



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

PO Box 47775 • Olympia, Washington 98504-7775 • (360) 407-6300

October 15, 2009

Mr. William Swenson  
P.O. Box 110967  
Tacoma, Washington 98411

**Re: Further Action at the following Site:**

- **Site Name:** West Coast Door
- **Site Address:** 3133 Cedar Street, Tacoma, Washington
- **Facility/Site No.:** 6308485
- **VCP Project No.:** SW0865

Dear Mr. Swensen:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the West Coast Door facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

**Issue Presented and Opinion**

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Is further remedial action necessary to clean up contamination at the Site?

**YES. Ecology has determined that further remedial action is necessary to clean up contamination at the Site.**

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

**Description of the Site**

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

- Polycyclic aromatic hydrocarbons (PAHs) into the soil and groundwater.
- Carcinogenic PAHs (cPAHs) into the soil and groundwater.
- Metals into the groundwater.
- Total petroleum hydrocarbons in the diesel range (TPH-D) into the groundwater.
- Trichloroethylene (TCE) into the groundwater.



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

### **Basis for the Opinion**

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This opinion is based on the information contained in the following documents:

1. Applied Geotechnology Inc., **Phase II Environmental Site Assessment, West Coast Door Inc. Facility, 3102 Pine Street, Tacoma, Washington, June 25, 1992.**
2. Associated Environmental Group, Inc., **Groundwater Sampling Survey, West Coast Door Manufacturing Facility, 3102 South Pine St., Tacoma, Washington 98424, January 31, 1997.**
3. Pacific Groundwater Group, **Groundwater Capture Zone Investigation Report, City of Tacoma Materials Handling Lab, June 28, 2001.**
4. Langseth Environmental Services, Inc., **Underground Gasoline Storage Tank Removal Project, West Coast Door, July 15, 2005.**
5. Environmental Associates, Inc., **Phase I Environmental Site Assessment, West Coast Door, 3133 South Cedar Street, Tacoma, Washington, June 30, 2006.**
6. Environmental Associates, Inc., **Phase 2, Soil & Groundwater Sampling & Testing, West Coast Door Property, 3133 South Cedar Street, Tacoma, Washington, August 9, 2006.**
7. Environmental Associates, Inc., **Supplemental Soil & Groundwater Exploration, Former West Coast Door Property, 3133 South Cedar Street, Tacoma, Washington, October 5, 2006.**
8. Pacific Crest Environmental, **Additional Soil and Groundwater Characterization, West Coast Door Property, Former Buffelen Wood Pipe and Facility, 3133 South Cedar Street, Tacoma, WA, Pacific Crest No. 112-001, June 11, 2008.**
9. Floyd Snider, **Results of Recent Groundwater Plume Delineation, West Coast Door Facility, Tacoma, WA, June 18, 2009.**

Those documents are kept in the Central Files of the Southwest Regional Office of Ecology (SWRO) for review by appointment only. You can make an appointment by calling the SWRO resource contact at (360) 407-6365.

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

### **Analysis of the Cleanup**

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Ecology has concluded that **further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

#### **1. Characterization of the Site.**

Ecology has determined your characterization of the Site is not sufficient to establish cleanup standards and select a cleanup action.

In May 1992, West Coast Door (WCD) commissioned a Phase II Environmental Site Assessment (ESA) of the Site. Applied Geotechnical, Inc. (AGI) conducted a file review of properties surrounding the Site and advanced four soil borings in the northern portion of the WCD property to a maximum depth of 45 feet below ground surface (bgs). Soil samples were screened for volatile organic compounds (VOCs), total petroleum hydrocarbons in the gasoline and diesel range (TPH-G and TPH-D, respectively), PAHs, and phenols. Analytical results indicated no contaminants were present in Site soils above the MTCA Method A Soil Cleanup Levels (CULs) for unrestricted land use. Groundwater monitoring wells (MW-1 through MW-3) were installed in the three deepest soil borings. Groundwater samples were analyzed for VOCs and metals. TCE was detected in MW-2 above the TCE MTCA Method A CUL at 740 micrograms per liter ( $\mu\text{g/l}$ ). Also, chromium and lead were detected in all three monitoring wells above their respective MTCA CULs, the highest levels of which were 0.21 and 0.049  $\mu\text{g/l}$ , respectively. Based on the historical operations on the Site and the review of surrounding properties, AGI inferred that the TCE and metals contamination did not originate on the Site.

In June 2005, WCD hired Langseth Environmental Services, Inc. to decommission an underground storage tank (UST). Eight soil samples were collected and analyzed for TPH-G, benzene, ethylbenzene, toluene, xylenes, and lead; benzene was the only compound detected at 0.03 milligrams per kilogram (mg/kg) and was just at the MTCA Method A Soil CUL. All other compounds were below their respective MTCA CUL or were not detected.

In June 2006, Tacoma Goodwill Industries (TGI) commissioned Environmental Associates, Inc. (EAI) to conduct a Phase I ESA of the entire WCD property, including the southern portion of the parcel not investigated during the 1992 Phase II EA. EAI identified several recognized environmental considerations including the Tacoma Smelter Plume, historical on-Site wood treatment operations, decommissioned USTs, groundwater contaminated by TCE, and the South Tacoma Channel Superfund Site. The on-Site wood treatment operations were located in the southwest portion of the parcel and involved the use of creosote. A reported

10,500 pounds of coal tar, assumed to result from the creosote wood treatment operations, were removed from the Site. The report also identified two other USTs, not previously mentioned in the earlier reports, that were removed sometime in 1989; confirmational samples were reported to be below MTCA CULs. EAI recommended limited subsurface soil sampling and analysis if additional information was needed for a Site-specific assessment of impacts caused by former wood treatment operations.

In July 2006, TGI commissioned EAI to perform a Phase II ESA of the Site soil and groundwater. EAI completed four additional soil borings and installed another groundwater monitoring well (MW-4). Soil and groundwater samples were analyzed for PAHs, semi-VOCs, and pentachlorophenol (PCP) to further characterize the suspected contamination. All soil samples exceeded the total cPAH MTCA Method A Industrial Soil CUL of 2 mg/kg; the highest concentration was 124.80 mg/kg at Strataprobe Boring (SP) location SP-3 (see Table 1). Two soil samples exceeded the naphthalene MTCA Method A Soil CUL, the highest concentration was 29 mg/kg at SP-2. Impacts to the soils by PCPs were inconclusive; during laboratory preparation the samples were diluted and sample results were reported as estimates up to eight times the MTCA Method B CUL due to sample matrix effects (see Table 2). No groundwater sample results were reported above their respective MTCA Method A CULs.

In September 2006, EAI continued their Site characterization with additional soil and groundwater investigation activities. EAI completed five additional soil borings and analyzed the soil for PAHs, installed two additional monitoring wells (MW-5 and MW-6), and collected groundwater samples for PAHs and semi-VOCs from all wells on the Site. Three out of the five soil samples exceeded the Toxic Equivalency Fraction (TEF) Total cPAHs MTCA Method A CUL for unrestricted land uses, the highest value was 8.252 mg/kg at SP-7 (see Table 1 and Table 2). The inconclusive PCP soil findings from the July 2006 event were not revisited during this investigation (see Table 2). Shallow soil samples were collected from six locations on the east side of the property and analyzed for metals, and all soil samples were below their respective MTCA Method A CUL; however, the results for chromium were reported as total chromium and were inconclusive for hexavalent chromium (see Table 5). Groundwater was sampled for PAHs, PCP, and semi-VOCs; cPAHs and naphthalene were detected in MW-5 and MW-6 at concentrations that exceeded their respective MTCA Method A CULs. The highest concentration level for modified TEF cPAHs was 6.32 µg/l in MW-6; naphthalene was found at a concentration of 8,300 µg/l in MW-5 (see Table 3 and Table 4). PCP groundwater sample results were inconclusive due to matrix interferences and their estimated value exceeded the PCP MTCA Method B CUL in MW-5 and MW-6.

In June 2008, Pacific Crest Environmental (Pacific Crest) reported their 2007-2008 results for additional soil and groundwater characterization of the former wood treatment facility. Pacific Crest advanced eight soil borings and installed three new monitoring wells (MW-7, MW-8, and MW-9). Pacific Crest sampled the soil for PAHs and found the Site soils were

contaminated with cPAHs and naphthalene above their respective MTCA CULs; the highest naphthalene soil concentration was 150 mg/kg at MW-7 and a modified TEF for cPAHs of 7.2 mg/kg at SB-3. The groundwater was analyzed for VOCs, PAHs, cPAHs, and TPH-D. Analytical results from the groundwater sampling event indicated groundwater concentrations exceeded the applicable MTCA CULs; the highest exceedances were 5,500 µg/l for naphthalene, 490 µg/l for 2-methylnaphthalene, 390 µg/l for 1-methylnaphthalene, 58 µg/l for styrene, and 14,000 µg/l for TPH-D occurring at MW-6; a maximum concentration of 4.198 µg/l for total modified TEF for cPAHs at MW-5 (see Table 7, Table 8, and Table 10). Pacific Crest identified the source area for the PAHs as being under the southern end of the warehouse (see Figure 2).

In May-June 2009, Floyd-Snyder advanced six additional soil borings in the Sound Transit railroad corridor to collect six groundwater samples from each location (see Figure 1—Summary of Recent Groundwater Test Results). Only one soil boring groundwater sample, SB-9, was found to exceed the MTCA Method A CUL for naphthalene with a concentration of 4,500 µg/l in the Sound Transit right-of-way.

In June 2009, Ecology met with the owner and his consultant to discuss the latest remedial investigation work to delineate the soil and groundwater contamination, possible considerations for a follow-on feasibility study, and to identify additional data gaps. Based on a review of the information collected to date, Ecology has the following comments:

1. The full extent of the contamination in the groundwater will need to be determined per WAC 173-340-350(7)(c)(iii)(C). Recent groundwater analysis indicates the extent of cPAHs, naphthalene, and styrene in Site groundwater has not been delineated to the west, southwest, and northwest of the Site. In addition, TCE above the Method A CUL was found in the groundwater along the northern border of the Site and is reported to originate off Site. TCE was also identified in the southern portion of the Site. Analytical results for TCE in groundwater samples collected from MW-5 and MW-6 were inconclusive due to the elevated laboratory practical quantitation limits and were not further explained, resulting in estimated concentration levels above the MTCA Method A CUL. Groundwater samples collected from MW-5 and MW-6 were also reported to contain a sheen. No source for the TCE was identified and there does not appear to be any correlation with the TCE contamination in the northern portion of the Site. Ecology recommends the TCE plume be further evaluated and delineated in the southern portion of the Site.

Ecology concurs with the Floyd-Snyder recommendation to place two monitoring wells to the west and southwest of the property and recommends an additional monitoring well directly north of MW-5 to help define the northwest boundary of the plume. A review of the Floyd-Snyder Technical Memorandum indicates a naphthalene groundwater concentration substantially above the MTCA Method A CUL at SB-9, yet at SB-10 and

SB-11, naphthalene is not detected at the laboratory reporting limit. Ecology believes there is a data gap between SB-10 and SB-11 and recommends additional investigation between these locations to define the geology, groundwater gradient, and potential influence by Extraction Well 12A.

The groundwater gradient for the area surrounding the Site is intermittently influenced by area extraction wells. The gradient direction appears to shift from the southwest through the southeast, then at times through the northeast. Also, there is a reported groundwater mounding effect that appears to cause the groundwater gradient to locally radiate from MW-4. These extraction well influences are not well defined or understood on the Site. Ecology believes additional information defining the temporal influence of these extraction wells on Site groundwater is needed to fully understand the impacts to the groundwater quality and gradient.

2. The full extent of the contamination in the soil will need to be determined per WAC 173-340-350(7)(c)(iii)(B). The soil column under the area identified as the location of the former creosote tanks has not been characterized down to the groundwater interface, given the variable nature of the Site geology (see Figure 8). Ecology believes an understanding of the geology at this location is crucial to developing a remediation strategy for the Site and recommends the entire soil column at this source location be characterized. Ecology further recommends an evaluation of the product remaining in the Site soils and initiating product recovery activities if warranted.

The Site soil was evaluated for metals contamination. All metals were below their respective MTCA CULs; however, the chromium laboratory analysis was performed for total chromium only and was not further evaluated for concentrations of trivalent chromium and hexavalent chromium. Hexavalent chromium has a MTCA Method A CUL less than the total chromium value reported. Ecology recommends the soil be resampled for hexavalent chromium at the locations where the total chromium values exceeded the hexavalent chromium MTCA CUL.

Two earlier investigations evaluated the Site soils and groundwater for PCP. The analytical results for PCP were reported in draft form and flagged as estimates due to matrix effects and were not further explained or evaluated. Since the estimated soil concentrations exceeded the respective MTCA Method B CULs for both soil and groundwater, Ecology believes additional investigation for PCP is warranted if the available data cannot adequately explain the laboratory data errors and estimated soil and groundwater concentrations. If PCP is confirmed present in soil and groundwater above the PCP MTCA Method B CULs, then Ecology recommends the Site soil and groundwater be further evaluated for dioxins and furans.

3. Ecology reviewed the submitted Terrestrial Ecological Evaluation (TEE) Exclusion Form. Ecology believes it is premature to apply for a TEE exclusion at this time.

Ecology's review identified discrepancies with the delineation of undeveloped land area identified on the TEE form. Ecology determined the Site contains more than one-quarter acres of contiguous undeveloped area and believes the presence of PCP in the Site soil has not been excluded. To claim the TEE exclusion, PCP must not be a constituent of concern on the Site and the conditions for the exclusion established in WAC 173-340-7491 must be met. If the exclusion does not apply, then, in accordance with WAC 173-340-7490, a TEE will need to be completed for the Site. Please fill out the TEE form and submit it to Ecology. The form can be found on our website at <http://www.ecy.wa.gov/biblio/ecy090300.html>.

4. Ecology recommends a work plan be prepared to address the remedial activities identified above for review and approval to ensure that the proposed activities will likely meet the substantive requirements of MTCA.
5. In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840 (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted simultaneously in both a written and electronic format. For additional information regarding electronic format requirements, see the website <http://www.ecy.wa.gov/eim>. Be advised that according to the policy, any reports containing sampling data that are submitted for Ecology review are considered incomplete until the electronic data has been entered. Please ensure that data generated during on-site activities is submitted pursuant to this policy. **Data must be submitted to Ecology in this format for Ecology to issue a No Further Action determination.** Please be sure to submit all soil and groundwater data collected to date, as well as any future data, in this format. Data collected prior to August 2005 (effective date of this policy) is not required to be submitted; however, you are encouraged to do so if it is available. Be advised that Ecology requires up to two weeks to process the data once it is received.

## 2. **Establishment of cleanup standards.**

Ecology has determined the cleanup levels and points of compliance you established for the Site do not meet the substantive requirements of MTCA.

The Site soil and groundwater contamination has not been fully delineated. Cleanup standards cannot be established until the Site is fully characterized.

Site soil analytical results were evaluated against the WAC 173-340-740 and Table 740-1, MTCA Method A Soil CULs for unrestricted land uses. The Site owner has proposed using MTCA Method A Soil CULs for Industrial Properties. To use the latter MTCA CULs, Ecology must evaluate the Site and concur it meets the criteria for an industrial property plus review any proposed environmental covenants or other relevant conditions before the Site

analytical results would be evaluated against the industrial cleanup criteria. Ecology concurs that the Site meets the industrial property criteria established in WAC 173-340-745 based on its review of historic Site operations and the heavy industrial zoning classification of the Site by the City of Tacoma. Ecology believes it is appropriate to use MTCA Method A Soil CULs for Industrial Properties when evaluating Site soil contamination. Ecology will still need to review any proposed environmental covenant prior to approving any remediation strategy.

Site groundwater analytical results have been evaluated against the WAC 173-340-720 and Table 720-1, MTCA Method A Cleanup Levels for Ground Water. Site groundwater still exceeds the respective MTCA Method A CULs for naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, cPAH TEF, TPH-D, TCE, and styrene.

The Site soil contamination levels are not protective of human health via direct contact at the standard point of compliance nor are they protective of groundwater.

**3. Selection of cleanup action.**

Ecology has determined the cleanup action you selected for the Site does not meet the substantive requirements of MTCA.

Cleanup actions to date have involved coal tar removal and UST removal activities, which have not succeeded in meeting MTCA cleanup standards for soils and groundwater on the Site. Once the full extent of the contamination has been defined, it will be necessary to develop a feasibility study based on the information collected in the characterization phase. The feasibility study should include all practicable methods of treatment and a disproportionate cost analysis of cleanup alternatives in addressing the Site cleanup. Please note that monitored natural attenuation is a cleanup alternative that Ecology must approve before implementation.

**4. Cleanup.**

Ecology has determined the cleanup you performed does not meet any cleanup standards at the Site.

No remedial cleanup actions concerning the soil and groundwater contamination related to the creosote operations have succeeded in removing contamination from the Site. The Site groundwater has been monitored sporadically since 1992. Monitoring well analytical results indicate naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, cPAHs, TPH-D, TCE, and styrene groundwater contamination above their respective MTCA Method A Groundwater CULs remain in the Site groundwater. Naphthalene and cPAH contamination remain in the Site soil above their respective MTCA Method A CULs for Industrial Properties.



The only cleanup activities conducted on the Site to date involve the decommissioning of the former UST and the coal tar removal. Analytical results indicated that the Site soil in the former UST location was not impacted by petroleum compounds above the MTCA Method A CULs. Groundwater was not evaluated for contaminants related to this UST removal.

### **Limitations of the Opinion**

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**1. Opinion does not settle liability with the state.**

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

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

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

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

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

**3. State is immune from liability.**

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70.105D.030(1)(i).

### **Contact Information**

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

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For more information about the VCP and the cleanup process, please visit our web site: [www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm](http://www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm). If you have any questions about this opinion, please contact me by phone at (360) 407-7404 or e-mail at [erad461@ecy.wa.gov](mailto:erad461@ecy.wa.gov).

Sincerely,



Eugene Radcliff, L.G.  
SWRO Toxics Cleanup Program

GER/ksc:West Coast Door Property Site FA

Enclosures (5):

- A – Description and Diagrams of the Site
- Figure 1 Pacific Crest Environmental Site Location Map
- Table 1 Carcennogenic PAHs–Soil Sampling Results
- Table 2 Other PAHs & Semi-Volatiles–Soil Sampling Results
- Table 3 Carcennogenic PAHs–Groundwater Sampling Results
- Table 4 Other PAHs & Semi-Volatiles–Groundwater Sampling Results
- Table 5 Metals-Soil Sampling Results
- Table 7 Groundwater Analytical Results Summary–non-cPAHs
- Table 8 Groundwater Analytical Results Summary–cPAHs
- Table 10 Groundwater Analytical Results Summary–TPH-Dx
- Figure 2 Site Plan with Cross-Section A-A'
- Figure 8 Cross Section A-A'
- Figure 1 Summary of Recent Groundwater Test Results (Floyd-Snyder)

By certified mail: (7008 2810 0001 3941 1566)

cc: Mr. Thomas Colligan, Two Union Square  
Mr. Rob Olsen, Tacoma-Pierce County Health Department  
Scott Rose–Ecology  
Dolores Mitchell–Ecology (without enclosures)

**Enclosure A**  
**Site Description and Diagrams of the Site**

Media of Concern: Confirmed Soil and Groundwater.

The West Coast Door facility (Site) is located at 3133 South Cedar Street in Tacoma, Pierce County, Washington. The Site is currently houses a large warehouse and over half the parcel has had former structures removed and is now undeveloped land. The Site is located near the former South Tacoma Channel Superfund Site, groundwater is locally influenced by the City of Tacoma Well 12A extraction well (12A) and the Time Oil groundwater extraction and treatment system (GETS) wells. The Site has relatively flat topography and is approximately 250 feet above sea level (asl). The Site is bordered on the east by South Pine Street; on the south by the Sound Transit railroad tracks and right-of-way; on the west by South Cedar Street; and on the north by the City of Tacoma City Road Plant (See Figure 1). The Pierce County Assessor's office notes the West Coast Door property has three assigned tax parcel numbers of 0320073046, 0320073068, and 0320073067.

Sanborn Maps indicate the 14.32-acre Site was first developed around 1912 as a creosoting wood treatment plant. Around 1930 to the 1950s, the creosote wood treatment operations continued and expanded into wood pipe manufacturing. In 1954, the creosote wood treatment and wood pipe manufacturing operations were discontinued when West Coast Door purchased the property. West Coast Door operated and expanded the facility until 1995 when it ceased operations. Since then, the facility has been leased to light industry tenants. Goodwill Industries is the current tenant using the warehouse.

The Site is located in the South Tacoma Channel interpreted to have formed as Quaternary Glacial Lake Puyallup, which drained multiple times to the southwest through the present day channel. Starting at an elevation of approximately 380 feet asl and cutting down through Vashon recessional outwash deposits and the Vashon till unit to a depth of approximately 250 feet asl at the Site location, depositing the gravels and sand that underlie the Site today. These deposits are known as the Steilacoom Gravel and comprise the upper regional aquifer unit in the Tacoma area. The unit is described as sandy gravel and cobbly gravel; clean to silty; poorly to well sorted; horizontally layered to cross bedded; loose to densely packed. Sand and gravel deposits can vary from a veneer of 3 feet to 80 feet thick with interbedded silty layers across the Site.

The natural groundwater gradient for the area around the Site is relatively flat with a tendency to flow to the northeast through the South Tacoma Channel and ultimately discharge into Commencement Bay. The GETS wells influence the groundwater gradient in the South Tacoma Channel and the groundwater gradient shifts to a more easterly direction. When 12A is cycled on in the summer months, the groundwater gradient appears to shift to a southerly direction in response. Locally, on the Site the groundwater gradient is more indeterminate and not well understood, at times simultaneously appearing to travel to the northeast, to the northwest, and to the southwest, radiating from a perceived and unidentified mounding effect centered around monitoring well MW-4. From 2006 to 2008, depth to groundwater was reported to range from 30 feet below ground surface (bgs) to 23 feet bgs, remaining relatively flat across the Site during each monitoring event.

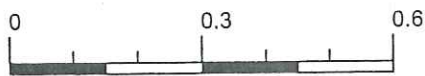
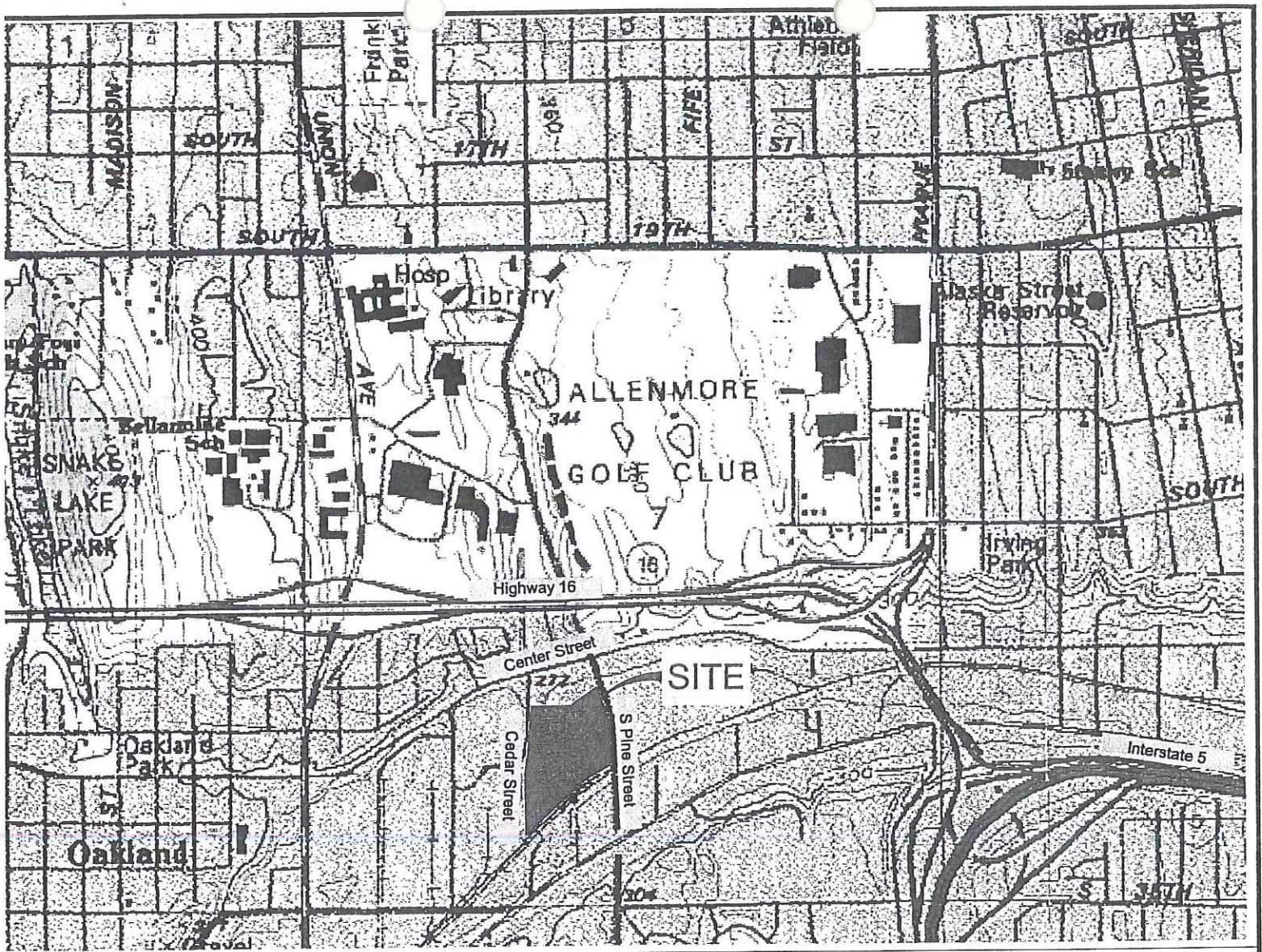
Ecology reviewed eight reports describing various remedial investigation activities that occurred on the Site from 1992 to June 2009. These reports described seven remedial investigation activities to

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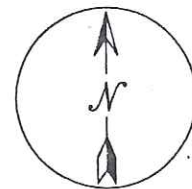
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characterize the contamination affecting the Site soil and groundwater and one report describing the decommissioning of one underground storage tank. Polycyclic aromatic hydrocarbons (PAHs) and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) were found in the Site soils above the MTCA Method A Cleanup Levels (CULs) for Industrial Properties. PAHs, cPAHs, metals, total petroleum hydrocarbons in the diesel range (TPH-D), and trichloroethylene (TCE) were found in the Site groundwater above their respective MTCA Method A Groundwater CULs.



Approximate Scale in Miles



# Figure 1

## Site Location Map

West Coast Door Property  
 3133 South Cedar Street SE  
 Tacoma, Washington

Project No: 112-001

DWN: SC

CKD: GL

DATE: 11/9/06

PACIFIC CREST ENVIRONMENTAL

1533 BENDIGO BOULEVARD NORTH PO Box 952  
 NORTH BEND, WA 98045

**TABLE 1 - Carcinogenic PAHs - Soil Sampling Results**  
All results and limits in parts per million (ppm)

Strataprobe Boring	Sample Date	Benzo(a)pyrene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(k)fluoranthene	Benzo(a)anthracene	Benzo(b)fluoranthene	Total Carcinogenic PAHs <sup>(5)</sup>
<i>Previous Samples by AGI (May 1992)</i>									
B2-6.0	5/4/1992	1.5	1	0.68	0.81	0.37	0.88	0.71	2.06
B3-5.5	5/4/1992	0.81	0.6	0	0.41	0.22	0.51	0.41	0.97
<i>Previous Samples by EAI (July 2006)</i>									
SP1-7-8	7/20/2006	45	45	7	25	18	33	67	62.55
SP2-1-2	7/20/2006	24	25	5.8	17	15	15	47	35.97
SP3-3-4	7/20/2006	93	240	18	49	34	52	87	124.80
SP4-3-4	7/20/2006	50	99	6.9	20	24	55	62	69.85
<i>Samples by EAI - This Study (Sept. 2006)</i>									
SP5-3-4	9/12/2006	0.038	0.037	0.006	0.019	0.019	0.023	0.066	0.05
SP6-3-4	9/12/2006	5.9	6.8	0.89	2.5	1.6	6.5	5.4	7.92
SP7-7-8	9/12/2006	6.4	5.2	1.1	2.9	2.3	2.1	9.6	8.58
SP8-3-4	9/12/2006	2.3	2.4	0.67	2.4	0.87	1.4	3.0	3.36
SP9-7-8	9/12/2006	<5	<5	<5	<5	<5	<5	<5	0.00
cPAH Toxicity Equivalent Fraction <sup>(6)</sup>		1.0	0.01	0.4	0.1	0.1	0.1	0.1	
Reporting Limit <sup>3</sup>		0.18	0.18	0.18	0.18	0.18	0.18	0.18	
MTCA-Method-A Residential <sup>(4)</sup>		---	---	---	---	---	---	---	0.1
MTCA-Method-A Industrial <sup>(4)</sup>		---	---	---	---	---	---	---	2

Notes:  
 1 - "ND" denotes analyte not detected at or above listed Reporting Limit.  
 2 - "NA" denotes sample not analyzed for specific analyte.  
 3 - "Reporting Limit" represents the laboratory lower quantitation limit.  
 4 - Method A soil cleanup level for total carcinogenic PAHs as published in the Model Toxics Control Act (MTC A) 173-340-WAC.  
 5 - Total Carcinogenic PAHs are calculated by summing the product of each cPAH multiplied by its toxicity equivalency fraction per WAC 173-340-708(B).  
 Bold and italics denotes concentrations above existing MTCA Method A soil cleanup levels.

**TABLE 2 - Other PAHs & Semi-Volatiles - Soil Sampling Results**  
**All results and limits in parts per million (ppm)**

Strataprobe Boring	Sample Date	Naphthalene	Acenaphthene	Fluorene	Anthracene	Fluoranthene	Pyrene	Pentachlorophenol (PCP)
SP1-7-8	7/20/2006	5.9	9.9	4.7	28	76	87	<25
SP2-1-2	7/20/2006	29	<2.5	<2.5	0.78	11	14	<25
SP3-3-4	7/20/2006	2.6	<2.5	3.4	170	50	60	<40
SP4-3-4	7/20/2006	<5	31	29	150	180	150	<70
SP5-3-4	9/12/2006	<0.005	<0.005	<0.005	0.0076	0.028	0.039	NA
SP6-3-4	9/12/2006	<0.25	0.420	3.5	5.5	11.0	16.0	NA
SP7-7-8	9/12/2006	<0.25	<0.25	<0.25	0.520	3.30	5.90	NA
SP8-3-4	9/12/2006	<0.25	<0.25	<0.25	1.00	2.10	3.00	NA
SP9-7-8	9/12/2006	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	NA
Reporting Limit <sup>1</sup>		5	5	5	5	5	5	5
Cleanup Level for Unrestricted Land Use (Method-A) <sup>4</sup>		5	---	---	---	---	---	---
Cleanup Level - Direct Contact (Method-B) <sup>5</sup>		1600	4800	3200	24000	3200	2400	8.33
Cleanup Level - Protection of Groundwater (Method-B) <sup>6</sup>		4.46	105	101	1140	631	655	0.0116

Notes:

- 1- "ND" denotes analyte not detected at or above listed Reporting Limit.
- 2- "NA" denotes sample not analyzed for specific analyte.
- 3- "Reporting Limit" represents the laboratory lower quantitation limit.
- 4- Method A soil cleanup levels for unrestricted land use as published in the Model Toxics Control Act (MTCOA) 173-340-WAC, Table 740-1, Amended February 12, 2001.
- 5- Method-B soil cleanup levels for the "direct contact pathway", as published in Ecology's CLARC version 3.0, August 2001 database.
- 6- Method-B soil cleanup level for the protection of groundwater based upon the Method-B groundwater cleanup levels. Values as published in Ecology's CLARC version 3.0, August 2001, database.

Bold and italics denotes concentrations above existing MTCOA Method A soil cleanup levels.

**TABLE 3 - Carcinogenic PAHs - Groundwater Sampling Results**  
**All results and limits in parts per billion (ppb)**

Strataprobe Boring	Benzo(a)pyrene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(k)fluoranthene	Benzo(a)anthracene	Benzo(b)fluoranthene	Total Carcinogenic PAHs <sup>(5)</sup>
MW-1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00
MW-4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00
MW-5	<50 <sup>(6)</sup>	<50 <sup>(6)</sup>	<50 <sup>(6)</sup>	<50 <sup>(6)</sup>	<50 <sup>(6)</sup>	<50 <sup>(6)</sup>	<50 <sup>(6)</sup>	Likely Present <sup>6</sup>
MW-6	4.7	9.4	<2	<2	3.2	7	4.9	6.32
cPAH Toxicity Equivalent Fraction <sup>(5)</sup>	1.0	0.01	0.4	0.1	0.1	0.1	0.1	
Reporting Limit <sup>3</sup>	0.1	0.1	0.1	0.1	0.1	0.1	0.1	--
Existing Cleanup Level <sup>4</sup>	---	---	---	---	---	---	---	0.1

Notes:

- 1- "ND" denotes analyte not detected at or above listed Reporting Limit.
- 2- "NA" denotes sample not analyzed for specific analyte.
- 3- "Reporting Limit" represents the laboratory lower quantitation limit.
- 4- Method-A Groundwater cleanup level for total carcinogenic PAHs as published in the Model Toxics Control Act (MTCOA) 173-340-WAC.
- 5- Total carcinogenic PAHs are calculated by summing the product of each cPAH multiplied by its toxicity equivalency fraction per WAC 173-340-708(8).
- 6- Due to high concentrations of non-carcinogenic PAHs, namely naphthalene, minimum detection limits exceeded WDOE target compliance levels. Carcinogenic PAHs are assumed to be present in this sample at concentrations greater than 0.1 ppb.

**Bold and Italics** denotes concentrations above existing MTCOA Method A soil Cleanup levels.



**TABLE 4 - Other PAHs & Semi-Volatiles - Groundwater Sampling Results**  
**All results and limits in parts per billion (ppb)**

Strataprobe Boring	Naphthalene	Acenaphthene	Fluorene	Anthracene	Fluoranthene	Pyrene	Pentachlorophenol (PCP)
MW-1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1
MW-4	36	45	21	3.9	1	0.5	<1
MW-5	<b>8,300</b>	370	230	110	120	110	<1000
MW-6	<b>1,700</b>	430	200	85	54	41	<40
Reporting Limit <sup>3</sup>	0.1	0.1	0.1	0.1	0.1	0.1	1
Existing Cleanup Level <sup>4</sup>	160	960	640	2,400	640	480	0.729

Notes:

- 1 - "ND" denotes analyte not detected at or above listed Reporting Limit.
- 2 - "NA" denotes sample not analyzed for specific analyte.
- 3 - "Reporting Limit" represents the laboratory lower quantitation limit.
- 4 - Method B groundwater cleanup levels as published in the Model Toxics Control Act (MTC) 173-340-WAC.

**Bold and Italics** denotes concentrations above existing MTCA Method A soil cleanup levels.

**TABLE 5 - Metals - Soil Sampling Results**  
**All results and limits in parts per million (ppm)**

Sample Name	Chromium	Lead
SS-1	9.22	68.2
SS-2	373	21.9
SS-3	9.31	10.5
SS-4	8.45	10.9
SS-5	8.00	25.9
SS-6	17.8	191
Reporting Limit <sup>3</sup>	1	1
WDOE-Method-A Cleanup Level (unrestricted land use)	2000 <sup>(5)</sup>	250
WDOE-Method-A Cleanup Level (industrial property)	2000 <sup>(5)</sup>	1000

## Notes:

- 1 - "ND" denotes analyte not detected at or above listed Reporting Limit.
- 2 - "NA" denotes sample not analyzed for specific analyte.
- 3 - "Reporting Limit" represents the laboratory lower quantitation limit.
- 4 - Method A or B cleanup levels as published in the Model Toxics Control Act (MTCA) 173-340-WAC.
- 5 - Results reported as total chromium. The Method A target compliance level for chromium III is 2,000 ppm, while the Method-A compliance level for chromium VI is 19 ppm.

**Bold and Italics** denotes concentrations above existing MTCA Method A soil cleanup levels.

Table 7  
Groundwater Analytical Results Summary - non-Carcinogenic PAHs  
West Coast Door Property  
Tacoma, WA  
Pacific Crest No. 112-001

Location Identification	Sample Identification	Date Sampled	Sampled by	Non-Carcinogenic PAHs Analytical Results (micrograms per liter) <sup>1</sup>											
				Naphthalene	2-Methylnaphthalene	1-Methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(g,h,i)perylene	
MW-1	MW1	5/4-5/92	AGI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW1	7/28/2006	EAI	<0.1	NA	NA	NA	<0.1	<0.1	<0.1	NA	<0.1	<0.1	<0.1	NA
	MW1	9/21/2006	EAI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW1-03212008	3/21/2008	Pacific Crest	0.12	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	0.012
MW-2	MW2	5/4-5/92	AGI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW2	7/28/2006	EAI	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	MW2	9/21/2006	EAI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-3	MW3	5/4-5/92	AGI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW3	7/28/2006	EAI	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	MW3	9/21/2006	EAI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MW3-03212008	3/21/2008	Pacific Crest	0.013	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.0099
MW-4	MW4	7/28/2006	EAI	36	NA	NA	NA	45	21	NA	3.9	1	0.5	NA	
	MW4-03242008	3/24/2008	Pacific Crest	85	5.8	43	3.3	62	21	16	3.9	3.6	2.7	<0.0097	
MW-5	MW5	9/19/2006	EAI	8300	NA	NA	NA	370	230	NA	110	120	110	NA	
	MW5-03242008	3/24/2008	Pacific Crest	2200	180	190	9.1	120	67	100	20	28	27	1.3	
MW-6	MW6	9/19/2006	EAI	1700	NA	NA	NA	430	200	NA	85	54	41	NA	
	MW6-03242008	3/24/2008	Pacific Crest	5500	490	390	21	200	65	52	12	21	17	0.72	
MW-7	MW7	6/7/2007	Pacific Crest	70	1.9	15	1.1	28	17	28	9.5	29	25	1.5	
	MW7-03242008	3/24/2008	Pacific Crest	34	1.8	13	0.81	25	13	17	5.2	9.1	6.6	0.18	
MW-8	MW8	6/7/2007	Pacific Crest	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.099	<0.0099
	MW8-03212008	3/21/2008	Pacific Crest	0.19	<0.10	<0.10	<0.10	0.17	<0.10	<0.10	<0.10	<0.10	<0.10	0.01	
MW-9	MW9	9/6/2007	Pacific Crest	440	150	140	4.7	94	52	61	9.6	6.6	4.9	0.29	
	MW9-03242008	3/24/2008	Pacific Crest	8.9	<0.52	0.94	0.27	6.0	4.9	16	3.7	6.8	5.2	0.012	
MTCA Method A Cleanup Levels for Groundwater <sup>2</sup>				160	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MTCA Method B Cleanup Levels for Groundwater <sup>3</sup>				160	32	2.4	NE	960	640	NE	2,400	640	480	NE	NE

NOTE:

Results in BOLD denote concentrations above MTCA Method B cleanup levels.

< Denotes analyte not detected at or above the listed laboratory practical quantitation limit/method reporting limit.

<sup>1</sup> Analyzed by EPA Method 8270-SIM.

<sup>2</sup> Model Toxics Control Act (MTCA) Chapter 173-340 of the Washington Administrative Code, Method A Cleanup Level, as amended February 12, 2001.

<sup>3</sup> Cleanup Levels and Risk Calculations (CLARC) under the Method B Model Toxics Control Act Cleanup Regulation, Version 3.1, Ecology Publication No. 94-145, updated October 2007.

cPAHs = carcinogenic polynuclear aromatic hydrocarbons

AGI = Applied Geotechnology Inc.

EAI = Environmental Associates, Inc.

-- = not available

NA = not available

NS = not sampled

MTCA = Model Toxics Control Act

Table 8  
Groundwater Analytical Results Summary - cPAHs  
West Coast Door Property  
Tacoma, WA  
Pacific Crest No. 112-001

Sample Identification	Sample Identification	Date Sampled	Sampled by	cPAHs Analytical Results (micrograms per liter) <sup>1</sup>							Total TEF Modified cPAHs <sup>3</sup>
				Benzo(a)pyrene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(k)fluoranthene	Benzo(a)anthracene	Benzo(b)fluoranthene	
MW-1	MW1	5/4-5/92	AGI	NA	NA	NA	NA	NA	NA	NA	NA
	MW1	7/28/2006	EAI	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
	MW1	9/21/2006	EAI	NA	NA	NA	NA	NA	NA	NA	NA
	MW1-03212008	3/21/2008	Pacific Crest	<0.0099	<0.0099	<0.0099	0.011	<0.0099	0.013	<0.0099	0.0024
MW-2	MW2	5/4-5/92	AGI	NA	NA	NA	NA	NA	NA	NA	NA
	MW2	7/28/2006	EAI	NS	NS	NS	NS	NS	NS	NS	NS
	MW2	9/21/2006	EAI	NA	NA	NA	NA	NA	NA	NA	NA
MW-3	MW3	5/4-5/92	AGI	NA	NA	NA	NA	NA	NA	NA	NA
	MW3	7/28/2006	EAI	NS	NS	NS	NS	NS	NS	NS	NS
	MW3	9/21/2006	EAI	NA	NA	NA	NA	NA	NA	NA	NA
	MW3-03212008	3/21/2008	Pacific Crest	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	NA
MW-4	MW4	7/28/2006	EAI	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N/A
	MW4-03242008	3/24/2008	Pacific Crest	<0.0097	0.014	<0.0097	<0.0097	<0.0097	0.017	<0.0097	0.00184
MW-5	MW5	9/19/2006	EAI	<50 <sup>3</sup>	<50 <sup>3</sup>	<50 <sup>3</sup>	<50 <sup>3</sup>	<50 <sup>3</sup>	<50 <sup>3</sup>	<50 <sup>3</sup>	Potentially Present <sup>3</sup>
	MW5-03242008	3/24/2008	Pacific Crest	2.8	6.8	0.50	1.2	2.5	6.2	2.9	4.198
MW-6	MW6	9/19/2006	EAI	4.7	9.4	<2	<2	3.2	7	4.9	6.304
	MW6-03242008	3/24/2008	Pacific Crest	1.7	3.2	0.29	0.67	1.5	3.3	1.7	2.478
MW-7	MW7	6/7/2007	Pacific Crest	3.9	7.5	0.59	1.4	3.1	7.7	3.8	5.634
	MW7-03242008	3/24/2008	Pacific Crest	0.43	1.1	0.076	0.16	0.37	1.0	0.40	0.6416
MW-8	MW8	6/7/2007	Pacific Crest	<0.0099	0.011	<0.0099	<0.0099	0.011	0.015	0.011	0.00381
	MW8-03212008	3/21/2008	Pacific Crest	<0.010	0.017	<0.010	0.011	0.012	0.021	0.012	0.00577
MW-9	MW9	9/14/2007	Pacific Crest	0.37	0.55	0.24	0.29	0.28	0.53	0.44	0.5535
	MW9-03242008	3/24/2008	Pacific Crest	0.037	0.34	<0.010	0.012	0.044	0.40	0.047	0.0907
cPAH Toxicity Equivalent Fraction <sup>2</sup>				1.0	0.01	0.1	0.1	0.1	0.1	0.1	NE
MTCA Method A Cleanup Levels for Groundwater <sup>4</sup>				0.1	NE	NE	NE	NE	NE	NE	0.1
MTCA Method B Cleanup Levels for Groundwater <sup>5</sup>				0.012	0.012	0.012	0.012	0.012	0.012	0.012	NE

NOTE:

Results in BOLD denote concentrations above MTCA Method B cleanup levels.

< Denotes analyte not detected at or above the listed laboratory practical quantitation limit/method reporting limit.

<sup>1</sup> Analyzed by EPA Method 8270-SIM.

<sup>2</sup> Total carcinogenic PAHs are calculated by summing the product of each cPAH multiplied by its toxicity equivalency fraction per WAC 173-340-708(8).

<sup>3</sup> Due to high concentrations of non cPAHs, minimum detection limits exceeded Washington State Department of Ecology target compliance levels. Carcinogenic PAHs are potentially present in this sample at concentrations greater than 0.1 micrograms per liter.

<sup>4</sup> Model Toxics Control Act (MTCA) Chapter 173-340 of the Washington Administrative Code, Method A Unrestricted Cleanup Level, as amended October 2007.

<sup>5</sup> Cleanup Levels and Risk Calculations (CLARC) under the Method B Model Toxics Control Act Cleanup Regulation, Version 3.1, Ecology Publication No. 94-145.

cPAHs = carcinogenic polynuclear aromatic hydrocarbons

TEF = toxicity equivalency fraction

AGI = Applied Geotechnology Inc.

EAI = Environmental Associates, Inc.

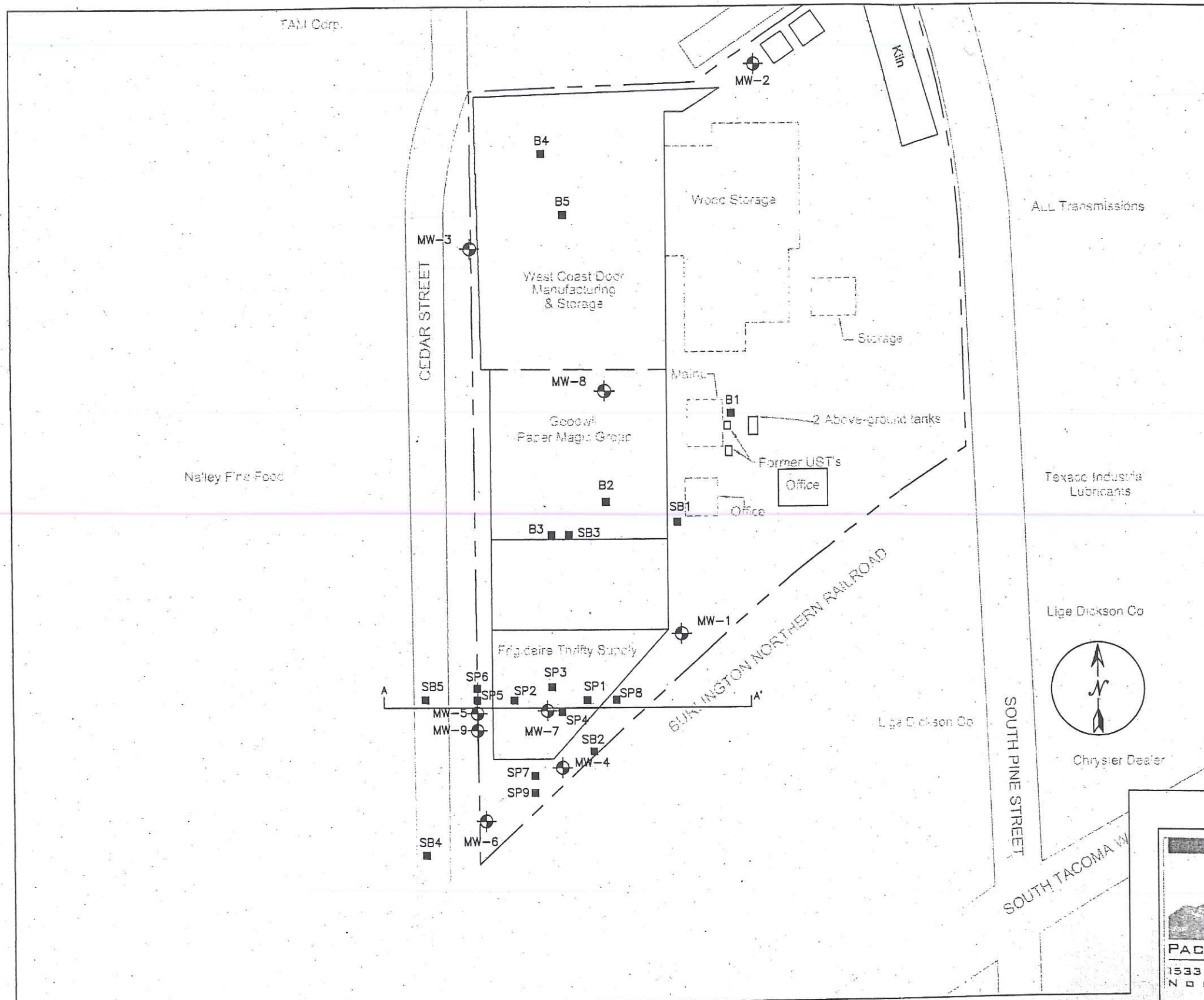
-- = not available

NA = not analyzed

N/A = not applicable

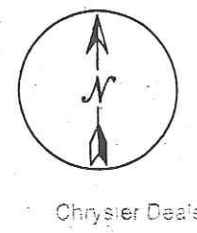
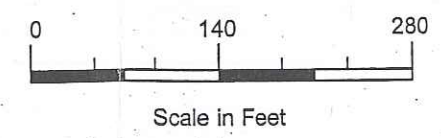
NS = not sampled

NE = not established



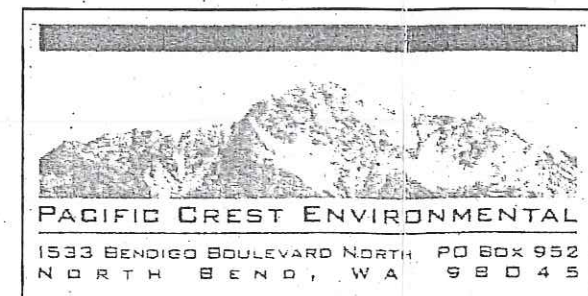
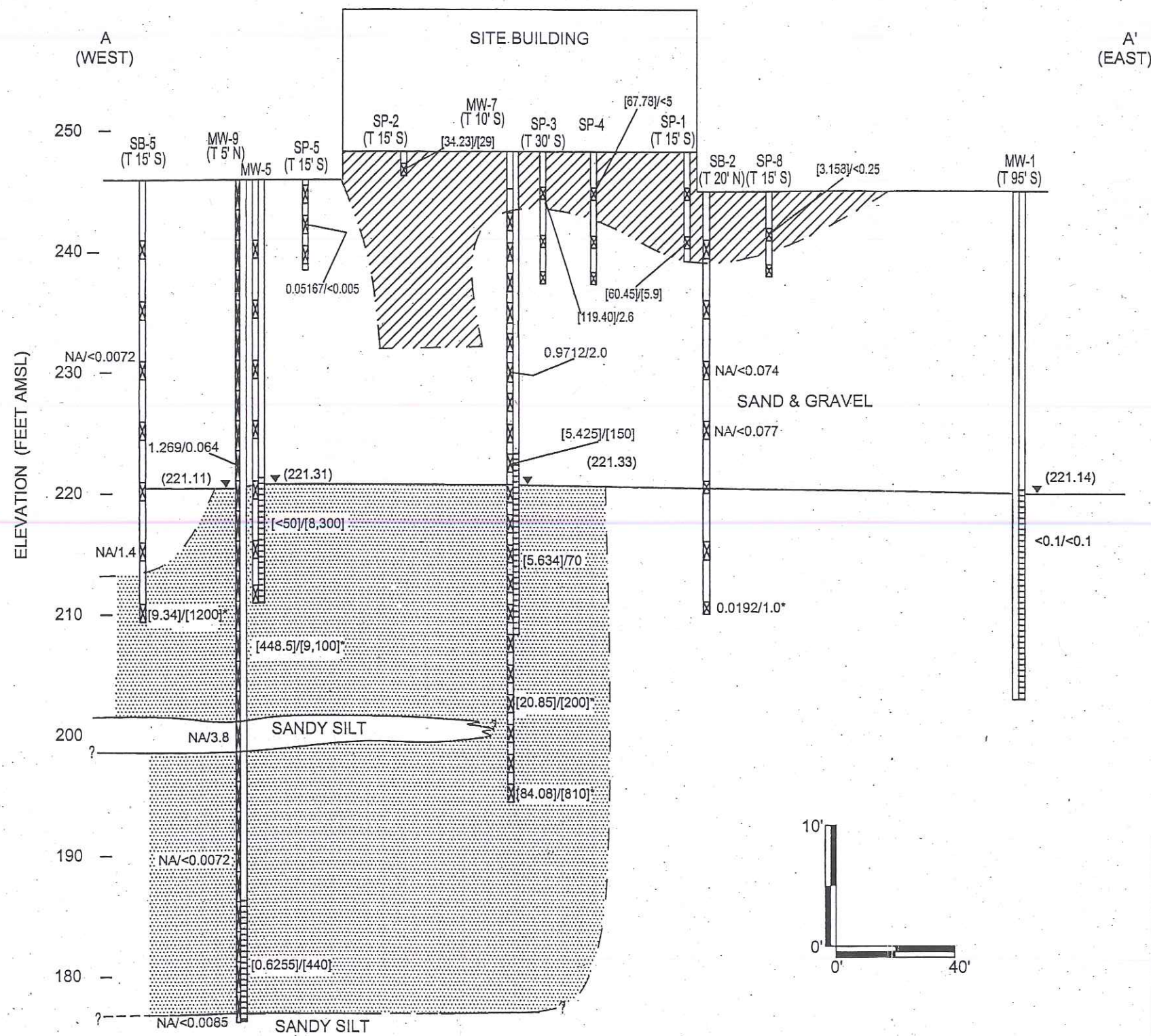
### LEGEND

- MW-1 Monitoring Well
- B3 Soil Boring (Applied Geotechnology Inc.)
- SP1 Soil Boring (Environmental Associates, Inc.)
- SB3 Soil Boring (Pacific Crest Environmental, LLC)
- Building Exterior
- Concrete Pad Remaining from Demolished Building
- Property Boundary
- Cross Section Line



**PACIFIC CREST ENVIRONMENTAL**  
 1533 BENDIGO BOULEVARD NORTH PO BOX 952  
 NORTH BEND, WA 98045

**Figure 2**  
 Site Plan with  
 Cross-Section A-A'  
 West Coast Door Property  
 3133 South Cedar Street SE  
 Tacoma, Washington



**Figure 8**  
**Cross Section A-A'**  
West Coast Door Property  
3133 South Cedar Street Southeast  
Tacoma, Washington

**Table 10**  
**Groundwater Analytical Results Summary - TPH-Dx**  
**West Coast Door Property**  
**Tacoma, WA**  
**Pacific Crest No. 112-001**

Location Identification	Sample Identification	Date Sampled	Sampled by	Total Petroleum Hydrocarbons in Groundwater Analytical Results (micrograms per liter) <sup>1</sup>	
				ORO	DRO
MW-5	MW5-03242008	3/24/2008	Pacific Crest	5800	<450
MW-6	MW6-03242008	3/24/2008	Pacific Crest	14000	<400
MW-7	MW7-03242008	3/24/2008	Pacific Crest	490	<450
MW-8	MW8-03212008	3/21/2008	Pacific Crest	<270	<430
MW-9	MW9-03242008	3/24/2008	Pacific Crest	320	<450
<b>MTCA Method A Cleanup Levels for Groundwater<sup>2</sup></b>				<b>500</b>	<b>500</b>

**NOTE:**

Results in **BOLD** denote concentrations above MTCA Method B cleanup levels.

< Denotes analyte not detected at or above the listed laboratory practical quantitation limit/method reporting limit.

<sup>1</sup> Analyzed by EPA Method NWTPH-Dx.

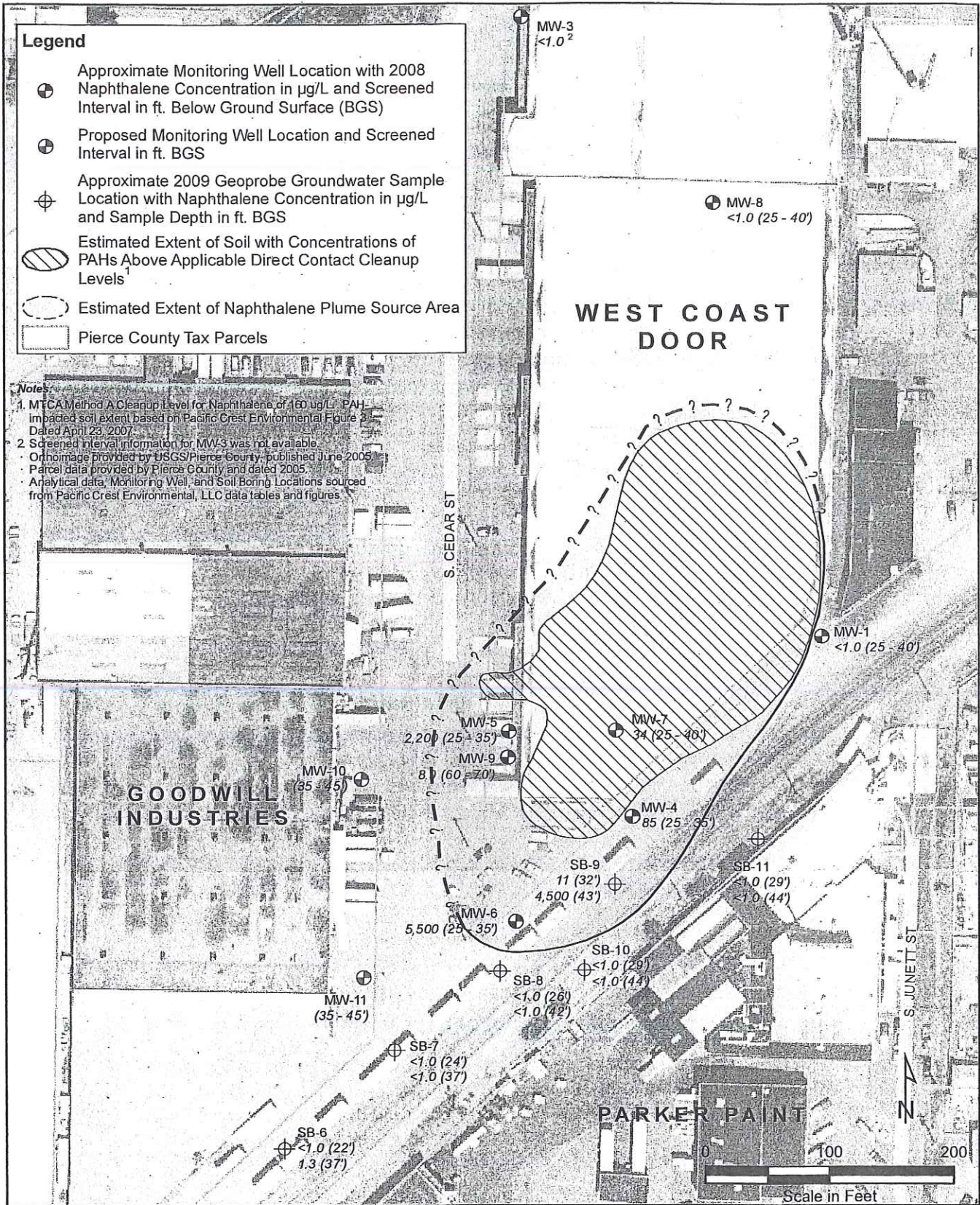
<sup>2</sup> Model Toxics Control Act (MTCA) Chapter 173-340 of the Washington Administrative Code, Method A Cleanup Level, as amended October 2007.

MTCA = Model Toxics Control Act

Pacific Crest = Pacific Crest Environmental, LLC

DRO = Diesel Range Organics

ORO = Oil Range Organics



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**Technical Memo  
West Coast Door  
Tacoma, Washington**

**Figure 1  
Summary of Recent  
Groundwater Test Results**