestos contained in sludge, and metals contaminated soils. The integrity of the landfill has been maintained and cap is in satisfactory condition and no repair, maintenance or contingency actions are required at this time. A photo log is available in Appendix 6.9.

A total of approximately 18,000 cubic yards of contaminated soils, sludge were excavated as part of the remedial action and these materials were consolidated within an on-Site engineered landfill (containment facility). The landfill was capped with a composite cap (Resource Conservation Recovery Act cap) and the contaminated material contained beneath the cap which continues to eliminate the direct contact exposure pathway to the humans. Site personnel regularly perform well-head maintenance, vegetation control in the cap surface, fence maintenance and Site security control. Though the concentrations of cis-1,2-DCE and VC slightly exceed their cleanup levels, comparison of compliance monitoring analytical data to the cleanup standards shows overall decreasing trends over the entire monitoring period of 16 years indicating that the contaminated materials within the landfill do not pose a threat to groundwater.

An EC was recorded for the Site and remains active. This EC 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 the Covenant or that will allow the release of contaminants remaining in the contaminated materials at the Site to the environment. The Covenant also restricts the Site for Industrial uses only, requires fencing to restrict public access to the Site, regular operation and maintenance of the landfill, landfill cap and groundwater monitoring. The EC serves to assure the long term property use and integrity of the landfill cap.

3.2 New scientific information for individual hazardous substances for mixtures present at the Site

There is no new relevant scientific information for hazardous substances remaining at the Site.

3.3 New applicable state and federal laws for hazardous substances present at the Site

MTCA Method A cleanup levels for contaminants of concern at the Site have not changed since the NFA determination was issued on March 18, 2009.

3.4 Current and projected Site use

The Site is currently occupied by commercial building, State Highway 19 and Irondale Road easement areas. This use is not likely to have a negative impact on the risk posed by hazardous substances contained at the Site. There are no changes projected in the Site use.

3.5 Availability and practicability of higher preference technologies

The remedy implemented included excavation and disposal of majority of contaminated soils and containment of remaining soils/hazardous substances. The implemented remedy 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 Site 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 appears to be protective of human health and the environment.
- Soil cleanup levels have not been met at the Site; however, under WAC 173-340-740(6) (d), the cleanup action could comply with cleanup standards if the long-term integrity of the containment system was ensured and the requirements for containment technologies in WAC 173-340-360(8) have been met.
- The results of confirmation groundwater monitoring showed slight exceedence of cis-1,2 DCE and VC concentrations; however, comparison of compliance monitoring results to the cleanup standards showed overall decreasing trends over the entire monitoring period of 16 years indicating that the contaminated materials contained within the landfill are not impacting the groundwater and may not pose a threat to groundwater.
- The EC 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 EC are being satisfactorily followed and no additional remedial actions are required 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

CH2M Hill, 1993. Off-site Migration Pathway Assessment, BPA Tacoma Substation. Prepared for Bonneville Power Administration.

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Conestoga-Rovers and Associates (CRA), 1993. Preliminary Evaluation of Remedial Alternatives. Bonneville Power Administration Property, Taylor Way, Tacoma, Washington. Prepared for Occidental Chemical Corporation.

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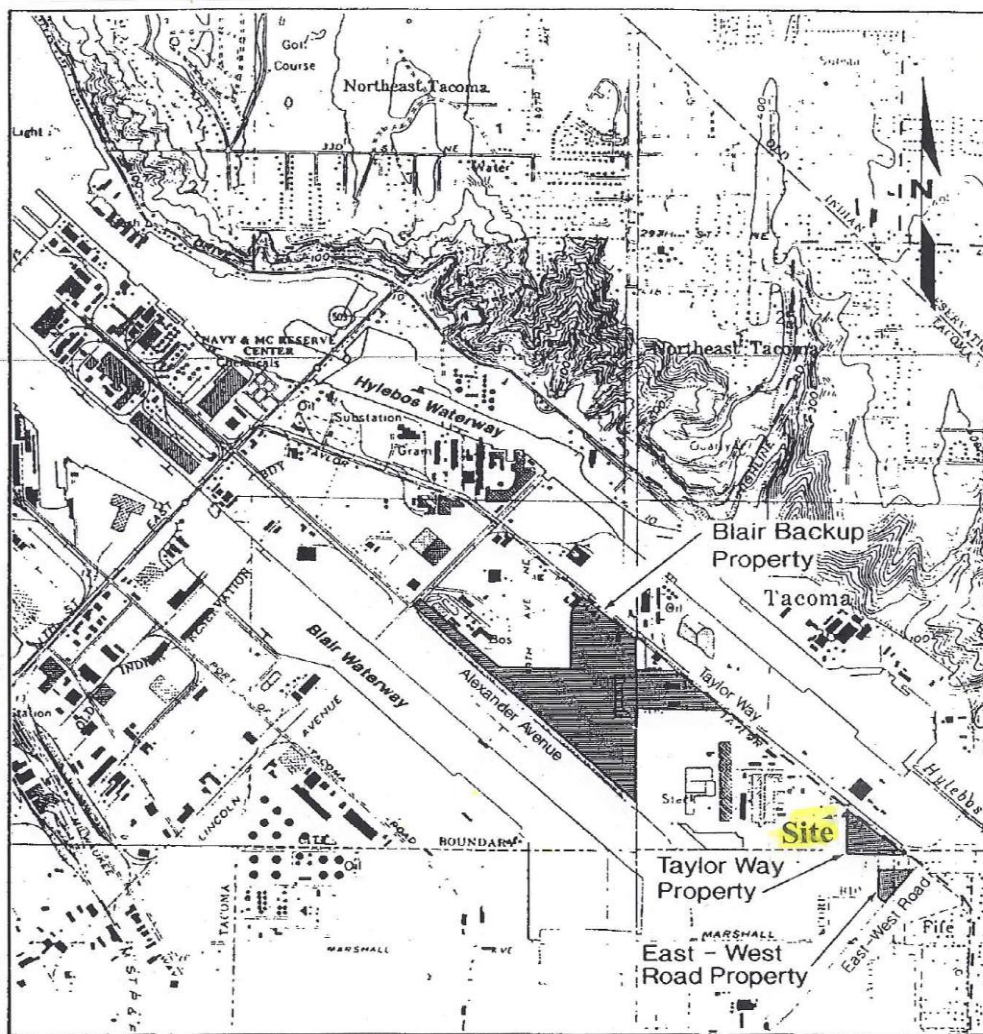
Hart Crowser, 1991b. Final Investigation Report, Taylor Way Property, Tacoma, Washington. Prepared for the Port of Tacoma.

Occidental Chemical Corporation, 1984. Tacoma Off-Plant Disposal Site Investigation, Bonneville Power Administration.

Department of Ecology, Site Visit, May 5, 2014.

6.0 APPENDICES

6.1 Vicinity Map

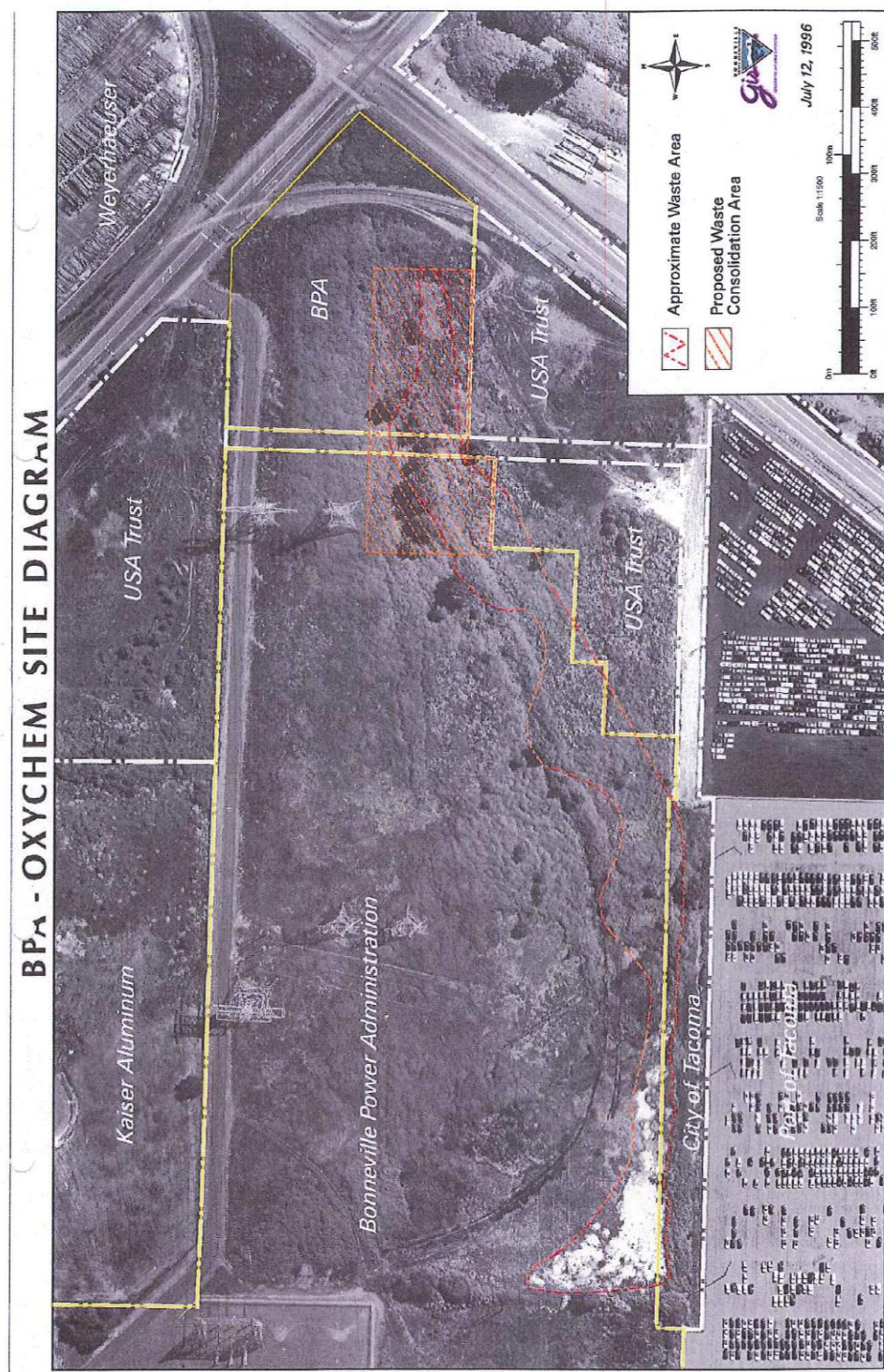


Base map prepared from USGS 7.5-minute quadrangles, Tacoma North and Proctor Bay, Washington, photorevised 1981

0 2000 4000
Scale in Feet

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Figure 1 Page 95

6.2 Site Plan



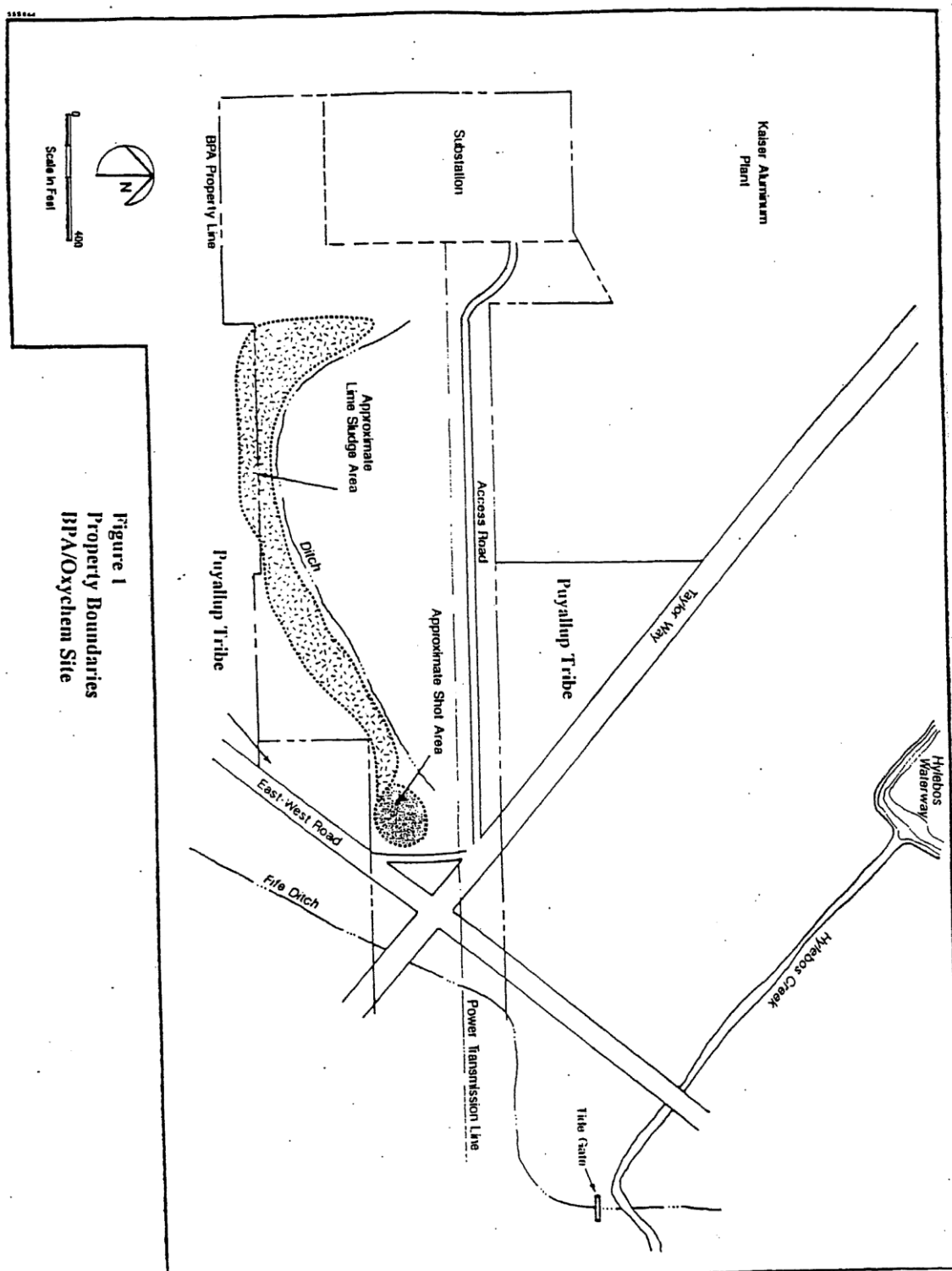
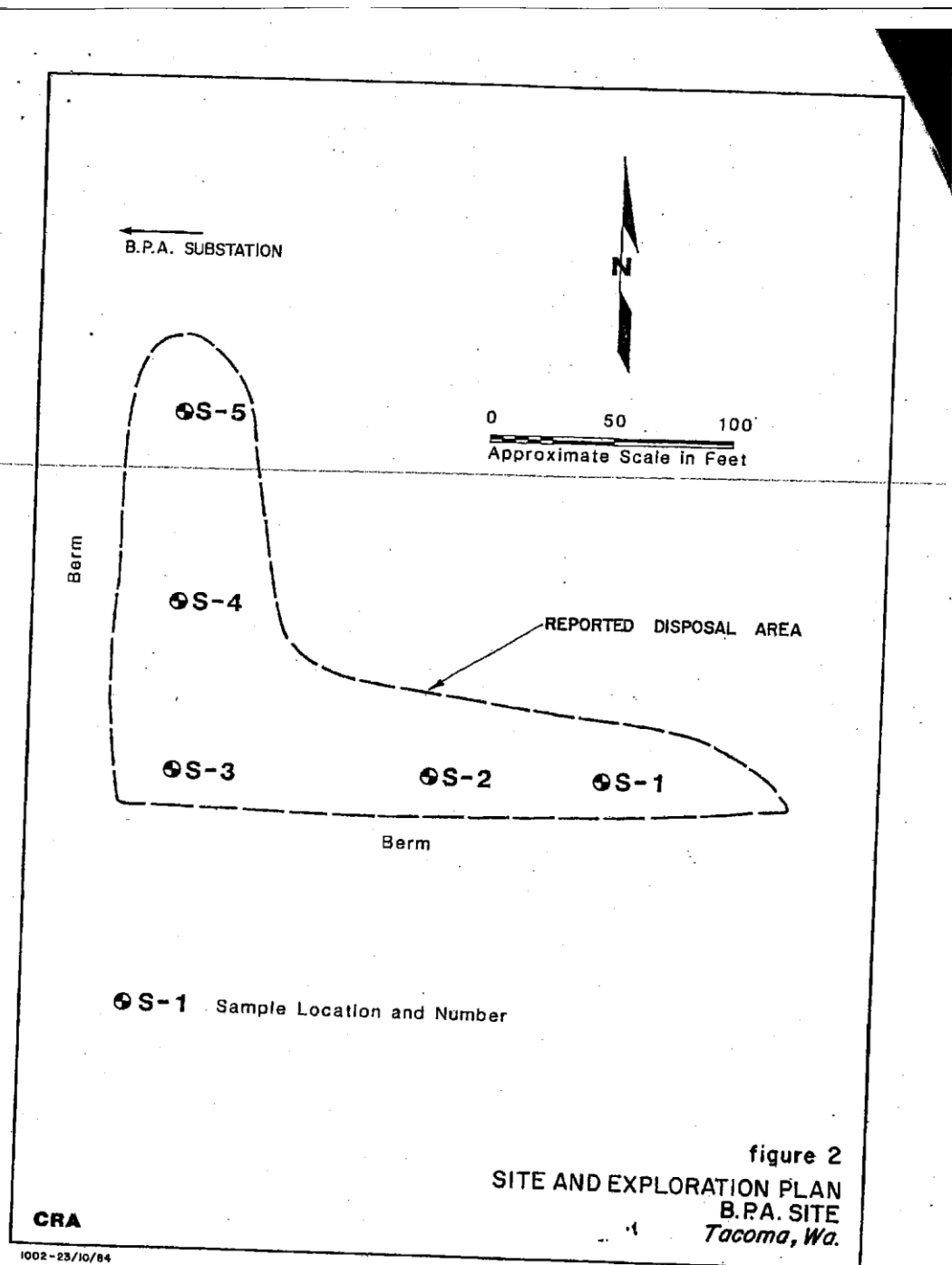
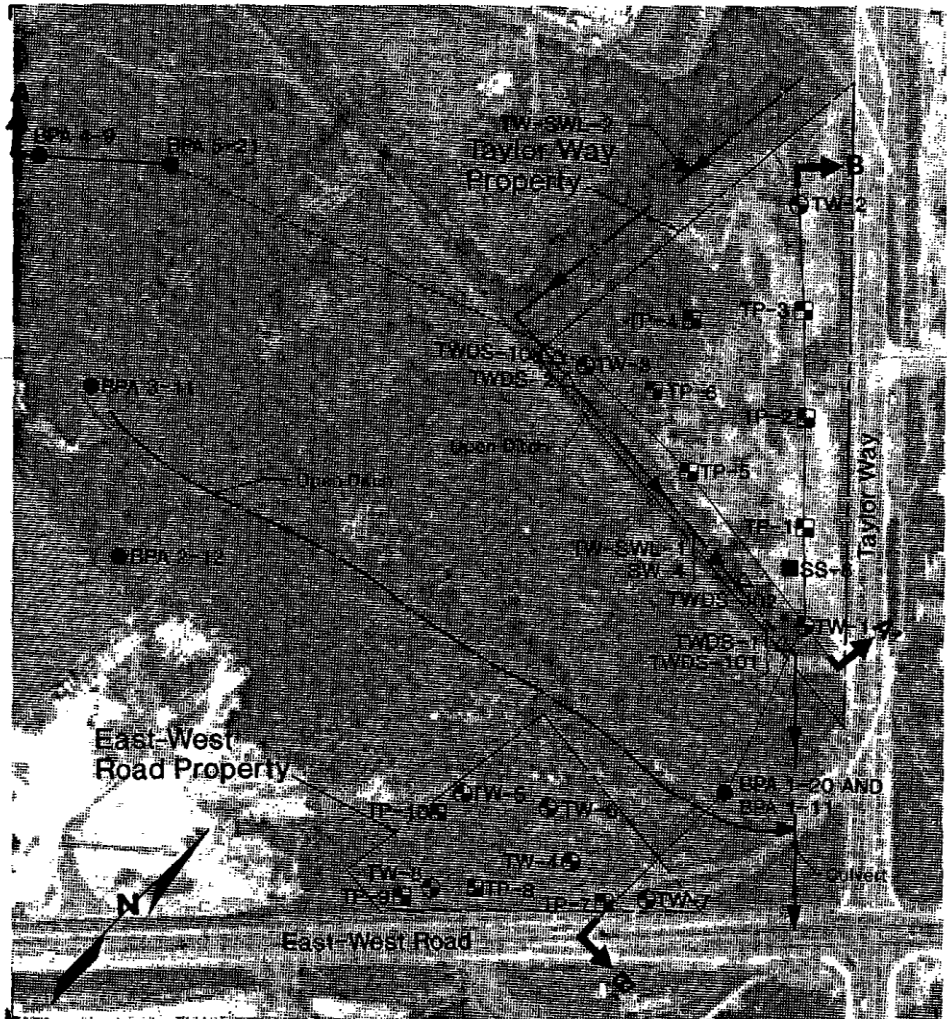


Figure 1
Property Boundaries
BPA/Oxychem Site

6.3 1984, 1990 and 1991 Site Investigations Sampling Locations



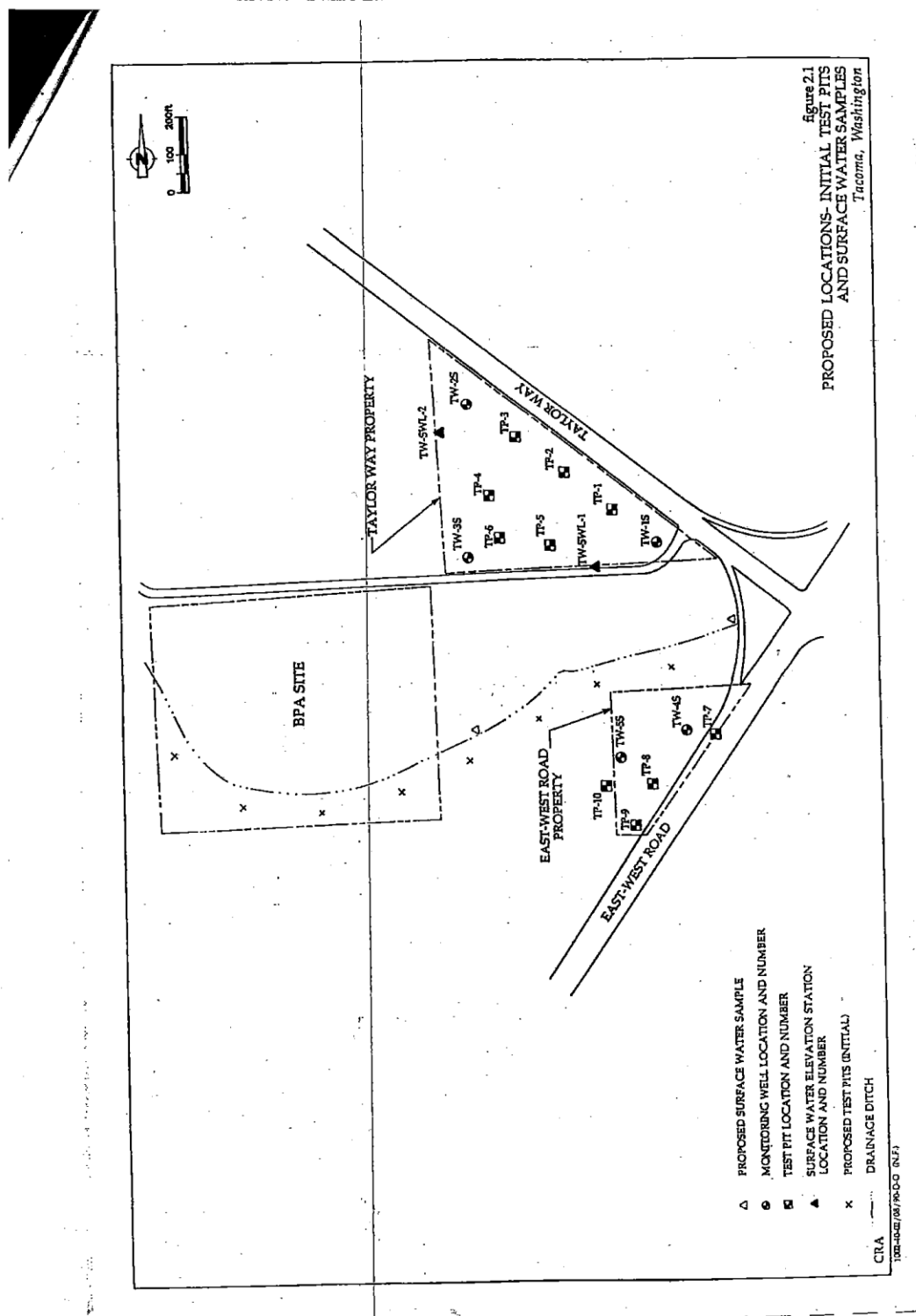
Site and Exploration Plan

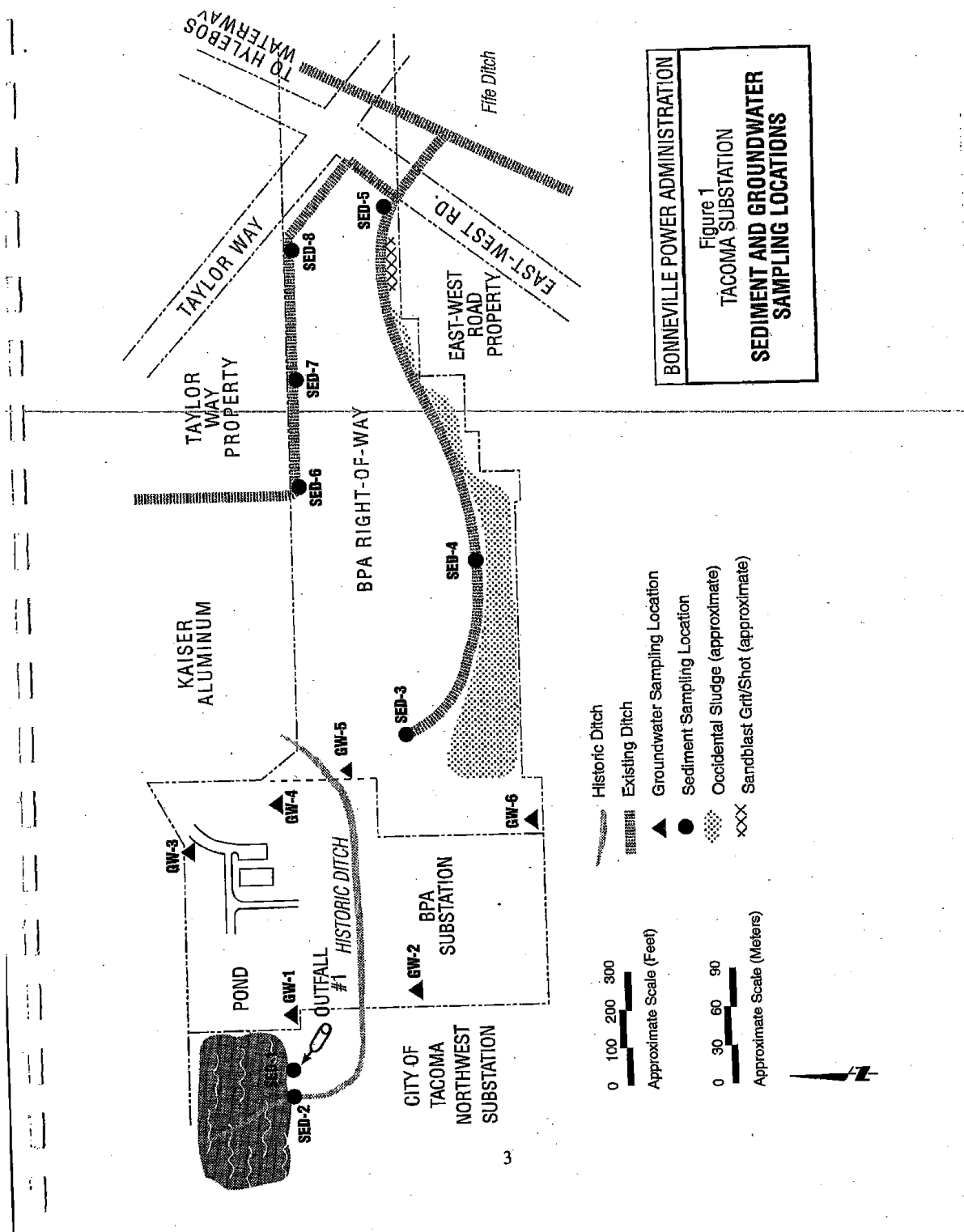


- TW-2 Monitoring Well Location and Number
- BPA 1-11 Monitoring Well Location and Number (Others)
- TP-1 Test Pit Location and Number
- ▲ TW-SWL-1 Surface Water Elevation Station Location and Number
- ▲ SW-4 Surface Water Sampling Location and Number
- SS-8 Surface Soil Sample Location and Number
- △ TWDS-1 Ditch Sediment Sample Location and Number
- ↔ Generalized Geologic Cross Section Location and Designation

0 200 400
Approximate Scale in Feet

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Figure 3 Page 62





1.4 Landfill / Containment Facility Layout and Cap Cross-Section

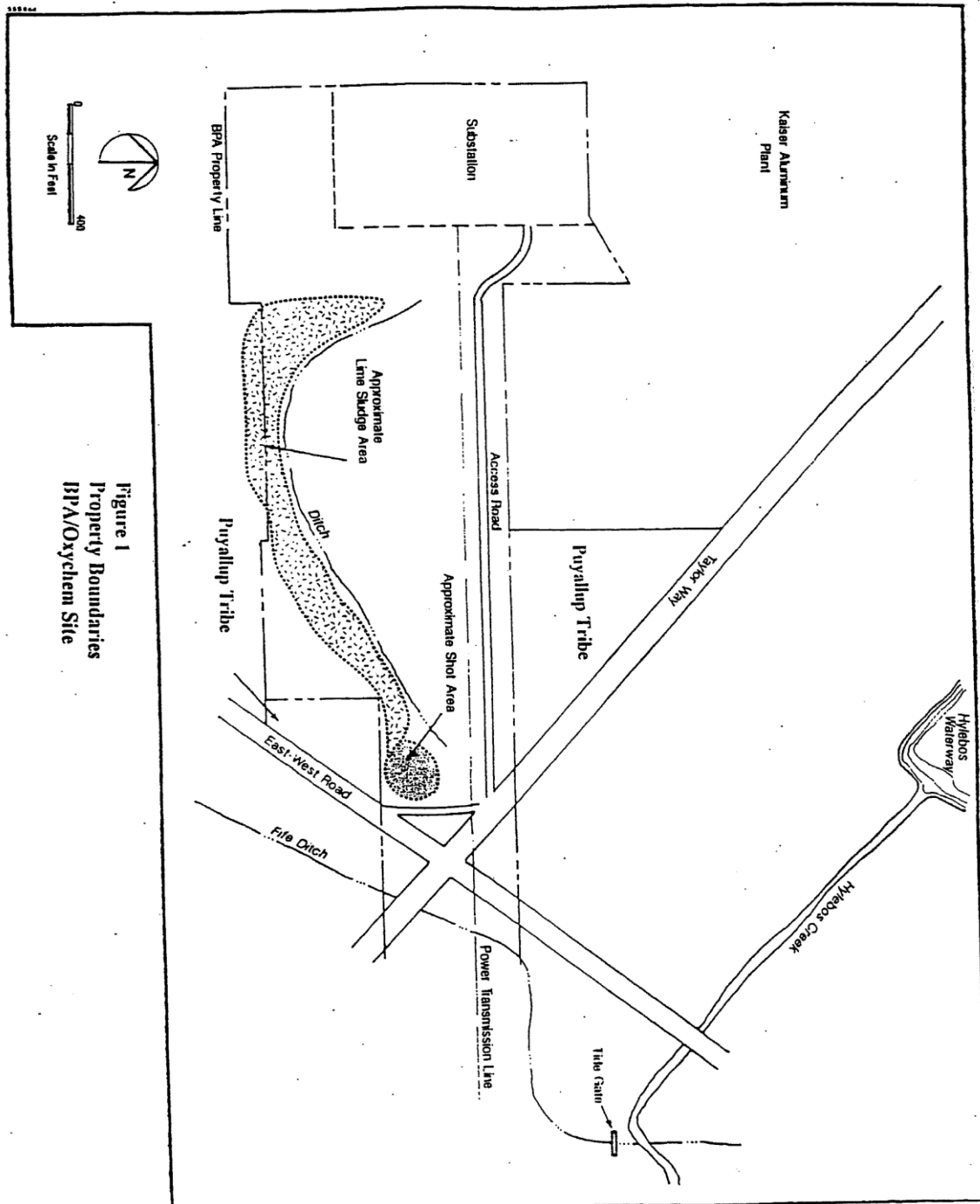
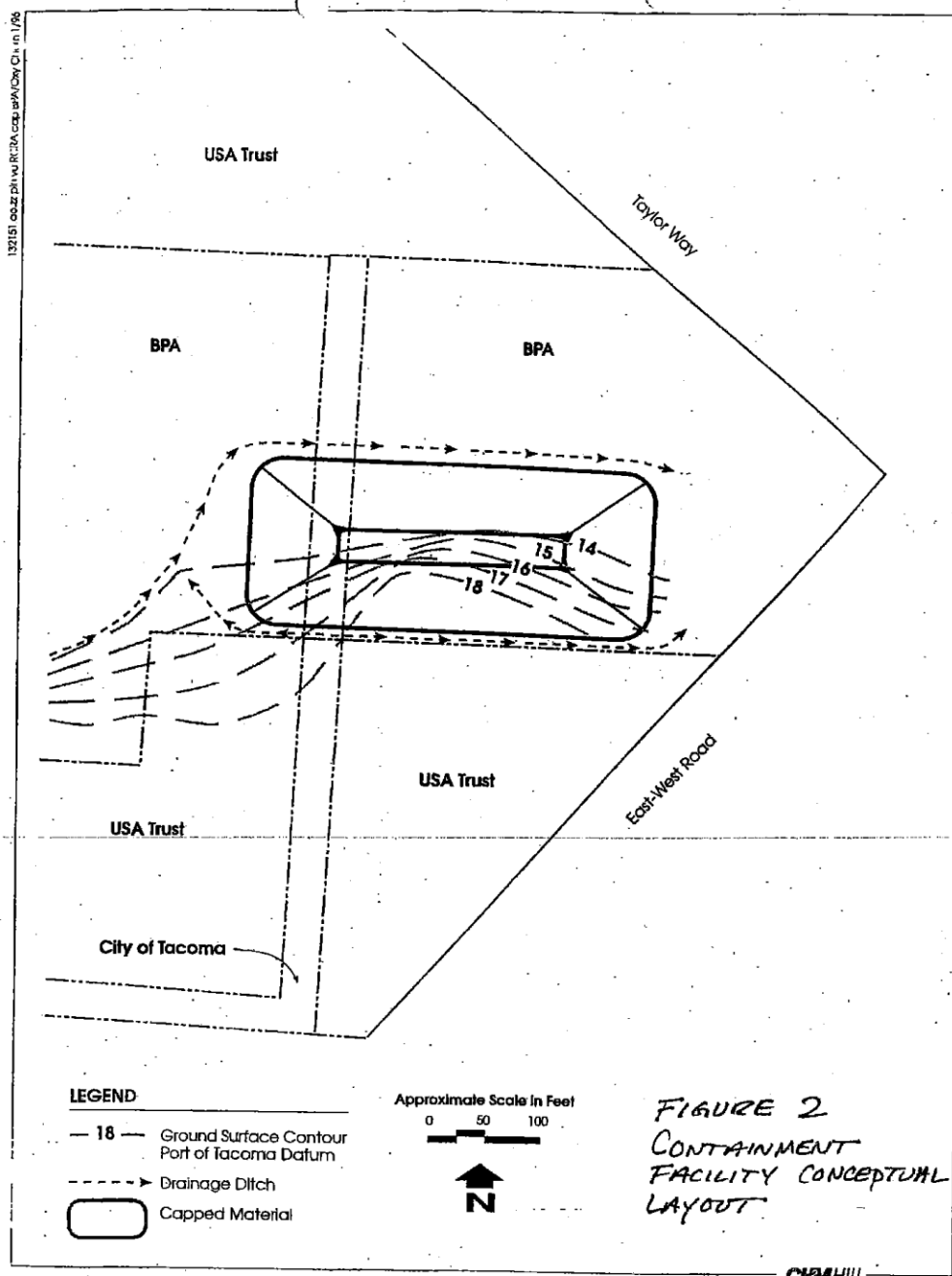


Figure 1
Property Boundaries
BPA/Oxychem Site



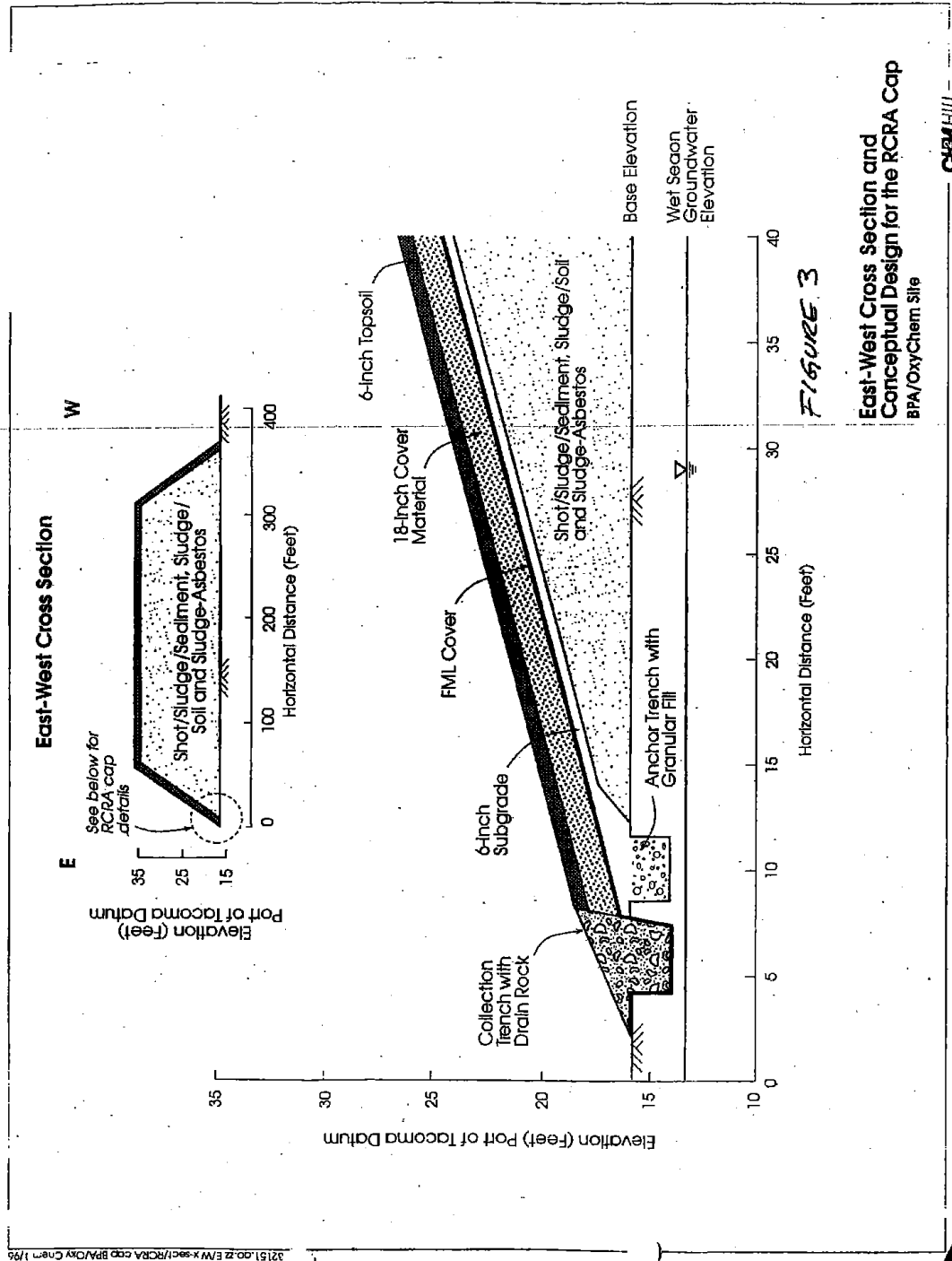


figure 3.1

SITE PLAN AND GROUNDWATER CONTOUR MAP - NOVEMBER 2013
COMPLIANCE MONITORING PROGRAM
BONNEVILLE POWER ADMINISTRATION SITE
Tacoma, Washington

Figure 3.1 is a site plan and groundwater contour map for the Bonneville Power Administration site in Tacoma, Washington, dated November 2013. The map shows the property boundaries, a central confinement area, and groundwater contours. Key features include:

- Property Line:** Indicated by a dashed line.
- Final Contour Line and Elevation:** Shown as solid lines with elevations ranging from 4.00 to 6.00 feet.
- Ditch Line:** Represented by a line with cross-ticks.
- Monitoring Well:** Marked with a circle and crosshair. Two wells are shown: MW-1 (elevation 4.90) and MW-2 (elevation 3.85).
- Groundwater Elevation (NGVD):** Indicated by a solid line with a value of 7.61.
- Groundwater Elevation Contour:** Represented by a solid line with a value of 6.50.
- Groundwater Flow Direction:** Indicated by a purple arrow pointing towards the confinement area.

The map also includes a north arrow, a scale bar (0 to 150 feet), and a legend. Surrounding roads include Taylor Way, East West Road, and Marine View Dr.

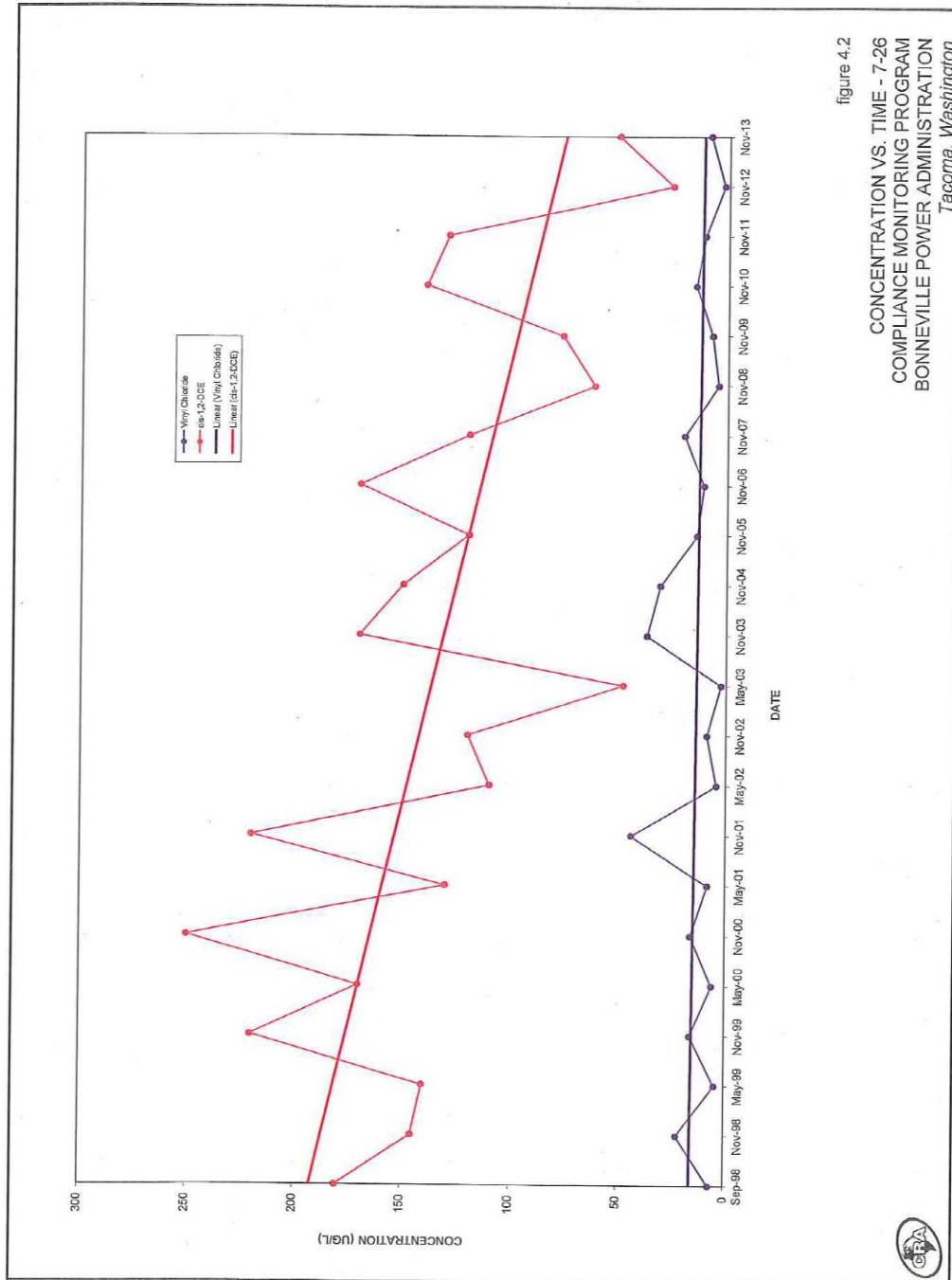


figure 4.2
CONCENTRATION VS. TIME - 7-26
COMPLIANCE MONITORING PROGRAM
BONNEVILLE POWER ADMINISTRATION
Tacoma, Washington

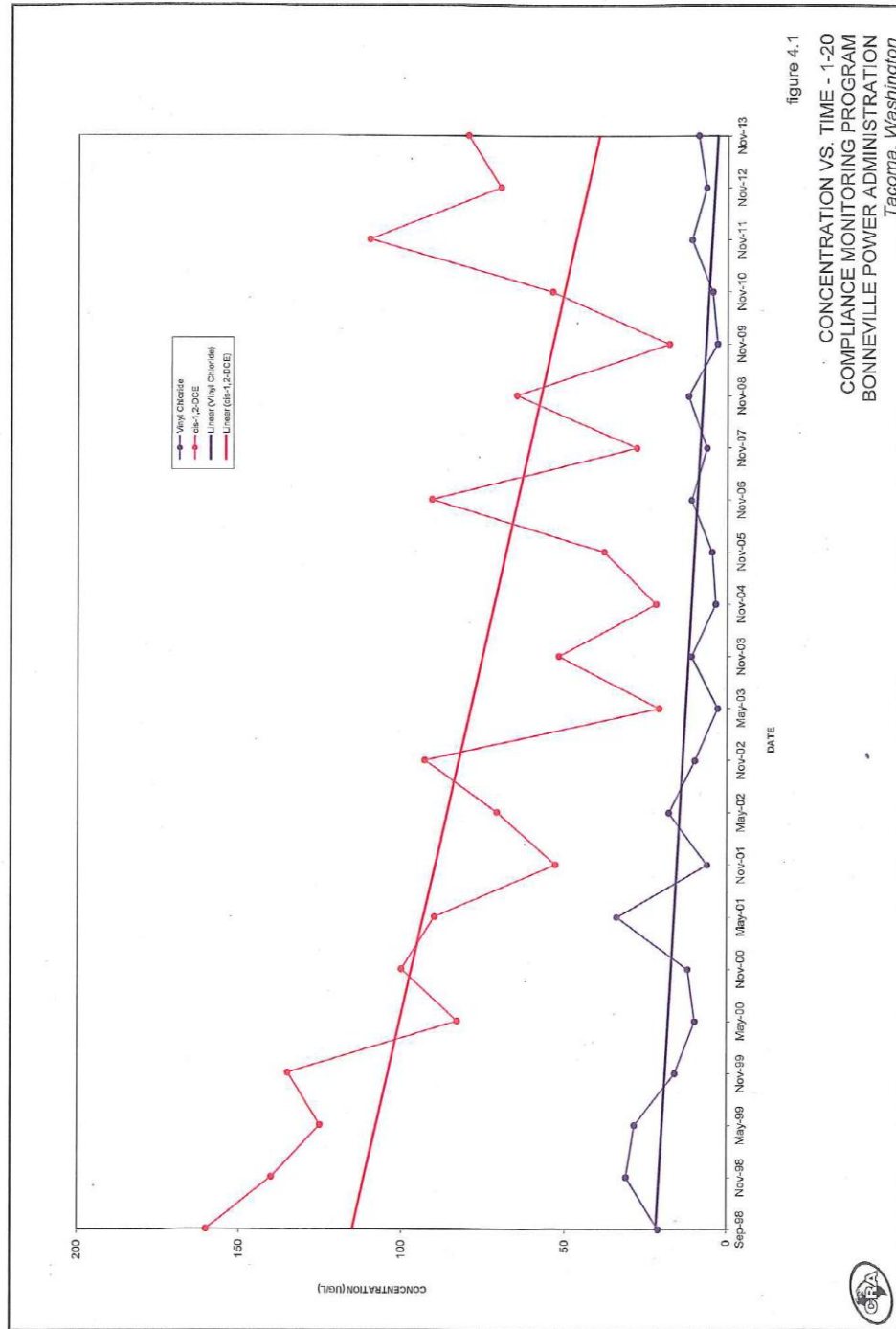


TABLE 3.4

ANALYTICAL RESULTS SUMMARY
BONNEVILLE POWER ADMINISTRATION SITE
TAYLOR WAY
TACOMA, WASHINGTON

		1-20		7-26		7-26	
Sample Location:							
Sample ID:		GW-112613-BP-1-20		GW-112613-BP-7-26		GW-112613-BP-FD-1	
Sample Date:		11/26/2013		11/26/2013		11/26/2013	
						(Duplicate)	
Parameter	Units	Cleanup Level ⁽¹⁾					
Volatile Organic Compounds							
cis-1,2-Dichloroethene	µg/L	70	80	51 J		100 J	
Methylene chloride	µg/L	5	2.0 U	2.0 U		2.0 U	
Tetrachloroethene	µg/L	5	0.50 U	0.50 U		0.50 U	
Trichloroethene	µg/L	5	0.50 U	0.22 J		0.26 J	
Vinyl chloride	µg/L	10*	9.0	8.5 J		23 J	

Notes:

⁽¹⁾ Model Toxic Control Act (MTCA Method B Surface Water Standard, Cleanup Levels and Risk Calculations (CLARC), Version 3.1, updated November 2001.

J Estimated.

U Non-detect at associated value.

* Practical quantitation limit.

☐ Concentration exceeds the cleanup standard.

1.6 Quit Claim Deed and Environmental Covenant

200101190200 9 pg
1-19-2001 10:19am \$16.00
PIERCE COUNTY, WASHINGTON

AFTER RECORDING RETURN TO:

Edward G. Hudson
Smith Alling Lane
1102 Broadway, #403
Tacoma, WA 98402

QUIT CLAIM DEED

Grantor: United States of America, Department of Energy, Bonneville Power Administration ("BPA")

Grantee: Occidental Chemical Corporation ("OCC")

Tax Parcel No.: 03-20-01-1-074

Related Documents: Consent Decree dated March 3, 1997 (Superior Court of Washington for Pierce County, Cause No. 97-2-06046-5); Easement Agreement between BPA and OCC dated 1/3/2001.

Notice of Building Restriction: The described property contains hazardous waste materials governed by a State of Washington Department of Ecology Consent Decree, and is deemed an unbuildable site under the zoning and land use documents of the City of Tacoma.

Abbreviated Legal Description: Full legal description stated below.

A PORTION OF GOVERNMENT LOTS 1 AND 2 OF SECTION 1, TOWNSHIP 20 NORTH, RANGE 3 EAST, WILLAMETTE MERIDIAN, PIERCE COUNTY, WASHINGTON, AND ALSO PART OF CHICAGO ROCK ISLAND AND PACIFIC ADDITION TO TACOMA, AS RECORDED IN VOLUME 10 OF PLATS AT PAGE 11, RECORDS OF SAID COUNTY, THAT LIES WITHIN THE BONNEVILLE POWER ADMINISTRATION (B.P.A.) COVINGTON - TACOMA NO. 2 TRANSMISSION LINE RIGHT-OF-WAY.

THIS DEED made this 3 day of JANUARY, 2001, between the UNITED STATES OF AMERICA, DEPARTMENT OF ENERGY, BONNEVILLE POWER ADMINISTRATION, hereinafter called Grantor, and OCCIDENTAL CHEMICAL CORPORATION, hereinafter called Grantee.

1

ETN: 1050291 1-19-2001
Excise Tax Collected: \$0.00
Affidavit Processing Fee: \$2.00
Cathy Pearsall-Stirek CPO Pierce County Auditor
BY: ROBIN CAROVANO

For reference only, not for re-sale.

For reference only, not for re-sale.

NOW THEREFORE, the Grantor, for and in consideration of One Hundred Fifty Thousand and 00/100 Dollars (\$150,000.00), the receipt whereof is hereby duly acknowledged, does hereby remise, release, and quitclaim unto the Grantee, its heirs, successors and assigns, subject to the restrictions and reservation described below, all Grantor's right, title, interest and claim in and to a parcel of land described as follows:

NEW PARCEL "B"

A PORTION OF GOVERNMENT LOTS 1 AND 2 OF SECTION 1, TOWNSHIP 20 NORTH, RANGE 3 EAST, WILLAMETTE MERIDIAN, PIERCE COUNTY, WASHINGTON, AND ALSO PART OF CHICAGO ROCK ISLAND AND PACIFIC ADDITION TO TACOMA AS RECORDED IN VOLUME 10 OF PLATS AT PAGE 11, RECORDS OF SAID COUNTY, THAT LIES WITHIN THE BONNEVILLE POWER ADMINISTRATION (B.P.A.) COVINGTON -- TACOMA NO. 2 TRANSMISSION LINE RIGHT-OF-WAY, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTH ONE-QUARTER CORNER OF SAID SECTION 1; THENCE SOUTH 87°32'46" EAST, ALONG THE NORTH LINE OF SAID SECTION 1, 165.91 FEET TO THE SOUTH ONE-QUARTER CORNER OF SECTION 36, TOWNSHIP 21 NORTH, RANGE 3 EAST; THENCE CONTINUING ALONG THE NORTH LINE OF SAID SECTION 1, SOUTH 88°14'34" EAST, 1149.13 FEET TO THE NORTHEAST CORNER OF SAID PLAT OF CHICAGO ROCK ISLAND AND PACIFIC ADDITION TO TACOMA; THENCE SOUTH 02°36'52" WEST, 44.67 FEET ALONG THE EAST LINE OF SAID PLAT, ALSO BEING THE EAST LINE OF VACATED FRANK STREET AS VACATED BY CITY OF TACOMA ORDINANCE NO. 26123 DATED JANUARY 13, 1998 AND THE POINT OF BEGINNING; THENCE SOUTH 87°38'49" EAST, 326.24 FEET ON A LINE PARALLEL WITH AND 8.0 FEET NORTH OF AN EXISTING CHAIN LINK FENCE, TO THE SOUTHWESTERLY RIGHT-OF-WAY LINE OF TAYLOR WAY; THENCE SOUTH 47°52'03" EAST, 110.74 FEET ALONG SAID RIGHT-OF-WAY, TO THE WESTERLY RIGHT-OF-WAY LINE OF SR-509 AS ACQUIRED BY THE STATE OF WASHINGTON AS SHOWN ON STATE HIGHWAY PLANS FOR SR-509 MILWAUKEE WAY TO TAYLOR WAY ALIGNMENT/RIGHT-OF-WAY PLANS, SHEET NO. 36 OF 241; THENCE SOUTH 03°49'58" EAST, 153.44 FEET ALONG SAID WESTERLY RIGHT-OF-WAY LINE TO STATION NFR 124+63.01, LEFT 35 FEET FROM THE CENTERLINE OF SAID NFR LINE; THENCE SOUTH 40°23'11" WEST, 99.21 FEET ALONG THE NORTHWESTERLY RIGHT-OF-

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WAY LINE OF SR-509 OF SAID HIGHWAY PLANS TO THE SOUTH
LINE OF SAID B.P.A. COVINGTON -- TACOMA NO. 2
TRANSMISSION RIGHT-OF-WAY AS SHOWN ON PLANS DATED
MARCH 18, 1963, DRAWING NO. C-109-345-D1; THENCE NORTH
88°14'34" WEST, 368.17 FEET ALONG SAID B.P.A. RIGHT-OF-WAY
LINE TO THE EAST LINE OF SAID PLAT OF CHICAGO ROCK-
ISLAND AND PACIFIC ADDITION TO TACOMA, ALSO BEING
THE EAST RIGHT-OF-WAY LINE OF AFOREMENTIONED
VACATED FRANK STREET; THENCE CONTINUING NORTH
88°14'34" WEST, 30.00 FEET ALONG SAID B.P.A. RIGHT-OF-WAY
TO THE WEST LINE OF VACATED FRANK STREET AND THE
EAST LINE OF BLOCK 3 OF SAID PLAT; THENCE SOUTH
02°36'52" WEST, 41.14 FEET ALONG SAID EAST LINE OF BLOCK 3
TO THE SOUTHEAST CORNER OF LOT 15 OF SAID BLOCK 3;
THENCE NORTH 87°21'52" WEST, 46.89 FEET; THENCE NORTH
01°13'34" EAST, 346.66 FEET ALONG A LINE THAT IS PARALLEL
WITH AND 15.5 FEET WESTERLY OF AN EXISTING CHAIN LINK
FENCE, TO A LINE BEARING NORTH 87°38'49" WEST, FROM THE
POINT OF BEGINNING, SAID LINE BEING PARALLEL WITH AND
8.0 FEET NORTH OF AN EXISTING CHAIN LINK FENCE; THENCE
SOUTH 87°38'49" EAST, 85.29 FEET ALONG SAID PARALLEL LINE
TO THE POINT OF BEGINNING.

SUBJECT TO EASEMENTS, RESTRICTIONS, RESERVATIONS,
AND COVENANTS OF RECORD.

CONTAINING 3.42 ACRES, MORE OR LESS.

SITUATE IN THE CITY OF TACOMA, PIERCE COUNTY, WASHINGTON.

Also, the Grantor conveys an easement for access to the above-described site over the
existing BPA Tacoma substation access road to the site (or if the existing access is
removed for any reason, then a substitute access). This easement is appurtenant to the
above-described land and is further described as follows:

An existing paved roadway 18 feet in width on the northern portion of
property owned in fee by the U.S. Department of Energy, Bonneville
Power Administration, beginning in Government Lot 1 and ending in
Government Lot 2, Section 1, Township 20 North, Range 3 East,
Willamette Meridian, Pierce County, State of Washington as shown on the
drawing copied from the Boundary Line Adjustment documents recorded
under Pierce County Auditor File No. 200101195001 and marked
Exhibit A.

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Restrictions. This property (hereinafter called the Property) is subject to the following restrictions:

1. The Property is subject to the Declaration of Restrictive Covenants, attached as Exhibit B hereto, which is incorporated by reference;
2. Any change in use or in the size of the engineered containment facility located on the Property and described in Exhibit A (as such engineered containment facility exists on the date of this Deed) requires the written concurrence of the Grantor; and
3. No equipment shall be used, nor activity undertaken, on the Property within 15 vertical feet of Grantor's electric transmission line conductors without first consulting Grantor who shall provide conditions for equipment use and activity.

Reservation. Reserving to the United States of America from Property so granted:

Reserving to the United States of America, Department of Energy, Bonneville Power Administration, and its assigns, a perpetual non-exclusive easement and right-of-way for the limited purposes of above-ground electric power transmission and communications across, upon, and over, all the above-described Property. This reservation includes the right to enter and to locate, construct, operate, maintain, repair, rebuild, upgrade, remove, and patrol the existing above-ground electric transmission facilities, as well as one or more future lines of poles or structures and appurtenances thereto, supporting above-ground conductors of one or more electric circuits of any voltage as well as above-ground communication facilities, together with the present and future right to keep the Property free and clear of all structures, trees, brush, vegetation, and fire hazards; provided that all such activities are consistent with the provisions of the Declaration of Restrictive Covenants attached hereto as Exhibit B. Grantor shall give Grantee at least ten (10) days prior written notice of any construction or removal of any facilities located on the Property. Furthermore, in the event that any of Grantor's activities actually or potentially compromise or threaten the integrity or operation of the engineered containment facility, or related monitoring wells, Grantor shall immediately cease such activities, notify Grantee regarding the situation as soon as reasonably possible, and restore, at Grantor's expense, any and all damaged areas to its original condition. All such notices shall be provided to Grantee at Occidental Chemical Corporation, Attn: Al Meek, Director, Environmental Affairs, Glenn Springs Holding, Inc., 2480 Fortune Drive, #300, Lexington, Kentucky 40509 (telephone: 1-859-543-2153; facsimile: 1-859-543-2171; e-mail: Al_Meek@oxy.com), or at such

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other addresses as Grantee may designate in writing to Grantee in the future. Title to trees and merchantable timber hereafter growing on the Property shall remain in the United States.

Grantor and Grantee do hereby release, protect, indemnify, and agree to hold the other party harmless from and against any and all liabilities, losses, damages, expenses, actions, and claims, including reasonable attorneys' fees and costs incurred in the defense thereof, arising directly or indirectly as a result of the acts or omissions of the indemnifying party, its servants, agents, licensees, invitees, employees, and contractors in connection with any use by such indemnifying party of the BPA Property or OCC Property pursuant to this Agreement; provided, however, that this paragraph does not purport to indemnify any party for damages arising out of or resulting from the negligence of the indemnified party, its agents, or employees.

It is also noted that:

Grantor and Grantee acknowledge that both have been named by the Environmental Protection Agency (EPA) as Potentially Responsible Parties (PRPs) at the Commencement Bay Nearshore/Tideflats Superfund Site, which includes the Property that is being transferred to Grantee, as described in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) § 120(h), 42 USC § 9620(h). Grantor and Grantee agree that this transaction meets all requirements for federal transfer of real property described in CERCLA § 120(h), including subsection (3).

Grantee agrees to release, protect, indemnify, and hold Grantor harmless from and against any environmental claims associated with the Property that arise out of release of hazardous substances occurring after the transfer of the Property to Grantee, including claims made pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 USC § 6901, the Resource Conservation and Recovery Act (RCRA), 42 USC § 6901, the Toxic Substances Control Act (TSCA), 15 USC § 2601, and related state statutes including the Washington Model Toxic Control Act, RCW 70, 105D, unless such releases were caused by Grantor or its servants, agents, licensees, invitees, employees, and/or contractors.

IN WITNESS WHEREOF, the Grantor, by its duly authorized representative has executed this deed pursuant to the delegation of authority promulgated in by the Acts of August 20, 1937 (50 Stat. 732, 16 USC § 832a), as amended, and October 23, 1962 (76 Stat. 1129, 40 USC § 319) and regulations, and delegations of authority issued pursuant thereto, the provisions of which have been met, having been determined that the conveyance is in the public interest and will not be adverse to the interests of the United States.

Dated at Portland, Oregon, this 3 day of January, 2001.

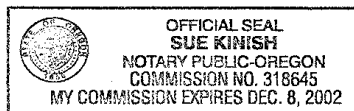
UNITED STATES OF AMERICA
Department of Energy
Bonneville Power Administration

By: John R. Cowger
John R. Cowger
Manager for Real Property Services

STATE OF OREGON)
) : ss.
COUNTY OF MULTNOMAH)

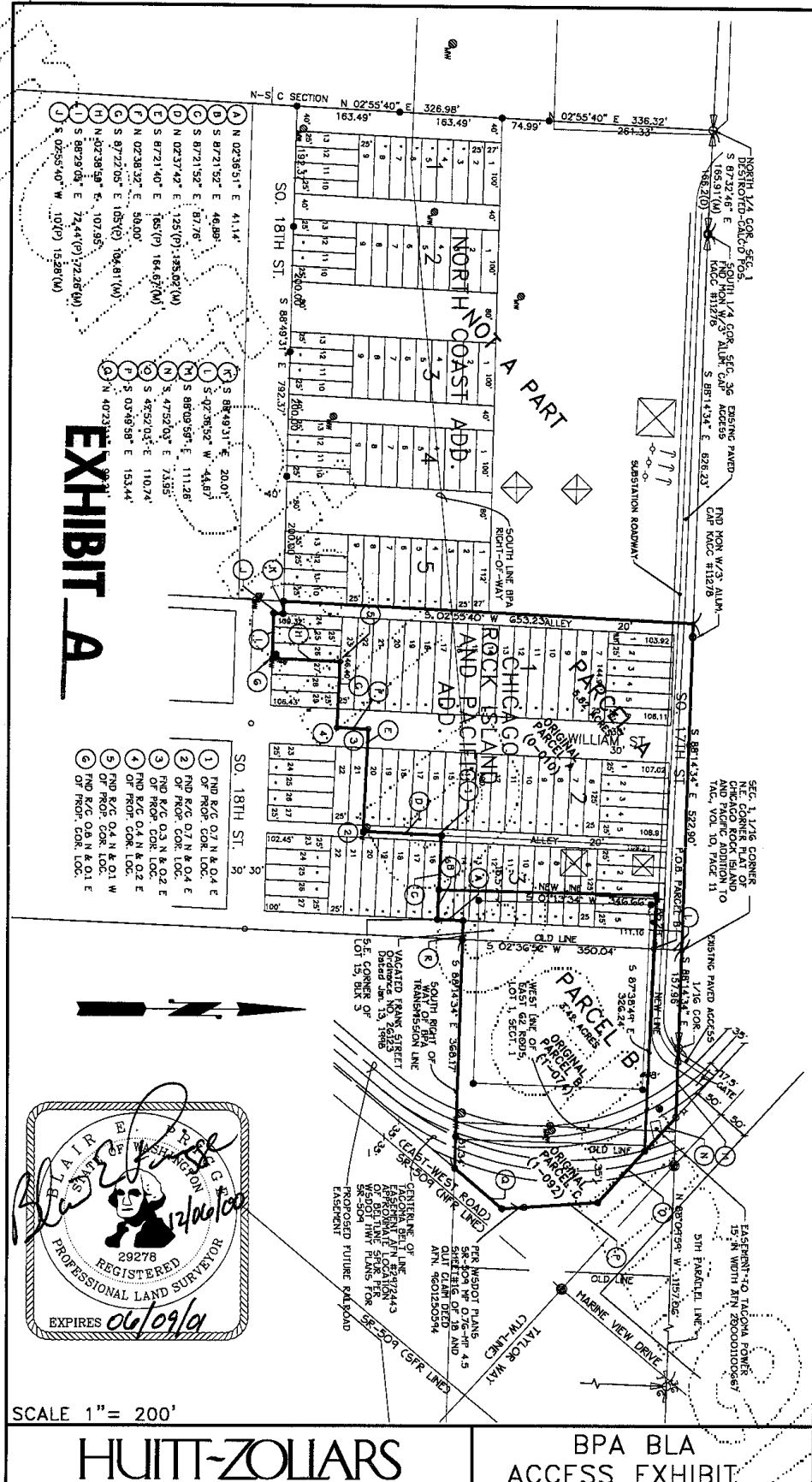
On this day personally appeared before me JOHN R. COWGER, to me known to be the Manager for Real Property Services, Bonneville Power Administration, who subscribed to and executed the within instrument and acknowledged that he signed the same as his free and voluntary act and deed for the uses and purposes therein mentioned.

GIVEN under my hand and official seal this 3 day of January, 2001.



Sue Kinish
NOTARY PUBLIC for the State of Oregon
My Commission Expires 12-8-02

For reference only, not for re-sale.



Restrictive Covenant

EXHIBIT B DECLARATION OF RESTRICTIVE COVENANT

The Property that is the subject of this Restrictive covenant is the subject of remedial action under Chapter 70.105D RCW. The work done to clean up the Property (hereafter the "Cleanup Action") is described in Washington State Department of Ecology Consent Decree No. 97-2-06046-5, dated March 3, 1997 (Superior Court of Washington for Pierce County, and in attachments to the Decree. This Restrictive Covenant is required by WAC 173-340-440 because the Cleanup Action at the Site will result in residual concentrations of arsenic and lead which exceed Ecology's Method A, and C cleanup levels for Industrial soil established under WAC 173-340-745.

The Occidental Chemical Corporation ("OCC") is the fee owner of real property formerly a part of the Bonneville Power Administration ("BPA") Tacoma substation property in the county of Pierce, state of Washington (legal description attached in the Quit Claim Deed between BPA and OCC), hereafter referred to as the "Site."

As a result of the Cleanup Action, the Site includes an engineered containment facility including a multi-layer cap system, drainage system and monitoring system. This facility contains lime sludge (containing volatile organic compounds and asbestos) and metals-containing baghouse grit.

OCC makes the following declaration as to limitations, restrictions, and uses to which the Site may be put, and specifies that such declarations 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 uses as defined in and allowed under the city of Tacoma's Zoning Regulations codified in the Tacoma City code as of the date of this Restrictive Covenant.

Section 2. Any activity on the Site is prohibited that may interfere with or reduce the effectiveness of the Cleanup Action, operation and maintenance, monitoring, or other activity required by the Decree. Any activity on the Site that may result in the release of a hazardous substance that was contained as a part of the Cleanup Action is prohibited.

Section 3. The owner of the Site must give written notice to the Department of Ecology, or to a successor agency, of the owner's intent to convey any interest in the Site. No conveyance of title, easement, lease or other interest in the Site shall be consummated by the owner without adequate and complete provision for the continued operation, maintenance and monitoring of the cleanup Action.

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Section 4. The owner must notify and obtain approval from the Department of Ecology, or from a successor agency, prior to any use of the Site that may be inconsistent with the terms of this Restrictive Covenant. The Department of Ecology, or its successor agency, may approve such a use only after public notice and comments.

Section 5. The owner shall allow authorized representative of the Department of Ecology, or of a successor agency, the right to enter the Site at reasonable times for the purpose of evaluating compliance with the Cleanup Action Plan and the Order, to take samples, to inspect Cleanup Actions conducted at the Site, and to inspect records that are related to the Cleanup Action.

Section 6. The owner of the Site and owner's assigns and successors in interest reserve the right under WAC 173-340-730 and WAC 173-340-440 to record an instrument which provides that this Restrictive Covenant shall no longer limit the use of the Site or be of any further force or effect. However, such an instrument may be recorded only with the consent of the Department of Ecology or of a successor agency. The Department of Ecology or a successor agency may consent to the recording of such an instrument only after public notice and comment.

OCCIDENTAL CHEMICAL CORPORATION

By:

John Hildebrand, Director -- Real Estate

Dated: December 12, 2000

For reference only, not for re-sale.

1.7 Photo Log



Figure 1: Landfill Perimeter Fence Gate - From Northwest



Figure 2: Landfill and Perimeter Fence - From East



Figure 3: Landfill and Perimeter Fence – From Southwest

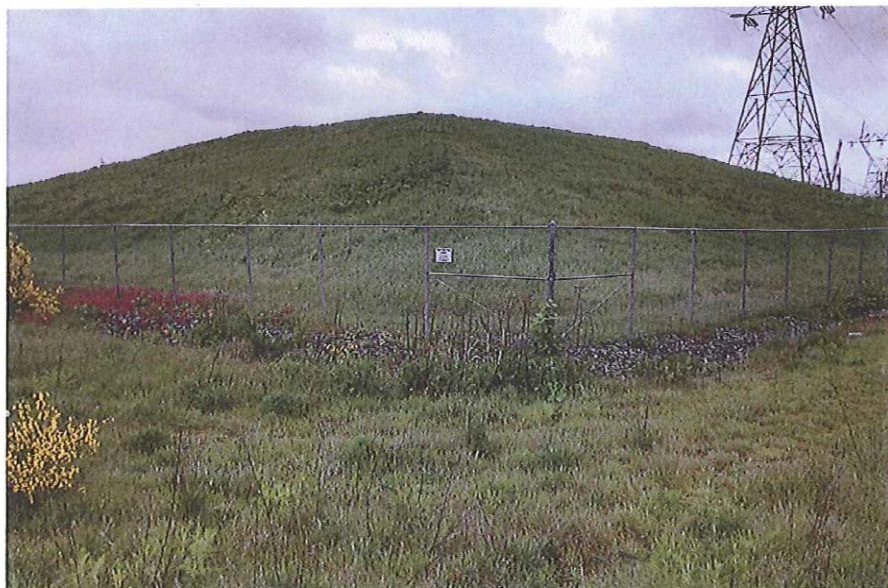


Figure 4: Landfill and Perimeter Fence – From Northeast



Figure 5: Landfill and Perimeter Fence – From North-Northwest



Figure 6: Landfill Perimeter Fence and Monitoring Well-2