DRAFT FOR REVIEW

FEASIBILITY STUDY INVESTIGATION REPORT

FORMER SOUND MATTRESS AND FELT PROPERTY
1940 EAST 11TH STREET
TACOMA, WASHINGTON
FS ID 1232087

Submitted by:

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1.0 INTRODUCTION

Pacific Crest Environmental, LLC (Pacific Crest) has prepared this Feasibility Study Investigation (FSI) Report to summarize the activities and findings of investigation activities conducted at the former Sound Mattress and Felt Company (Sound Mattress) property located at 1940 East 11th Street in Tacoma, Washington (the former Sound Mattress Property) (Figure 1). Pacific Crest, on behalf of Sound Mattress, conducted the investigation activities to complete the Feasibility Study (FS) for the Sound Mattress Site (the Site). The Site consists of contaminated media affected by a release of chlorinated volatile organic compounds (CVOCs) and metals that occurred at the former Sound Mattress Property. The Washington State Department of Ecology (Ecology) assigned Facility/Site No. 1232087 and Voluntary Cleanup Program (VCP) Project No. SW0857 to the Site in 2007 when Sound Mattress entered the Site into Ecology's VCP.

1.1 OBJECTIVES

The objective of the FSI activities was to collect further investigation data to support the FS and data needs identified by the Port of Tacoma (the Port) in 2014. The ultimate goal of the FS is to develop and evaluate cleanup action alternatives to facilitate the selection of a final cleanup action for the Site in accordance with Ecology's Model Toxics Control Act (MTCA). Cleanup of the Site is required because the concentrations of the contaminants of concern (COCs) in soil and groundwater exceed the Site-specific cleanup standards that were calculated in accordance with MTCA to be protective of receptors exposed to contaminants in the media of potential concern (soil, groundwater, surface water, and air).

In 2012, Pacific Crest initiated FS activities in accordance with the scope of work outlined in Pacific Crest's *Proposal for Feasibility Study* dated March 27, 2012. In 2014, the Port provided Sound Mattress with a list of additional investigation activities that it concluded were necessary to support the preferred cleanup alternative presented in a draft FS Report. The objectives of the additional investigation activities documented in this FSI Report include:

- Assessing fluctuations in volatile organic compound (VOC) concentrations in groundwater by collecting groundwater samples for laboratory analysis;
- Assessing the possibility of releases of non-VOC contaminants (i.e., metals and cyanide) associated with plating activities conducted by Washington Steel Products (Washington

Steel) in the building on the former Sound Mattress Property (the Building) by collecting groundwater samples and, if appropriate, soil samples for laboratory analysis;

- Developing a more precise estimate of the volume of contaminated soil below the slab of the Building by collecting soil samples for laboratory analysis;
- Supporting future fate and transport modeling and estimating dewatering requirements by conducting in-situ hydraulic conductivity testing to calculate the hydraulic conductivity of the shallow unconfined aquifer;
- Assessing the potential impacts to surface water by collecting surface water samples in the Sitcum Waterway for laboratory analysis; and
- Assessing the condition of suspected former septic tanks located on the former Sound Mattress Property by visual inspection.

1.2 REMEDIAL ACTION RESPONSIBILITIES

The remedial action is being conducted under the direction of Sound Mattress:

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The environmental consultant for the remedial action is:

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2.0 BACKGROUND

2.1 FORMER SOUND MATTRESS PROPERTY

2.1.1 Description

The former Sound Mattress Property is a 5.77-acre irregular-shaped parcel that is bounded to the north by Thorne Road and beyond by commercial/industrial properties; to the west by East 11th Street and beyond by the Port administration building; and to the south and east by commercial/industrial properties (Shaub-Ellison and Castan Trucking). Improvements to the former Sound Mattress Property include a 112,280 square-foot masonry warehouse building (the Building) that was constructed between 1948 and 1953. The slab of the Building is between 6-inches and 18-inches thick and is located between 2 feet and 4 feet above surface grade. The parking areas surrounding the Building are unpaved. In 2014, the Port began the process of demolishing the Building. The former Sound Mattress Property and improvements are illustrated on Figure 2.

2.1.2 Property Development and Uses

A chronologic summary of the development of the former Sound Mattress Property and the south-adjacent Shaub-Ellison Property, located at 1132 Thorne Road, is provided below:

- Prior to 1948, the former Sound Mattress Property was vacant and undeveloped tide-flat land.
- In 1948, Washington Steel constructed the northern portion of the existing Building. Washington Steel extended the Building with additions built in 1950 and 1953 (Tacoma Public Library - Tacoma-Pierce County Buildings Index).
- Between 1948 and 1959, Washington Steel conducted manufacturing operations in the Building that included the manufacturing of hardware including enameled metal drawers, knobs, pulls, and hinges (Tacoma Library Photo Archive). A Sanborn map prepared for the former Sound Mattress Property indicates areas inside the Building dedicated to drying, painting, plating, etching, manufacturing, packing, and shipping (Appendix A).
- In 1959, Ekco Products Company (Ekco) purchased Washington Steel, and in 1965 American Home Products Corp (American Home Products) purchased Ekco.

- In 1964, Sound Mattress purchased the former Sound Mattress Property. Sound Mattress did not occupy or conduct manufacturing operations on the former Sound Mattress Property but, instead, continued to lease portions of the Building to Ekco and, later, American Home Products until at least 1967.
- In 1965, Sound Mattress leased a portion of the Building to Brown and Haley, Inc. (Brown and Haley) for commercial activities associated with the sales and distribution of Brown and Haley candy (Pacific Crest 2006).
- The Polk City Directory identifies the tenants of the former Sound Mattress Property as "Washington Steel Products" in 1960 and as Brown & Haley, Ekco Products Co., Dell's Copy Shop, Washington Line Federal Credit Union, and Washington Steel Products in 1967. From 1972 through the present, the former Sound Mattress Property tenants are listed as Brown & Haley (1972, 1977, 1982, 1987, 1992, 2001, and 2005) and/or Westlocknational (1997); Cardservice International (2001 and 2005); Northwest Cardservice (2001); Hoops Unlimited (2001); and Westpac Marketing (2001).
- In 1970, the south-adjacent Shaub-Ellison Property consisted of undeveloped land and was purchased by Mr. Sanford Shaub from Mr. Robert Shea Sr.
- In 1973, the Shaub-Ellison Property was first developed with a 7,300 square-foot, split-level, concrete tilt-up building erected on approximately 0.78-acres. Additional improvements to the Shaub-Ellison Property include an asphalt-paved storage yard in the western portion of the parcel, and an asphalt-paved parking area on the eastern portion of the parcel.
- From 1974 through 1998, the Shaub-Ellison Property was operated by the Shaub-Ellison Company, a retail automotive tire service facility.
- Since 2000, the Shaub-Ellison Property has operated as RevChem Plastics, an industrial chemical and supply company.
- In October 2006, the Port purchased the former Sound Mattress Property.
- In 2014, the Port initiated demolition of the Building on the former Sound Mattress Property.

2.1.3 Underground Utilities

The former Sound Mattress Property is serviced by natural gas, telephone, water, and stormwater and sanitary sewers located in the rights-of-way of East 11th Street and Thorne Road. The

locations of underground stormwater and sanitary sewers are illustrated on Figure 2. Available information about the stormwater and sanitary sewer utilities is presented below:

- The one 60-inch diameter concrete stormwater line ("60-inch stormwater line") was constructed in 1951 and is located in the right-of-way of Thorne Road. The 60-inch stormwater line is connected to private stormwater laterals and private catch basins that collect stormwater runoff from the parking lot located north of the Building. Review of historic design drawings provided by the Port also depict roof drains that are indicated to discharge to the 60-inch stormwater line.

  Historic design drawings for the Building identify three underground vaults along the eastern side of the Building as "septic tanks". Later design drawings, prepared on behalf of the Port as part of the demolition design for the Building, identify one large vault near the southeast corner of the Building as a "storm" vault and identify a connection and flow control valve between the storm vault and the 60-inch stormwater line located in Throne Road.

- One 12-inch diameter concrete sanitary sewer line is located in the right-of-way of Thorne Road. The 12-inch sanitary sewer flows south along Thorne Road to the City of Tacoma wastewater treatment plant.
- A 60-inch diameter cement reinforced steel sanitary sewer line is located in the right-of-way of East 11th Street. The 60-inch diameter sewer transports treated wastewater from the City of Tacoma wastewater treatment plant to an outfall located in Commencement Bay.
- Information obtained by personal communication between Ms. Lauren Carroll of Pacific Crest and Mr. Robert Shea, during a May 8, 2006, meeting at the Site, revealed that Mr. Robert Shea, Sr., installed a polyvinyl chloride (PVC) underground sanitary sewer line in the alley southeast of the Building, located between the former Sound Mattress Property and the Shaub-Ellison Property. It was Mr. Shea's understanding that the sanitary sewer line installed by his father exits the southeast side of the Building in the alley and ends in an open termination point in the alley, without connection to the municipal sewer line on Thorne Road (Figure 2).

2.2 NATURAL SETTING

2.2.1 Physiographic Setting

The former Sound Mattress Property is located in the near-shore tidal flats area of the Port of Tacoma near Commencement Bay of the Puget Sound. In the late 1800s, the southern and eastern shoreline of Commencement Bay consisted of tidal flats formed as part of the Puyallup River delta. Dredge and fill activities, conducted since the 1910s, have significantly changed the estuarine nature of this shoreline and the tidal flats. The historic meandering streams and rivers were dredged to form waterways, and the intertidal areas between the waterways were filled with dredge material to create usable land. The newly created land has since been used for commercial and industrial operations including shipbuilding, chemical manufacturing, ore smelting, oil refining, food preservation, and transportation facilities. The tide-flats in the vicinity of the former Sound Mattress Property appear to have been backfilled in the 1940s.

2.2.2 Surface Water

The former Sound Mattress Property is located approximately 350 feet southeast of a large body of saline surface water (Sitcum Waterway). The Sitcum Waterway is a manmade waterway that is located between the Blair Waterway and former Milwaukee Waterway and is used by the Port and the Port's tenants for container and bulk product unloading from cargo vessels. The Port owns the adjacent upland properties on all sides of the Sitcum Waterway and owns the submerged land and bottom sediment in the Sitcum Waterway. The Port routinely dredges the Sitcum Waterway to maintain sufficient depth for vessels to access the docks, and the shoreline and submerged slope are armored with rip-rap to prevent erosion. Industrial loading, unloading, and other operations have been conducted on properties along the Commencement Bay and Sitcum Waterway for over 100 years. Public access and recreational boating is not permitted in the Sitcum Waterway.

The past industrial practices in the Sitcum Waterway resulted in areas of sediment contaminated with metals (arsenic, cadmium, copper, lead, nickel, and zinc) and polycyclic aromatic hydrocarbons (PAHs). In 1983, the United States Environmental Protection Agency (EPA) placed portions of Commencement Bay, including the area identified as the Sitcum Waterway Problem Area, on the Superfund National Priorities List due to widespread contamination of the water, sediments, and upland areas. Polychlorinated biphenyls (PCBs) and VOCs were not listed as

contaminants of concern for the Sitcum Waterway Problem Area. Since 1985, the Washington State Department of Health (DOH) has posted "Fish Consumption" warning signs in public access areas, and the entire Commencement Bay area, including the Sitcum Waterway, is classified by the DOH as "closed" to shellfish harvesting due to pollution.

Since 1991, investigation and cleanup of the Sitcum Waterway Problem Area has been conducted by the Port with EPA oversight. EPA attributed the contaminants in sediment to historical releases of metal ores handled at Terminal 7 and releases from a stormwater outfall (SI-172) that discharges runoff from an industrial and commercial area of the Tacoma Tideflats covering approximately 170 acres. In 1993, the EPA approved source control measures to address the stormwater discharge from SI-172; dredging of contaminated sediments in the main channel of the waterway for disposal in the Milwaukee Nearshore Confined Disposal Facility (NCDF); and natural attenuation for contaminated sediments located beneath and in the vicinity of the terminal on the north side of the waterway (Terminal 7). The remedial action to address the Sitcum Waterway Problem Area was completed in 1995. Since 1995, the Port has monitored the groundwater and sediment quality in the Sitcum Waterway Problem Area in accordance with the Operations, Maintenance, and Monitoring Plan (OMMP) dated June 3, 1994 (Port 1994) and Work Plan for Long-term Sediment Quality Monitoring dated 1996. Laboratory analysis of sediment and groundwater samples collected during the most recent sediment sampling event in 2003 and groundwater sampling event in 2013 indicated that source control, dredging, and monitored natural attenuation were effective for cleanup of the Sitcum Waterway Problem Area.

2.2.3 Geologic Setting

The regional unconsolidated geology in the Puget Sound area consists primarily of interbedded Pleistocene Era clays, silts, and sands deposited as a result of glacial activity. Glacial outwash sediments in the region were deposited, eroded, and re-deposited by rivers and streams. The advance and retreat of glacial ice sheets also resulted in the compaction of underlying sediments into glacial till. Alluvial deposits in the region are present in the vicinity of streams in the major regional river valleys and typically consist of unconsolidated, stratified, clay, silt, and very fine to fine sand, with considerable organic matter. Medium to coarse sand and gravel units underlie much of the fine-grained floodplain sediment in the region and are common in small stream valley bottoms (Galster and Laprade 1991). As discussed above, anthropogenic activities (i.e., dredging and filling) have altered much of the shallow subsurface in the Port of Tacoma tidal flats.

Geologic conditions within the Site boundaries are consistent with the regional unconsolidated geology. Unsaturated soil below the slab of the Building and above surface grade consists of sand, silt, and gravel fill (Upper Fill). The unsaturated soil in the vicinity of the Site consists of sand/silt and/or gravel fill (Upper Fill) to a depth of up to 10 feet below ground surface (bgs), overlying fine sand and silty sand with occasional minor silt and shell fragments to a depth of 8 feet bgs to 15 feet bgs (Upper Sand). The Upper Fill and Upper Sand consist of similar material and are nearly indistinguishable by visual inspection in some locations. The Upper Sand is underlain by a thin discontinuous silt (Upper Silt) that is up to 5 feet thick in places. The Upper Silt is present beneath the majority of the former Sound Mattress Property and the Port property located north of East 11th Street, but does not appear to be present in the immediate vicinity of East 11th Street along the northern boundary of the former Sound Mattress Property. The Upper Silt is underlain by sand (Lower Sand) to a depth of approximately 30 feet bgs. The Lower Sand is underlain by clayey silt (Lower Silt) that appears to be continuous across the Site. The unconsolidated geology in the Site vicinity is illustrated in cross section view on Figure 3 and Figure 4.

2.2.4 Hydrogeologic Setting

Groundwater aquifers in the Puget Sound area are generally confined to recent alluvial deposits of sands and gravel, which are stratigraphically delimited by aquitards (low permeability units) consisting of glacial till deposits. Discontinuous perched shallow groundwater zones may be seasonally or locally present above the glacial till deposits (Galster and Laprade 1991). The groundwater in aquifers that are located in close proximity to saline surface water generally meets the non-potability criteria of MTCA (WAC 173-340-720(2)(d)).

Shallow groundwater in the vicinity of the Site is encountered in the Upper Sand between the depths of approximately 7.5 feet bgs to 11 feet bgs. Saturated conditions extend to the top of the Lower Silt, interpreted as an aquitard and the base of the shallow water-bearing zone, at approximately 30 feet bgs. Due to the discontinuous nature of the Upper Silt, the Upper Sand and Lower Sand are interpreted as a single hydrogeologic unit. The direction of groundwater flow at the Site is to the northwest. The Site groundwater is influenced by tidal fluctuations in the adjacent surface water body and meets the MTCA criteria for non-potability (WAC 173-340-720(2)(d)).

2.3 SITE DISCOVERY, INVESTIGATION AND REGULATORY STATUS

A chronologic summary of relevant Site milestones is presented below:

- In April 2004, during a preliminary due diligence subsurface investigation performed by Environmental Associates, Inc. (EAI) at the neighboring Shaub-Ellison Property, laboratory analysis detected tetrachloroethene (PCE) in one groundwater sample (boring B2).
- Between 2004 and 2007, Site characterization activities by Pacific Crest and others included: advancing soil borings; installing groundwater monitoring wells; collecting soil and groundwater for laboratory analysis; performing a passive soil vapor survey; and, assessing the results in accordance with industry practice. The further investigation results identified areas where releases of PCE appear to have occurred and have resulted in PCE and associated breakdown products generated by reductive dechlorination, including trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE) and vinyl chloride (VC) in soil and groundwater. PCE appears to have been used by the former owner of the former Sound Mattress Property (Washington Steel) as a degreasing solvent for cleaning metal parts. The results of the further investigations were documented in reports prepared on behalf of Sound Mattress and the Shaub-Ellison Property owner (EAI 2004a, EAI 2004b, EAI 2005, EMS 2005, LSI Adapt 2005, and Pacific Crest 2006).
- In 2007, the Site was enrolled in Ecology's VCP, and copies of the previous reports were provided to Ecology.
- Between 2007 and 2009, Site remedial investigation (RI) activities by Pacific Crest and others included: advancing soil borings; installing groundwater monitoring wells; conducting a tidal study; collecting soil, groundwater and air samples for laboratory analysis; performing an additional passive soil vapor survey inside the Building; and, assessing the results in accordance with industry practice. In 2009, the results of RI activities were submitted to Ecology in the RI Report dated December 9, 2009. Several RI data gaps were identified in the RI Report that required additional investigation to fully characterize the nature and extent of contamination. In 2010, the results of further characterization were submitted to Ecology in the Data Gap Investigation Report dated August 4, 2010, with a request for an Opinion Letter.

- Ecology issued an Opinion Letter dated November 8, 2010 that approved the RI activities and established cleanup levels for the COCs in soil, groundwater, and air.
- Between 2011 and 2013, Pacific Crest conducted FS activities to: further characterize the nature and extent of contamination; assess the effectiveness of remediation technologies that are capable of achieving the cleanup standards established for the Site; and develop a preferred cleanup action approach for the Site. The FS activities included: meeting with Port representatives to resolve concerns about the characterization of the Site; collecting soil and groundwater samples for laboratory analysis; conducting in-situ soil vapor extraction (SVE), air sparging (AS), and enhanced aerobic bioremediation (EAB) pilot tests; and preparing a draft FS Report. On May 14, 2013, Pacific Crest provided the Port with a copy of the draft FS Report. Between May 2013 and March 2014, Pacific Crest regularly contacted the Port to obtain updates about the Port's plans for the former Sound Mattress Property and the status of the Port's review of the draft FS Report. During that period, the Port's plans for the former Sound Mattress Property changed from demolition of the Building to leaving the Building in-place and back to demolition of the Building. In March 2014, the Port provided Sound Mattress and Pacific Crest with comments on the draft FS Report. In June and July 2014, representatives of Pacific Crest and Sound Mattress met with the Port to discuss the comments, the Port's plans for the Building, and additional investigation to support the FS.

3.0 INVESTIGATION ACTIVITIES

The scope of work that was developed with the input of the Port to provide supporting information for inclusion in the FS is summarized below:

- Preparing a Sampling and Analysis Plan (SAP) for the further investigation activities;
- Conducting one groundwater monitoring event of existing groundwater monitoring wells at the Site and analyzing groundwater samples for VOCs; total metals (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, tin, and zinc); dissolved metals (arsenic, cadmium, chromium, copper, lead, nickel, tin, and zinc) and cyanide (free and weak acid dissociable [WAD]);
- Conducting rising and falling slug tests in existing monitoring wells MW-6, MW-7, MW-11, MW-13, MW-14, and MW-16;
- Advancing 20 soil borings (P-1 through P-14 and P-16 through P-21) at the Site using direct-push drilling methods, and collecting soil samples for laboratory analysis of VOCs, and select metals that were detected in groundwater (arsenic, cadmium, chromium, copper, lead, nickel, tin, and zinc);
- Locating and inspecting up to three underground vaults that, based on information provided by the Port, potentially exist on the former Sound Mattress Property; and
- Collecting surface water samples at three locations near the groundwater/surface water interface within the Sitcum Waterway, and submitting the samples for laboratory analysis of CVOCs.

A narrative summary of the investigation activities conducted by Pacific Crest is provided in the following sections.

3.1 SAMPLING AND ANALYSIS PLAN AND ACCESS

Pacific Crest prepared a SAP in accordance with WAC 173-340-820 and a Site-specific Health and Safety Plan (HASP) for the investigation activities in accordance with 29 CFR 1910.120. During August 2014, the scope presented in the SAP was revised based on comments from Port, and the SAP was finalized. The Port granted Pacific Crest access to conduct the further

investigation activities between September and November 2014 in the form of a Hold-Harmless Agreement.

3.2 GROUNDWATER MONITORING

On September 4, 5, and 8, 2014, Pacific Crest conducted a groundwater monitoring event of the 17 existing groundwater monitoring wells (MW-1 through MW-17) at the Site. The water level in each well was allowed to equilibrate with atmospheric pressure for a minimum of 15 minutes prior to collecting groundwater level data. The depth to groundwater below the top of casing was measured relative to the north side of each well casing to an accuracy of 0.01-foot using an electronic water level indicator. An effort was made to measure water levels and sample wells that are tidally influenced during low tide.

Each well was purged using a peristaltic pump and dedicated polyethylene tubing at a flow rate of approximately 100 to 300 milliliters per minute (0.026 gallons per minute [gpm] to 0.079 gpm). During purging, groundwater geochemical parameters, including temperature, specific conductivity, pH, dissolved oxygen (DO), and oxidation/reduction potential (ORP), were recorded approximately every three minutes using a YSI 556 multi-parameter water quality meter equipped with a flow-through cell. Groundwater samples were collected from upstream of the flow-through cell upon stabilization of the geochemical parameters. Groundwater samples were transferred directly from the dedicated tubing into laboratory-prepared sample containers. The sampling procedures were performed in accordance with the U.S. Environmental Protection Agency's (EPA's) *Low-Flow (Minimal Drawdown) Ground-water Sampling Procedures* (Puls and Barcelona 1996) and Pacific Crest's SOPs. Duplicate groundwater samples were collected from well MW-11 to assess data quality. Groundwater samples that were collected for analysis of dissolved metals were filtered in the field using disposable 0.45 micron filters prior to being placed in laboratory-prepared sample containers.

Upon collection, the groundwater samples were appropriately labeled, placed into a cooler on ice, and transported under standard chain-of-custody protocols to OnSite Environmental Inc. (OnSite), located in Redmond, Washington, on a standard turnaround time. OnSite analyzed the groundwater samples for VOCs by SW-846 Method 8260C, and total and dissolved metals (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, tin, and/or zinc) by SW-846 Methods 6010C, 6020A, 200.7/200.8, 7470A, 7471B, and 245.1; and prepared

a report documenting the results. OnSite subcontracted analysis of the groundwater samples for cyanide (free and WAD) by SW-846 Method 9012B/Standard Method (SM) 4500-CN to AmTest Laboratories (AmTest) located in Kirkland, Washington. Copies of the laboratory reports are provided in Appendix B.

3.3 SLUG TESTS

On September 11, 2014, Pacific Crest personnel conducted rising and falling head slug tests in existing monitoring wells MW-7, MW-11, and MW-16, and on October 30, 2014, Pacific Crest personnel conducted rising and falling head slug tests in existing monitoring wells MW-6, MW-13, and MW-14. A slug test could not be conducted in well MW-5 as originally proposed in the SAP because the static water level in that well was 18 inches from the surface, and accurate water level measurements during slug insertion would not have been feasible. Prior to the start of the slug tests, depth to water in each well was measured with an electronic water level indicator to an accuracy of within 0.01-foot. For the falling head portion of the slug tests, the water level in the test well was displaced by rapidly submersing a PVC “slug” of known volume below the static water level in the well. Following displacement, water level recovery in the well was monitored using a water level indicator. Water level data was recorded at progressively increasing time intervals between 15 and 60 seconds until the water level in the well recovered to within 5% of the maximum displacement (as measured from the static water level). The rising head slug test was conducted immediately after the falling head portion by rapidly removing the “slug” from the well, and monitoring and recording the data in a similar manner to that described for the falling head portion of the test.

The slug test data was analyzed using a Microsoft Excel spreadsheet solution developed by the U.S. Geologic Survey (USGS) (Halford and Kuniansky 2004), which performed quantitative analysis of the slug test data using the Bouwer and Rice Method. The Bouwer and Rice Method is applicable to the assessment of hydraulic conductivities of unconfined aquifers using either completely or partially penetrating wells. The proprietary program plots the data on a semi-logarithmic graph. Displacement (feet of water) is plotted on the logarithmic scale (y-axis), and elapsed time (minutes) is plotted on the arithmetic scale (x-axis). A best-fit line is matched to the data, and the slope and intercept of the line are used to calculate aquifer hydraulic conductivity in the vicinity of the well. The slug test data and software output are provided in Appendix C.

3.4 SOIL BORINGS

Between September 9, 2014, and September 11, 2014, ESN Northwest, Inc. (ESN) advanced 20 soil borings at the Site using a truck-mounted direct-push hydraulic probe rig as follows: two soil borings (P-1 and P-2) within the alleyway to the southeast of the Building to total depths of 12 to 16 feet bgs; and 18 soil borings (P-3 through P-14; and P-16 through P-21) inside the Building to total depths of 12 to 16 feet below top of concrete. Proposed boring P-15 was not advanced due to access limitations. Duplicate soil samples were collected from boring P-17 to assess data quality. The soil boring locations are illustrated on Figure 2.

Pacific Crest personnel were on-site to direct the field activities and to collect soil samples from the 20 soil borings. Prior to the initiation of subsurface work, access was coordinated with the Port, and the locations of underground utilities in the vicinity of the borings were identified using both a public One-Call locating service and a private utility locating company, Applied Professional Services, Inc. (APS) of North Bend, Washington. During drilling, soil samples were collected continuously using a 2-inch diameter macro-core sampler equipped with vinyl acetate liners. Following retrieval, the soil samples were described in accordance with the Unified Soils Classification System (USCS) and field screened for visual or olfactory evidence of contamination. Soil vapor headspace analysis was conducted to field screen the samples for total volatile organic compound (TVOC) concentrations using a photoionization detector (PID). The soil vapor headspace analysis was performed by placing a portion of soil from each sample interval into a re-sealable plastic bag, allowing the sample to warm for several minutes, and recording the highest TVOC concentration inside the bag measured over a 30-second span using a PID. The USCS descriptions, observations of contamination, and field screening data were recorded on borings logs, which are provided in Appendix D. Two soil samples were collected from each boring and prepared for potential laboratory analysis as followed:

- Borings P-1, P-2, P-5, and P-10 through P-21:
    - One shallow soil sample (approximately 3-4 feet bgs)
    - One soil sample of Upper Silt near sand/silt interface (typically encountered at approximately 15 feet below top of concrete/ground surface)
- Borings P-3, P-4, P-6, P-7, P-8, and P-9:
    - One shallow soil sample immediately below gravel fill

- One soil sample of Upper Silt near sand/silt interface

Upon collection, the soil samples were appropriately labeled, placed into a cooler on ice, and transported under standard chain-of-custody protocols to OnSite under standard turnaround time. OnSite analyzed the soil samples for VOCs by SW-846 Method 8260C (all samples); grain size by PSEP/ASTM D422 (select soil samples from borings P-13, P-14, P-15, P-20, and P-21); and total organic carbon (select soil samples from borings P-13, P-14, P-15, P-20, and P-21) by EPA Method 9060. The soil samples were also analyzed for those metals detected in groundwater (i.e., arsenic, cadmium, chromium, copper, lead, nickel, tin, and zinc) by SW-846 Methods 6010C, 6020A, 200.7, 200.8, 7470A, 7471B, and 245.1. Copies of the laboratory reports are provided in Appendix B.

Upon completion, the borings were backfilled with bentonite to within six inches of the surface, and sealed to match the existing surface to the extent practicable.

3.5 GROUNDWATER/SURFACE WATER INTERFACE ASSESSMENT

The original scope of work included the collection of co-located pore-water and surface water samples at six locations near the groundwater/surface water interface within the Sitcum Waterway. However, information provided later by the Port indicated that the submerged slope of the Sitcum Waterway consisted of riprap, which would inhibit the collection of pore-water samples at the proposed sampling locations. Based on discussions with the Port and the Port's consultants, the scope of work was modified as summarized below.

Surface water samples (SW-1 through SW-3) were collected in October 2014 at three locations near the groundwater/surface water interface within the Sitcum Waterway (Figure 2). The surface water samples were collected using passive diffusion bag (PDB) sampling devices, which generally require the deployment of the samplers for a minimum of 14 days prior to sample collection. The PDB sampling devices were deployed on October 16, 2014, and retrieved on October 30, 2014. The sampling procedures, conducted in general accordance with the manufacturer's specifications, are summarized below:

- Pacific Crest personnel mobilized to each sampling location aboard a vessel operated by Gravity Environmental Consulting, LLC (Gravity Environmental) of Fall City, Washington.

- The PDB samplers were secured to a pre-measured length of nylon line sufficient to suspend the sampler immediately above the riprap, at a depth of approximately 15 to 20 feet below mean lower low water (MLLW). The nylon line was then secured to a floating device (i.e., buoy) to facilitate retrieval.
- An anchor was secured to the opposite end of the PDB samplers, and the PDB samplers were lowered to the desired location.
- The PDB samplers were retrieved from each location 14 days following deployment.
- Upon retrieval, appropriate laboratory supplied sample containers were filled directly from the PDB sampler, with care taken to minimize turbulence and possible contaminant volatilization. Sample containers were filled completely to eliminate headspace, the lid secured, and the absence of air bubbles verified.
- Each sample vial was appropriately labeled, placed on ice in a cooler, and transported to OnSite under standard chain-of-custody protocols for analysis for CVOCs by SW-846 Method 8260C on a standard turnaround time.

3.6 VAULT LOCATION AND INSPECTION

On September 10, 2014, APS attempted to locate and inspect three underground vaults/septic tanks that were identified by the Port near the northeastern boundary of the former Sound Mattress Property adjacent to the Thorne Road right-of-way. Vault inspection was conducted using a closed-circuit video camera to inspect the current condition of the underground vaults and associated conveyance piping.

3.7 DECONTAMINATION AND WASTE MANAGEMENT

All non-dedicated field sampling equipment was cleaned and decontaminated between each use and prior to leaving the Site using an aqueous solution of Alconox; deionized water; and/or a 10% nitric acid solution. Investigation-derived waste (IDW), including soil cuttings, purge water, and decontamination wash water, were temporarily contained on the former Sound Mattress Property in sealed and appropriately labeled U.S. Department of Transportation-approved 55-gallon steel drums pending waste disposal profiling and disposal in accordance with state and federal regulations. IDW was transported to the Chemical Waste Management landfill in Arlington, Oregon, for disposal. Waste disposal documentation is included in Appendix E.

4.0 RESULTS AND DISCUSSION

The results of the further investigation activities are summarized in Tables 1 through 8[1] and presented below. Laboratory analytical reports are included in Appendix B.

4.1 GROUNDWATER

The groundwater investigation results are discussed below:

- The depth to groundwater measured in monitoring wells MW-1 through MW-17 on September 5, 2014, ranged from 5.84 feet below top of casing (btoc) in well MW-9 to 12.98 feet btoc in well MW-15. The depth to water and groundwater elevation data are summarized in Table 1.
- The groundwater flow direction was generally calculated to be to the west-northwest towards the Sitcum Waterway under an average gradient of approximately 0.012 feet per foot (ft/ft) in the vicinity of well MW-13, and 0.005 ft/ft in the vicinity of well MW-6. The potentiometric groundwater surface contours for September 5, 2014, are illustrated on Figure 3.
- Groundwater geochemical parameters collected from wells MW-1 through MW-17 indicate that groundwater is present under a range of DO concentrations (0.11 milligrams per liter [mg/L] to 4.00 mg/L DO) with normal temperature (14.95° Celsius [C] to 21.42°C) and slightly acidic to normal pH (5.72 to 7.05) ranges. The groundwater geochemical parameters are summarized in Table 2.
- Laboratory analysis detected the following VOCs in groundwater: PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, VC, and 1,1-dichloroethane (1,1-DCA). The analytical results for VOCs in groundwater are summarized in Table 3 and presented in Appendix F on Figure F-1. The analytical results are discussed below:
    - The laboratory analytical results for groundwater indicate that concentrations of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE and VC have generally decreased in all wells compared to historical results.

[1] Analytical results for samples collected during previous investigations are also included in Tables 1 through 8.

- The distribution of the CVOC COCs (PCE and PCE's degradation compounds) in groundwater at the Site is affected by biologic, hydrogeologic, and geochemical variables. Concentrations of chlorinated ethenes adsorbed to soil and dissolved in groundwater are subject to biodegradation processes including reductive dechlorination, aerobic oxidation, anaerobic oxidation, and anaerobic co-metabolism. Select bacteria that thrive in anaerobic environments are capable of transforming CVOCs into innocuous byproducts. The typical breakdown sequence for CVOCs under anaerobic conditions is summarized below:

  PCE ►TCE ► cis-1,2-DCE (primarily) ► VC ► ethene and carbon dioxide (CO_2)

  The concentrations of cis-1,2-DCE and VC detected in samples collected at the Site are likely degradation constituents associated with the reductive dechlorination process described above.

- The distribution of PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and VC in groundwater is consistent with previous investigation results: elevated concentrations of PCE in shallow groundwater near well MW-11 and in the alley southeast of the Building, and elevated concentrations of the degradation compounds of PCE (TCE, cis-1,2-DCE, trans-1,2-DCE, and VC) in deeper groundwater located northwest well MW-11. One notable difference from previous results is that concentrations of PCE in groundwater from well MW-11 have decreased to below the level indicative of dense non-aqueous phase liquid (DNAPL).

- Laboratory analysis of groundwater did not detect non-chlorinated VOCs at concentrations above their respected method detection limits.

- Laboratory analysis detected the following total metals in groundwater: arsenic, cadmium, chromium, copper, lead, nickel, tin, and zinc. Laboratory analysis detected the following dissolved metals in groundwater: cadmium, copper, nickel, and zinc. The analytical results for total and dissolved metals and cyanide in groundwater are summarized on Table 4. The analytical results are discussed below:

  - Laboratory analysis did not detect total cobalt, mercury, selenium, or silver at concentrations above their respective method detection limits.

- Laboratory analysis detected in at least one sample total, but not dissolved, concentrations of arsenic, chromium, lead, and tin. The absence of detectable concentrations of dissolved arsenic, chromium, lead, and tin in samples where total metals were detected is interpreted to be due to metals adsorbed onto colloidal suspended solids, rather than dissolved in groundwater.
- Laboratory analysis detected in at least one sample total and dissolved concentrations of cadmium, copper, nickel, and zinc.
- Laboratory analysis detected free cyanide in the sample collected from well MW-7 only. Due to the absence of WAD cyanide – a more sensitive and inclusive analysis – in the sample from well MW-7, the free cyanide result is interpreted to be the result of matrix interferences and a false positive, not representative of groundwater conditions at the Site.
- The fate and transport mechanisms for metals in groundwater are primarily dependent upon geochemical variables, including redox potential, dissolved oxygen content, pH, and the chemical composition of the aquifer. Concentrations of metals in groundwater are not subject to degradation, but may be preferentially adsorbed to naturally occurring chemical components of soil (e.g., iron oxides). The geochemical conditions of groundwater (e.g., pH, dissolved oxygen concentration, dissolved organic carbon content, and hardness) influence the formation of low solubility metal compounds.

- The in-situ hydraulic conductivity slug test results ranged from 0.000021 (2.1×10^{-5}) centimeters per second (cm/s) to 0.0062 (6.2×10^{-3}) cm/s with a geometric mean of 0.000299 (2.99×10^{-4}) cm/sec. The hydraulic conductivity results are summarized in Table 5.

4.2 SOIL

The soil investigation results are discussed below:

- Pacific Crest personnel utilized visual and tactile observations to classify the subsurface conditions encountered in the soil borings as consisting of fill material underlain by a mixture of silty-sand, sand, gravel, and silt. The individual soil descriptions are provided in the boring logs and illustrated on cross-sections provided as Figure 3 and Figure 4.

Saturated soil samples from borings P-13, P-14, P-20, and P-21 were submitted to a geotechnical laboratory for grain size analysis. The grain size analysis results indicated samples composed of silty sand with trace amounts of clay and gravel, consistent with previous investigation results and Pacific Crest's observations. The laboratory report documenting grain size analyses of the soil samples collected in the saturated zone is included in Appendix B.

- The material located 3 to 5 feet below the bottom of the Building's concrete slab is anthropogenic fill material. Under the northwestern portions of the Building, the fill material encountered in soil borings generally consists of homogeneous sand and silty sand underlain by the native Upper Sand. Under portions of the Building located southeast of boring P-17, the fill material encountered directly below the Building's slab is more heterogeneous and consists of interbedded layers of gravel, 1-foot thick to 3-foot thick layers of silt, and silty sand. The silt fill layers southeast of boring P-17 appear to be discontinuous and randomly distributed horizontally and vertically.

- TVOC concentrations measured during field screening of soil with a PID ranged from 0.0 parts per million (ppm) to 169 ppm relative to the isobutylene standard gas.

- Laboratory analysis detected PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, VC, 1,1-DCA, 1,1-dichloroethene (1,1-DCE), acetone, carbon disulfide, benzene, toluene, ethylbenzene, total xylenes, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, chloroform, and naphthalene in one or more soil samples. The analytical results for VOCs in soil are summarized in Table 6. Results for PCE, TCE, and VC are presented in Appendix E on Figures E-1 through E-3, respectively. The concentrations of VOCs in soil samples collected during the FSI activities were similar to results from previous investigations with the following exceptions:

    - Laboratory analysis detected PCE at a maximum concentration of 34 milligrams per kilogram (mg/kg) in the unsaturated soil sample collected between 6 and 8.5 feet bgs from boring P-9. The PCE concentration detected in the sample from boring P-9 is the highest detected at the Site to date. The concentrations of PCE detected in borings P-6 and P-11 also exceeded the highest concentration detected in previous investigations.

- Laboratory analysis detected TCE at a maximum concentration of 4.9 mg/kg in the unsaturated soil sample collected between 6 and 8.5 feet bgs from boring P-9. The TCE concentration detected in the sample from boring P-9 is the highest detected at the Site to date. The TCE concentrations detected in borings P-6, P-10, and P-11 also exceeded the highest concentration detected in previous investigations.
- Laboratory analysis detected cis-1,2-DCE at a maximum concentration of 47 mg/kg in the saturated soil sample collected between 13.5 and 16 feet bgs from boring P-17. The cis-1,2-DCE concentration in the sample from boring P-17 is the highest detected at the Site to date. The cis-1,2-DCE concentrations detected in borings P-4, P-6, P-8, P-9, P-11, P-12, P-14, P-18, P-19, P-20, and P-21 also exceeded the highest concentration detected in previous investigations. However, with the exception of boring P-6, the elevated concentrations of cis-1,2-DCE were detected in saturated soil in areas where elevated concentrations of cis-1,2-DCE are detected in groundwater. The presence of cis-1,2-DCE concentrations in soil is indicative of groundwater contamination, not of a separate source.
- Laboratory analysis detected trans-1,2-DCE at a maximum concentration of 0.99 mg/kg in the saturated soil sample collected between 13.5 and 16 feet bgs from boring P-17. The trans-1,2-DCE concentration in the sample from boring P-17 is the highest detected at the Site to date. The trans-1,2-DCE concentrations detected in borings P-4, P-5, P-6, P-7, P-8, P-9, P-10, P-11, P-12, P-14, P-18, P-19, P-20 and P-21 also exceeded the high concentration detected in previous investigations. However, with the exception of boring P-6 and P-9, the elevated concentrations of trans-1,2-DCE were detected in saturated soil in areas where elevated concentrations of trans-1,2-DCE and cis-1,2-DCE are detected in groundwater. The presence of trans-1,2-DCE concentrations in soil is indicative of groundwater contamination, not of a separate source.
- Laboratory analysis detected VC at a maximum concentration of 5.5 mg/kg in the saturated soil sample collected between 14.5 and 16 feet bgs from boring P-21. During previous investigations, VC was not detected in soil at concentrations above its method detection limit; therefore, the concentration of VC detected in boring P-21 is the maximum detected at the Site to date. VC was also detected in

saturated soil samples from borings P-8, P-9, P-11, P-12, P-14, P-16, P-17, P-18, P-19, and P-20. Similar to cis-1,2-DCE and trans-1,2-DCE, the presence of VC in soil is indicative of groundwater contamination, not a separate source.

- Laboratory analysis detected trace concentrations of 1,1-DCA in one soil sample collected from boring P-14 and trace concentrations of 1,1-DCE in samples from borings P-8, P-9, P-11, P-12, P-14, P-17, P-18, and P-20.
- Trace concentrations of the following non-chlorinated VOCs were also detected in select soil samples: acetone, carbon disulfide, benzene, toluene, ethylbenzene, 1,3,5-trimethylbenzne, 1,2,4-trimethylbenzene, chloroform, and naphthalene. As discussed above, laboratory analysis of groundwater samples did not detect concentrations of non-chlorinated VOCs.

- Laboratory analysis for metals in soil detected arsenic, cadmium, chromium, copper, lead, nickel, tin, and zinc. The analytical results for metals in soil are summarized on Table 7 and presented in Appendix G on Figures G-4 through G-11. The laboratory analytical results for metals in soil are discussed below:

  - The 90th percentile value for background metals in Washington State are presented in Ecology's guidance document *Natural Background Soil Metals Concentrations in Washington State* dated October 1994. In this FSI Report, Pacific Crest compared the laboratory analytical results to natural background values for the Puget Sound Region. Laboratory analysis detected arsenic, cadmium, chromium, copper, nickel, or zinc in at least one sample with concentrations that exceeded the natural background value for the Puget Sound Region. A discussion of the potential sources of metals in soil that that exceed natural background is provided below:

    - Chromium, cadmium, copper, nickel, tin, and zinc and their alloys are used as plating metals. Two methods have been used historically for plating: electroplating using a high pH or low pH (depending on the metal) solution of the plating metal and cyanide or acid, and mechanical plating using elemental metal powder which is plated onto small parts by impact media in a rotating container. The Sanborn map of the former Sound Mattress Property (Appendix A) does not indicate which plating process was used

by Washington Steel. The absence of anomalous pH measurements in groundwater and of cyanide appear to exclude electroplating as the plating method used by Washington Steel.

- Chromium, cadmium, copper, nickel, and zinc are also metals that are found in automobile tires. The former Shaub-Ellison Property operated as a tire service facility between 1974 and 1998 and may be the source of some or all of the metals detected in soil in the alley between the two properties.
- Arsenic is not used as a plating metal, but has other anthropogenic and natural sources. Laboratory analysis detected arsenic in one soil sample (2.4% of all samples) (P-13@14.5-16.0) at concentrations above the natural background value of 7 mg/kg, and the method detection limits for arsenic in all of the remaining samples were greater than the natural background value.
- Cadmium concentrations exceed the natural background of 1 mg/kg in three samples (7.1% of all samples) (P-1@2.5-4.0, P-3@4.5-6.0, and P-10@10.0-12.0). Borings P-3 and P-10 are located in the vicinity of the "plating" area identified on the historic Sanborn map. Boring P-1 is located in the alley southeast of the Building, adjacent to the former Shaub-Ellison Property. Dissolved cadmium was only detected in the groundwater sample collected from well MW-11.
- Chromium concentrations exceed the natural background of 48 mg/kg in two samples (4.8% of all samples) (P-2@8.0-9.5 and P-3@14.5-16.0). The locations and depths where chromium was detected are not correlated with the detections of other metals or the "plating" area, and dissolved chromium was not detected in groundwater. On the basis of these results, the source of elevated chromium appears to be only natural variation.
- Copper concentrations exceeded the natural background value of 36 mg/kg in six locations (14.3% of all samples) (P-1@2.5-4.0, P-5@8.5-9.5, P-7@12.0-14.0, P-10@10-12, P-13@14.5-16.0, and P-17@13.5-16.0). The six locations are distributed across the former Sound Mattress

Property: Boring P-1 is located in the alley southeast of the Building; Borings P-5, P-7, and P-10 are located in the vicinity of the "plating" area; and Borings P-13 and P-17 are located northwest of the "plating" area. Dissolved copper was only detected in one well (MW-13). The absence of detectable concentrations of dissolved copper in groundwater in the areas where concentrations of copper in soil exceed background suggests that copper is not leaching to groundwater.

- Nickel concentrations exceeded the natural background value of 48 in two samples (4.8% of all samples) (P-1@2.5-4.0 and P-10@10.0-12.0). The distribution of nickel is similar to the distribution of cadmium with elevated concentrations in the alley and downgradient of the "plating" area. Dissolved nickel was detected in groundwater samples from several wells, but elevated concentrations were only detected in samples from wells MW-6 and MW-11.
- Tin concentrations were detected only in the four samples collected from borings P-6 and P-7. There is no published natural background value for tin in Washington State. Powdered alloys of tin (e.g., tin alloyed with copper is brass) are used in mechanical plating. Borings P-6 and P-7 are located in the vicinity of the "plating" area, and plating related activities may be the source of tin in soil.
- Zinc was detected in one sample (P-1@2.5-4.0) at a concentration that exceeded the natural background value of 85 mg/kg. Zinc was detected in all of the remaining 41 samples at concentrations ranging from 17 mg/kg to 69 mg/kg. The highest concentrations of total and dissolved zinc were detected in groundwater samples collected from wells installed in the alley between the former Sound Mattress and Shaub-Ellison properties.

4.3 SURFACE WATER

The surface water results in the Sitcum Waterway are summarized below:

- Surface water geochemical parameters collected from the three sampling locations at the time of PDB deployment indicate that surface water is present under aerobic conditions

(5.52 mg/L to 5.87 mg/L DO) with normal temperature (12.75°C to 12.78°C); slightly acidic to normal pH (5.40 to 7.97); and normal salinity (46.22 parts per thousand [ppt] to 46.53 ppt) ranges.

- Laboratory analysis of the surface water samples did not detect CVOCs above their respective laboratory practical quantitation limits (PQLs). The analytical results for CVOCs in surface water are summarized in Table 8.

4.4 VAULT LOCATION AND INSPECTION

Two underground vaults were located by APS to the northeast of the Building in the vicinity of well MW-10 (Figure 2). APS was unable to locate the third potential vault that was previously identified by the Port near well MW-14. Video inspection of the two vaults revealed the tanks to be in generally good condition, with no apparent cracks, faults, or perforations. The vault located nearest to MW-10 ("South Vault') was connected to two conveyance pipes: one leading to the southeast, and one towards the second vault ("North Vault"). The North Vault was also connected to two pipes: one leading to the South Vault; and one apparently leading to the Building. "T" fittings on the influent and effluent pipes prevented video inspection of the lines. Several feet of standing water were observed in each vault. Based on the apparent connection between the South Vault and the 60-inch diameter stormwater utility line in the right-of-way of Thorne Road, the North Vault and South Vault appear to act as stormwater retention and flow control structures for stormwater runoff from the Building's roof drains.

5.0 REGULATORY ELEMENTS

The regulatory elements applicable to the evaluation of the nature and extent of concentrations of COCs include: applicable regulations; preliminary screening levels; a CSM with the applicable exposure pathways; a summary of the COCs; the media of concern; and the development of preliminary cleanup standards.

The Site has been entered into the Ecology's VCP, and investigation and cleanup of the Site is governed by MTCA. MTCA regulations establish stringent default cleanup standards and methods for developing site-specific cleanup levels. The MTCA methods for establishing cleanup levels are summarized below:

- Method A provides tables of cleanup levels (Method A Cleanup Levels) that are protective of human health for common hazardous substances detected in media of concern. Method A Cleanup Levels are applicable for use at sites with relatively few hazardous substances. Method A Cleanup Levels have been developed for unrestricted land use and industrial land use scenarios.
- Method B provides a set of equations that use chemical-specific, site-specific, and exposure-specific parameters to develop risk-based cleanup levels (Method B Cleanup Levels). Method B Cleanup Levels are applicable for use at all sites governed by MTCA. Where applicable, Pacific Crest used these parameters for the calculation of Method B Cleanup Levels. After calculation of Method B Cleanup Levels, the values are compared to natural background values and PQLs and adjusted, if necessary, in order to ensure that Method B Cleanup Levels are not less than the natural background values for the Puget Sound Region (Ecology 1994) or PQLs.
- Method C provides a set of equations and modified criteria used primarily for industrial properties. Portions of the Site, including areas of the Sitcum Waterway and upland areas near the Port administration building, meet the industrial land use criteria for Method C.

5.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Although Ecology is the lead agency, the cleanup action effort will be conducted in accordance with all applicable local regulations and permitting requirements. The remedial alternatives

presented in the FS will comply with all applicable or relevant and appropriate requirements (ARARs), including state and federal laws, in accordance with WAC 173-340-350 and WAC 173-340-710. Potential ARARs evaluated in this FSI Report include:

- Ch. 173-204 WAC - Sediment Management Standards (SMS);
- Ch. 173-201A WAC - Aquatic Life – Marine (Acute and Chronic);
- National Toxics Rule, 40 CFR 131 – Human Health and Aquatic Life – Marine (Acute and Chronic); and
- Washington State Dangerous Waste Regulations (WAC 173-303).

5.2 PRELIMINARY SCREENING LEVELS

Based on the industrial activities conducted on the former Sound Mattress Property and primary sources of contamination (metal finishing and plating), the preliminary contaminants of potential concern (COPCs) considered in this FSI Report were: VOCs (chlorinated and non-chlorinated), metals (arsenic, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, tin, and zinc), and cyanide. Pacific Crest reduced the list of preliminary COPCs based on those compounds detected in soil and/or groundwater to the following: arsenic, cadmium, chromium, copper, lead, nickel, tin, zinc, PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, VC, 1,1-DCE, 1,1-DCA, 1,1,1-TCA, acetone, carbon disulfide, benzene, toluene, ethylbenzene, 1,3,5-trimethylbenzne, 1,2,4-trimethylbenzene, chloroform, and naphthalene. The focused list of preliminary COPCs was further reduced by comparison of the detected concentrations in the media of concern to the following preliminary screening levels:

- Ecology-approved cleanup levels for the Site as presented in the Opinion Letter dated November 8, 2010
- Natural Background for Metals in Washington State
- MTCA Method A – Unrestricted for Soil and Groundwater – 173-340 WAC
- MTCA Method B – Protection of Drinking Water for Soil and Groundwater and Direct Contact – 173-340 WAC
- Sediment Cleanup Objectives (SCOs) – 173-204 WAC
- Human Health and Aquatic Life – Marine Chronic – 40 CFR 131

- Human Health Marine Waters – Clean Water Act (CWA)

The numerical values for the PSLs are presented in Appendix H and summarized in the applicable data tables. The COPCs that exceeded one or more of the PSLs consist of: cadmium, nickel, PCE, TCE, cis-1,2-DCE, and VC.

5.3 CONCEPTUAL SITE MODEL

A CSM has been developed that is based on the data collected during the RI and FS activities conducted at the Site by Pacific Crest and others. The CSM identifies plausible exposure pathways for human receptors to the focused list of COPCs. The CSM is illustrated on Figure 6 (PCE and TCE), Figure 7 (VC and cis-1,2-DCE), and Figure 8 (metals); and the CSM elements are discussed below:

- **Primary Sources of Contamination** – Washington Steel conducted industrial activities including: metal degreasing using the chlorinated solvent PCE and metal plating using, at a minimum, cadmium, nickel, tin, and copper. The available characterization data suggests that mechanical plating, rather than electroplating, was used by Washington Steel. The adjacent former Shaub-Ellison Property conducted automobile repair and tire-related services which may have contributed to contamination in the alley between the two properties.
- **Contaminants of Potential Concern** – Based on the industrial activities conducted and primary sources of contamination, the preliminary list of COPCs considered in this FSI Report included: VOCs, metals, and cyanide. The focused list of COPCs consists of cadmium, nickel, PCE, TCE, cis-1,2-DCE, and VC. The COCs for the Site will be those COPCs that are present in the media of concern at concentrations that present an unacceptable risk to human health or the environment.
- **Primary Release Mechanisms** – The release mechanisms associated with the former Sound Mattress Property appear to have been surface spills of the chlorinated solvent PCE and metals associated with mechanical plating and leaks from the sewer line in the alley southeast of the Building. The release mechanisms that appear to be associated with the former Shaub-Ellison Property are surface deposition of material associated with tire services (i.e., tire dust containing metals) in the alley between the two properties.

- **Transport Media** – The Site is characterized in the southeast by elevated concentrations of CVOCs (primarily PCE, TCE, and cis-1,2-DCE) and metals (cadmium and nickel) in soil and groundwater in the Upper Fill and Upper Sand (<15 feet bgs) above the Upper Silt located near the suspected source areas. Concentrations of PCE indicative of DNAPL have been historically detected in one well (MW-11) located near the former metal finishing areas, though recent monitoring results suggest substantial reductive dechlorination has occurred. Concentrations of CVOCs are present in soil vapor on the former Sound Mattress Property due to volatilization from shallow soil and groundwater.

  The northwestern portion of the Site is characterized by concentrations of the degradation products of PCE (cis-1,2-DCE and VC) that have migrated in groundwater vertically downward into the Lower Sand below the Upper Silt and laterally to the northwest, away from the source areas, due to groundwater flow and the tidal influence of the Sitcum Waterway. Concentrations of metals in groundwater do not appear to have migrated beyond the former Sound Mattress Property.

  In the southeastern portions of the Site, the soil and groundwater in the Lower Sand do not appear to be impacted, and in the northwestern portions of the Site, the soil, soil vapor, and groundwater in the Upper Sand do not appear to be impacted. This distribution of contaminants appears to be controlled by groundwater flow and the gap in Upper Silt located near East 11th Street, as depicted in cross-section on Figure 4. Concentrations of the COPCs have not been detected in surface water.

- **Exposure Media and Secondary Release Mechanisms** – The exposure media (i.e., media of concern where concentrations of COPCs have been detected or have the potential to be detected) include: soil, groundwater, air, surface water, and sediment. Secondary release mechanisms applicable to the exposure media include: retention of adsorbed contaminants on shallow soil; leaching of contaminants from shallow soil to groundwater; retention of dissolved contaminants in groundwater; discharge of dissolved contaminants in groundwater to surface water; volatilization of dissolved and adsorbed contaminants from groundwater and soil into soil vapor; and erosion and re-deposition of contaminated soil as sediment. The erosion and re-deposition of contaminated soil as sediment is considered only a potential future exposure route because contaminated soil is located 350 feet from the Sitcum Waterway and is capped by either the slab of the Building or pavement or is located away from catch basins that discharge to the Waterway.

- **Potential Receptors** – The Site is located in a designated industrial zone; therefore, residents, recreational users, and upland ecological receptors are not considered plausible receptors under current or future land use. Therefore, the potential receptors are: adult industrial workers, adult temporary construction workers, and adult Site visitors.
- **Complete and Potentially Complete Exposure Pathways** – The potential exposure routes are: dermal contact and incidental ingestion of contaminants in soil, groundwater and, potentially, surface water; and inhalation of contaminants in air. Ingestion of groundwater and ingestion of surface water are not complete exposure routes because surface water is saline and non-potable and groundwater meets the criteria for non-potability. Human ingestion of aquatic biota exposed to contaminants in surface water or in groundwater discharging to surface water is not a complete exposure route because the location where groundwater discharges to surface water is the industrial Sitcum Waterway where public access is restricted, and CVOC contaminants were not detected in surface water. A complete exposure pathway consists of a source of contaminants and a potential or known exposure route for contaminants to reach a current or future receptor. Pacific Crest identified the following complete or potentially complete exposure pathways that are applicable to the Site:
    - *Direct Contact and Incidental Ingestion of COPCs in Soil* – Future industrial workers, current and future temporary construction workers, and current and future Site visitors to the portion of the Site located on the former Sound Mattress Property have the potential to be exposed to COPCs (CVOCs and metals) in shallow soil.
    - *Inhalation of CVOCs in Air* – Future industrial workers, current and future temporary construction workers, and current and future Site visitors to the portion of the Site located on the former Sound Mattress Property have the potential to be exposed to CVOC in air. Metals are not volatile and do not present a human health risk due to vapor intrusion.
    - *Direct Contact and Incidental Ingestion of COPCs in Groundwater* – Groundwater is present at depths of between 4 and 10 feet bgs on the former Sound Mattress Property. Current and future temporary construction workers in a portion of the Site located on the former Sound Mattress Property have the potential to be exposed to COPCs in shallow groundwater if excavation to groundwater is conducted.

- *Protection of Surface Water* – In accordance with WAC 173-340-730(3), Method B Cleanup Levels for surface water are required to be at least as stringent as: all water quality criteria published in the water quality standards for surface waters of the State of Washington (WAC 173-201A); water quality criteria based on the protection of aquatic organisms (acute and chronic criteria) and human health published under Section 304 of the CWA, unless it can be demonstrated that such criteria are not relevant and appropriate for a specific surface water body or hazardous substance; and the National Toxics Rule (40 CFR 131). In the Opinion Letter dated November 8, 2010, Ecology approved final RI Cleanup Levels for PCE, TCE, cis-1,2-DCE, and VC in groundwater that were based on National Recommended Water Quality Criteria (Section 304 of the CWA). Due to the restrictions on public access, Section 304 of the CWA ARARs for human ingestion of aquatic biota should not be considered relevant or appropriate for portions of Sitcum Waterway. Instead, the National Toxics Rule (40 CFR 131) and Washington State water quality criteria (173-201A WAC) will be used at the appropriate ARARs for surface water.

5.4 PRELIMINARY CLEANUP LEVELS

A cleanup level is the concentration of a contaminant in a media of concern that is protective of human health and the environment under specified exposure conditions (WAC 173-340-200). The media of potential concern include: soil, groundwater, air, surface water, and sediment. Cleanup of saturated soil will be demonstrated empirically in accordance with WAC 173-340-747(9) by comparison of analytical results of groundwater samples to groundwater cleanup standards and by a demonstration that concentrations of contaminants in soil will not result in a future exceedance of a groundwater cleanup standard. The Site COCs are those COPCs detected in the media of potential concern, with the exception of saturated soil, at concentrations that exceed applicable cleanup levels. The rationale for the Preliminary Cleanup Levels calculated by Pacific Crest are presented below:

- **Cadmium** – Ecology has established a baseline natural background concentration for cadmium in soil of 1 mg/kg. The investigation results indicate that historical plating activities that were conducted on the former Sound Mattress Property appear to have resulted in cadmium in soil and groundwater at concentrations above the PSLs.

- Groundwater and Surface Water – The surface water ARAR and PSL for cadmium in groundwater is 9.3 µg/L (40 CFR 131). Dissolved concentrations of cadmium in groundwater have only been detected above the PSL in samples collected from well MW-11. The absence of detectable concentrations of cadmium in groundwater down-gradient of well MW-11 and the time period since Washington Steel ended operations at the former Sound Mattress Property (approximately 1967) indicate that geochemical conditions are not conducive to migration of cadmium in groundwater, and existing concentrations of cadmium in groundwater are unlikely to reach surface water (173-340-720(3)(b)(iv)). Direct contact and incidental ingestion of cadmium in groundwater is a plausible exposure route by temporary construction workers. The PSL (9.3 µg/L) is proposed as the Preliminary Cleanup Level that is protective of temporary construction workers and would also be protective of surface water if geochemical conditions became conducive to migration of cadmium.
- Soil – The Preliminary Cleanup Level for cadmium in soil that is calculated to not result in an exceedance of the surface water ARAR through the Soil Leaching Pathway is 1.28 mg/kg.

- **Nickel** – Ecology has established a baseline natural background concentration for nickel in soil of 48 mg/kg. The investigation results indicate that historical plating activities that were conducted on the former Sound Mattress Property appear to have resulted in nickel in soil and groundwater at concentrations above the PSLs.
  - Groundwater and Surface Water – The surface water ARAR and PSL for nickel in groundwater is 8.2 µg/L (40 CFR 131). Dissolved concentrations of nickel in groundwater have been detected above the PSL in samples collected from wells MW-11 and MW-6. Laboratory analysis also detected concentrations of nickel in all wells except MW-3 which are interpreted to be indicative of natural background conditions. Direct contact and incidental ingestion of nickel in groundwater is a plausible exposure route by temporary construction workers. The PSL (8.2 µg/L) is proposed as the Preliminary Cleanup Level that is protective of temporary construction workers and would also be protective of surface water if geochemical conditions became conducive to migration of nickel.

  - Soil –The Preliminary Cleanup Level for nickel in soil is the natural background value of 48 mg/kg.

- **Tetrachloroethene (PCE)** – PCE (C_2Cl_4) is a widely used synthetic CVOC solvent. PCE is a colorless, volatile, non-flammable, chlorinated ethene with a sweet ether-like odor. It has a low solubility in water and a high affinity for sorption to soils and organic matter. The investigation results indicate that historical metal finishing activities that were conducted on the former Sound Mattress Property resulted in PCE in soil, groundwater, and air at concentrations above the PSLs.

  - Air – In the November 8, 2010, Option Letter, Ecology approved 6.57 micrograms per cubic meter (µg/m^3) as the Cleanup Level for PCE in air. Pacific Crest proposes to use the current Method C Cleanup Level of 40 µg/m^3 as the revised Cleanup Level for PCE in air. Pacific Crest calculated a groundwater screening level of 101.5 µg/L for the VI Pathway and a soil screening level of 1.01 mg/kg that would prevent an exceedance of the groundwater screening level. The soil screening level calculations are presented in Appendix H. However, any determination that the Site air meets the cleanup standards will be based on an empirical demonstration that analytical results of air samples do not exceed cleanup levels for air.

  - Groundwater – In the Opinion Letter dated November 8, 2010, Ecology approved 3.3 µg/L as the Cleanup Level for PCE in groundwater, based on the National Recommended Water Quality Criteria (Section 304 of the CWA). Pacific Crest proposes to use the surface water ARAR (40 CFR 131) value of 8.85 µg/L as the revised Preliminary Cleanup Level for PCE in groundwater in those areas of the Site located northwest of the former Sound Mattress Property boundary where deeper groundwater discharges to surface water; and the VI Pathway value of 101.5 µg/L as the revised Preliminary Cleanup Level for PCE in groundwater for those areas of the Site located on and immediately up-gradient of the former Sound Mattress Property.

  - Soil – PCE has only been detected in soil on and up-gradient of the former Sound Mattress Property. Pacific Crest proposes to use the MTCA Method B Cleanup Level for the Soil Leaching Pathway that is calculated to not result in an

exceedance of the proposed on-property Groundwater Cleanup Level of 101.5 µg/L. The revised Soil Cleanup Level for PCE in soil is 1.01 mg/kg.

- **Trichloroethene (TCE)** – TCE (C_2HCl_3) is another widely used synthetic CVOC solvent and, under anaerobic conditions, a degradation product of PCE. TCE in soil, groundwater, and air is interpreted to be the result of bacteria mediated anaerobic degradation of PCE. The investigation results indicate that the degradation of PCE in soil has resulted in TCE in soil, groundwater, and air at concentrations above the PSLs.
    - Air – In the November 8, 2010, Option Letter, Ecology approved 1.55 µg/m^3 as the Cleanup Level for TCE in air. Pacific Crest proposes to use the current Method C Cleanup Level of 2 µg/m^3 as the revised Cleanup Level for TCE in air. Pacific Crest calculated a groundwater screening level of 8.4 µg/L for the VI Pathway and a soil screening level of 0.053 mg/kg that would not result in an exceedance of the groundwater screening level. The soil screening level calculations are presented in Appendix H. However, any determination that the Site air meets the cleanup standards will be based on an empirical demonstration that analytical results of air samples do not exceed cleanup levels for air.
    - Groundwater – In the Opinion Letter dated November 8, 2010, Ecology approved 30 µg/L as the Cleanup Level for TCE in groundwater, based on the National Recommended Water Quality Criteria (Section 304 of the CWA). Pacific Crest proposes to use the surface water ARAR (40 CFR 131) value of 81 µg/L as the revised Preliminary Cleanup Level for TCE in groundwater in those areas of the Site located northwest of the former Sound Mattress Property boundary where deeper groundwater discharges to surface water; and the VI Pathway value of 8.4 µg/L as the revised Preliminary Cleanup Level for TCE in groundwater for those areas of the Site located on and immediately up-gradient of the former Sound Mattress Property.
    - Soil –TCE has only been detected in soil on the former Sound Mattress Property. Pacific Crest proposes to use the MTCA Method B Cleanup Level for the Soil Leaching Pathway that is calculated to not result in an exceedance of the proposed on-property Groundwater Cleanup Level of 8.4 µg/L. The preliminary Soil Cleanup Level for PCE in soil is 0.053 mg/kg.

- **Cis-1,2-Dichloroethene –** Cis-1,2-DCE can form under anaerobic conditions in the environment when bacteria break down the TCE. The observed distribution of cis-1,2-DCE at the Site appears to be related to the distribution of TCE in groundwater.
    - Air – In the November 8, 2010, Option Letter, Ecology approved 122.72 µg/m^3 as the Cleanup Level for cis-1,2-DCE in air. Recent toxicological studies have resulted in the removal of cis-1,2-DCE as a potential contaminant of concern for inhalation, so Pacific Crest proposes to remove cis-1,2-DCE as a COC in air.
    - Groundwater – In the Opinion Letter dated November 8, 2010, Ecology approved 10,000 µg/L as the Cleanup Level for cis-1,2-DCE in groundwater, based on the National Recommended Water Quality Criteria (Section 304 of the CWA) value for either cis-1,2-DCE or trans-1,2-DCE. Pacific Crest proposes to continue to use the Ecology approved value of 10,000 µg/L as the Preliminary Cleanup Level for groundwater.
    - Soil – In the Opinion Letter dated November 8, 2010, Ecology approved 65 mg/kg as the Cleanup Level for cis-1,2-DCE in soil. Pacific Crest proposes to use the MTCA Method B Cleanup Level for the Soil Direct Contact (160 mg/kg) as the Preliminary Cleanup Level for soil.
- **Vinyl Chloride (VC)** – VC (H_2C=CHCl) can form under anaerobic conditions in the environment when bacteria break down cis-1,2-DCE. The observed distribution of VC at the Site appears to be related to the distribution of cis-1,2-DCE in soil and groundwater.
    - Air – In the November 8, 2010, Option Letter, Ecology approved 0.99 µg/m^3 as the Cleanup Level for VC in air. Pacific Crest proposes to use the current Method C Cleanup Level of 2.8 µg/m^3 as the revised Cleanup Level for VC in air. Pacific Crest calculated a groundwater screening level of 3.5 µg/L for the VI Pathway and a soil screening level of 0.02 mg/kg that would not result in an exceedance of the groundwater screening level. The soil screening level calculations are presented in Appendix H. However, any determination that the Site air meets the cleanup standards will be based on an empirical demonstration that analytical results of air samples do not exceed cleanup levels for air.
    - Groundwater – In the Opinion Letter dated November 8, 2010, Ecology approved 2.4 µg/L as the Cleanup Level for VC in groundwater, based on the National

Recommended Water Quality Criteria (Section 304 of the CWA). Pacific Crest proposes to use the MTCA Method C surface water value of 92.3 µg/L as the revised Preliminary Cleanup Level for VC in groundwater in those areas of the Site located northwest of the former Sound Mattress Property boundary where deeper groundwater discharges to surface water; and the VI Pathway value of 3.5 µg/L as the revised Preliminary Cleanup Level for VC in groundwater for those areas of the Site located on and immediately up-gradient of the former Sound Mattress Property.

- Soil – VC has only been detected in saturated soil on the former Sound Mattress Property. Pacific Crest proposes to use the MTCA Method B Cleanup Level for the Soil Leaching Pathway that is calculated to not result in an exceedance of the proposed on-property Groundwater Cleanup Level of 3.5 µg/L for soil. The Preliminary Soil Cleanup Level for VC in soil is 0.02 mg/kg.

6.0 CONCLUSIONS

The findings of the investigation activities conducted at the Site to complete the FS are summarized below:

- Releases of PCE and metals associated with metal finishing activities conducted in the Building, including mechanical plating, appear to be the source of CVOCs and metals in soil and groundwater at the Site. Tire service activities conducted on the Shaub-Ellison Property may also have contributed to metals in surface soil in the alley between the two properties.
- The preliminary COPCs considered in this FSI Report were: VOCs (chlorinated and non-chlorinated), metals, and cyanide. Pacific Crest reduced the list of preliminary COPCs to final COCs by comparison to natural background, PSLs, and Preliminary Cleanup Levels. On the basis of the analysis presented in this FSI Report, the Site COCs consist of: PCE, TCE, cis-1,2-DCE, VC, cadmium, and nickel.
- The extent of COCs exceeding applicable Preliminary Cleanup Levels in soil and groundwater is presented in cross-section on Figures 4 and 5 and in plan view on Figure 9.
- The majority of contaminated soils are located beneath the Building (Figure 9). Evaluation of remedial alternatives for soil will be conducted as part of the FS and is beyond the scope of this FSI Report.
- Concentrations of PCE in groundwater have generally decreased compared to previous monitoring events, indicating ongoing reductive dechlorination. During the September 2014 groundwater monitoring event, concentrations of PCE, TCE, cis-1,2-DCE, and/or VC exceeded applicable Preliminary Cleanup Levels in multiple wells (Table 3; Figure F-1 in Appendix F).
- CVOCs were not detected above their respective laboratory PQLs in surface water samples collected from the Sitcum Waterway, and elevated metals concentrations were not detected in wells MW-15 and MW-17 located adjacent to the Sitcum Waterway, indicating that surface water has not been impacted by COCs.

- Two underground vaults were located on the former Sound Mattress Property. Both vaults were observed to be in generally good condition and the FSI results do not indicate that the vaults act as potential preferential pathway for the migration of COCs.
- The data collected at the Site during the FSI and previous investigations address the Port's previous concerns and are sufficient to select final Cleanup Levels and evaluate remediation alternatives for meeting the substantive requirements of MTCA and obtaining a "No Further Action" determination from Ecology.

7.0 REFERENCES

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8.0 LIMITATIONS

The conclusions and recommendations contained in this report are based on professional opinions with regard to the subject matter. These opinions have been arrived at in accordance with currently accepted hydrogeologic and engineering standards and practices applicable to this location and are subject to the following inherent limitations:

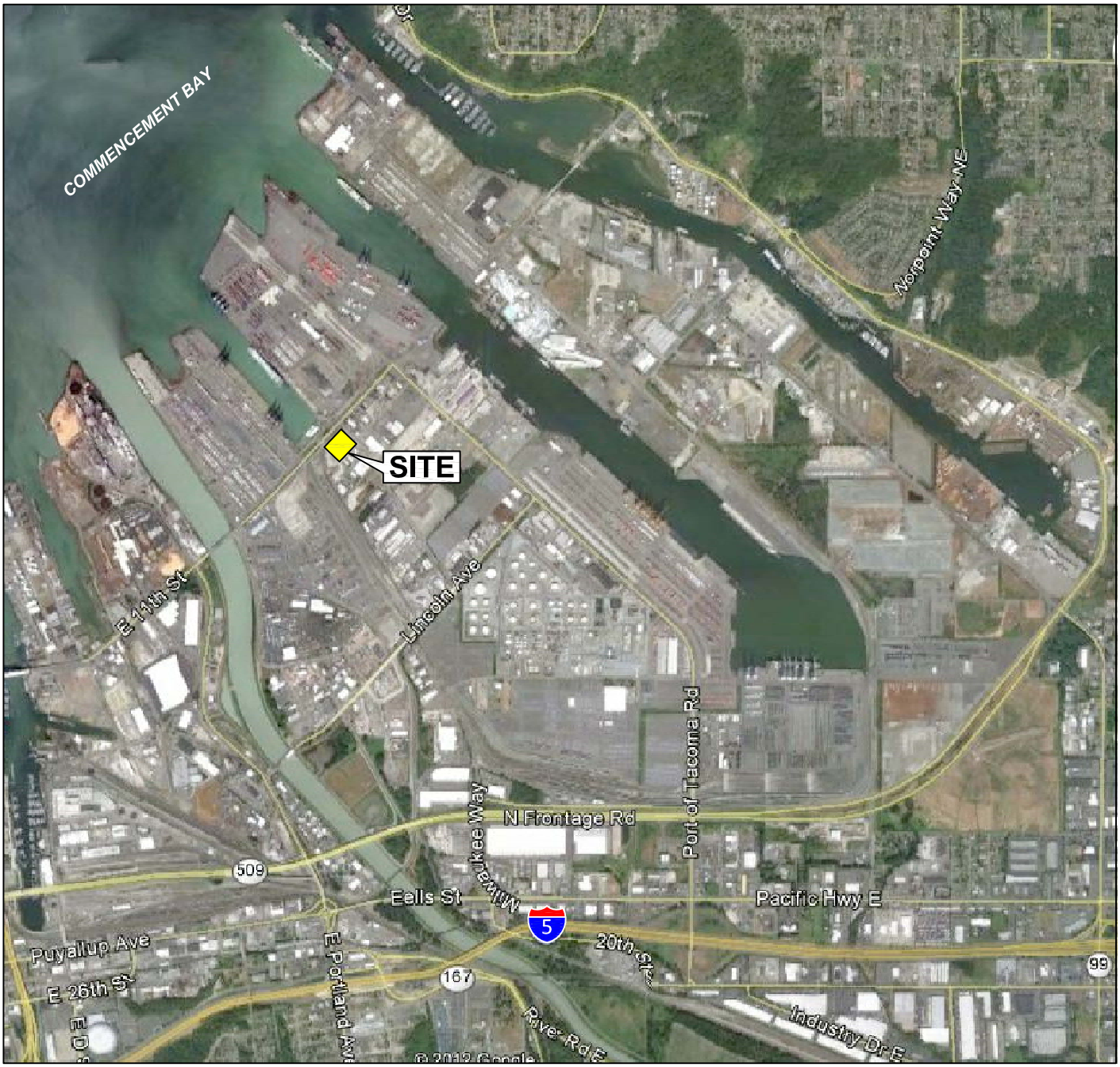
- **Accuracy of Information**. Certain information used by Pacific Crest in this report has been obtained, reviewed, and evaluated from various sources believed to be reliable. Although the conclusions, opinions, and recommendations are based in part on such information, Pacific Crest's services did not include the verification of its accuracy or authenticity. Should such information prove to be inaccurate or unreliable, Pacific Crest reserves the right to amend or revise its conclusions, opinions, and/or recommendations.

FIGURES

FURTHER INVESTIGATION REPORT

Former Sound Mattress and Felt Property
1940 East 11th Street
Tacoma, Washington

Pacific Crest PN: 110-001



N

0 1/2

Approximate Scale in Miles

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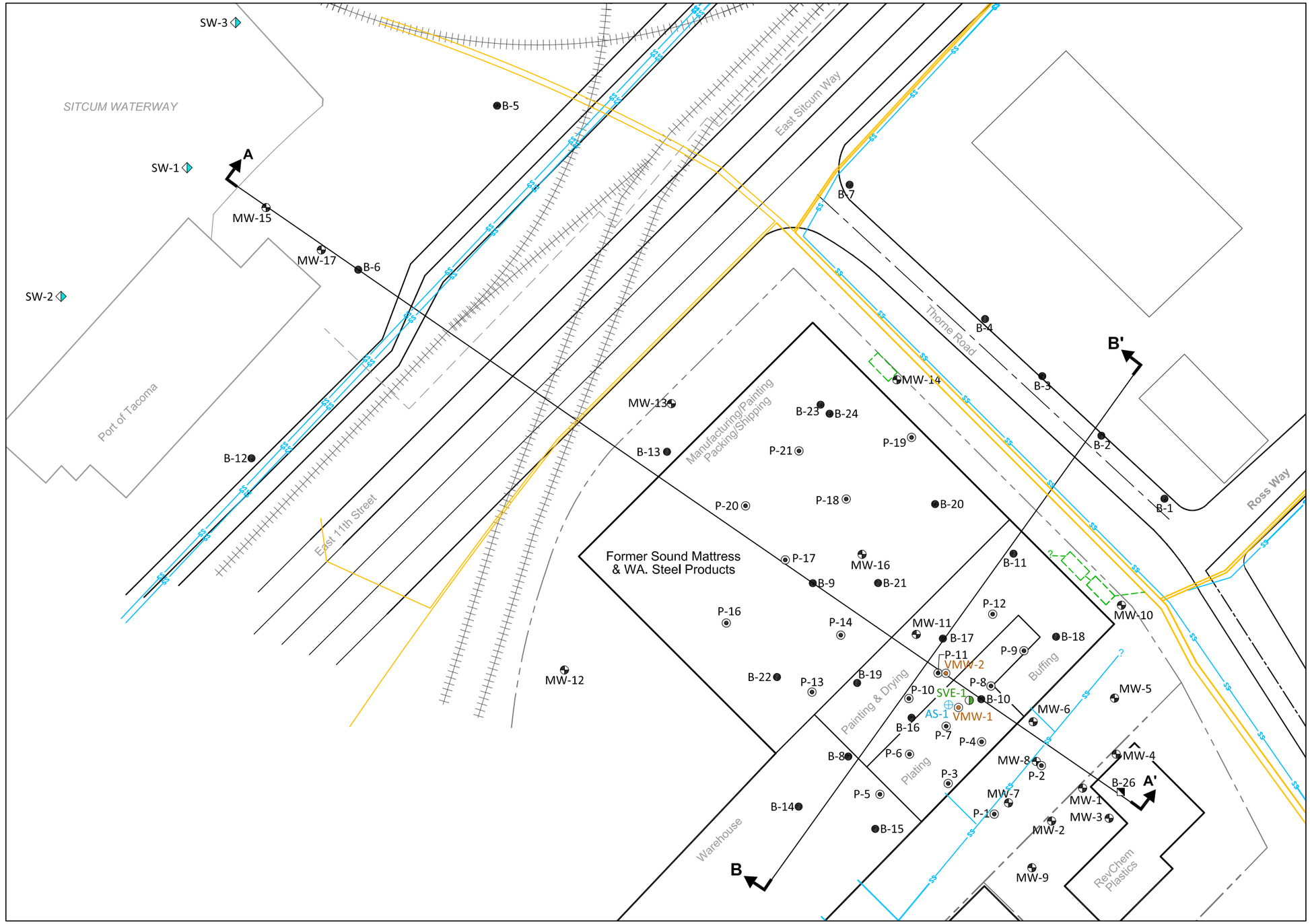
Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure 1

Site Location Map

12/11/2014 Drafting 110-001-003.dwg FIG 1



Legend

- MW-1 — Groundwater Monitoring Well
- AS-1 — Air Sparging Well
- SVE-1 — Soil Vapor Extraction Well
- VMW-1 — Vapor Monitoring Well
- P-1 — Soil Boring (Pacific Crest, 2014)
- B-1 — Soil Boring
- SW-1 — Surface Water Sample Location (Pacific Crest, 2014)
- Road
- Building
- Property Boundary
- Pre-1965 Operations
- Railroad Tracks
- SS — Sanitary Sewer
- Storm Sewer
- Potential Septic Tank Location (per Port of Tacoma)
- A-A' — Cross Section Location and Designation

N

0 80

Approximate Scale in Feet

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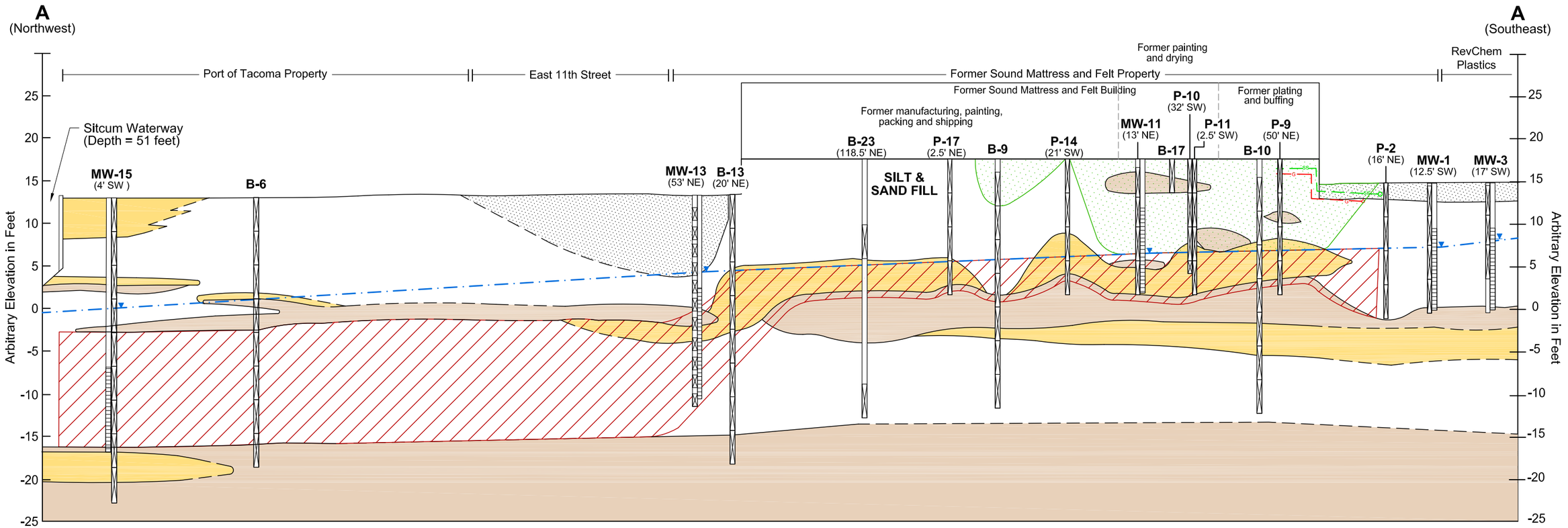
PN: 110-001

Figure 2

Site Plan

1/22/2015 Drafting 110-001-007.dwg FIG 2



Legend

- Fill
- SP, GP-SP = Sand, Gravel and Sand
- SM, GM, SM-GM = Sand Gravel or Sand and Gravel containing Silt
- ML = Silt
- Contact Between Sediment Types (Dashed Where Inferred)
- Approximate Groundwater Potentiometric Surface (9/5/2014) (tidally influenced)
- Sanitary Sewer
- Gas Line

MW-13 (X' X) Boring ID, Offset Distance & Direction

Soil Sample Interval
- Well Location
- Screened Interval
- Potentiometric Elevation in Well
- Bottom of Boring

- Estimated Extent of Groundwater with Concentrations of Site COCs Exceeding Preliminary Cleanup Levels
- Estimated Extent of undisturbed Soil with Concentrations of Site COCs Exceeding Preliminary Cleanup Levels
- COC Contaminant of Concern
- µg/L micrograms per liter
- mg/kg milligrams per kilogram

Approximate Horizontal Scale in Feet
0 60
0 12
Approximate Vertical Scale in Feet
Vertical Exaggeration x 5

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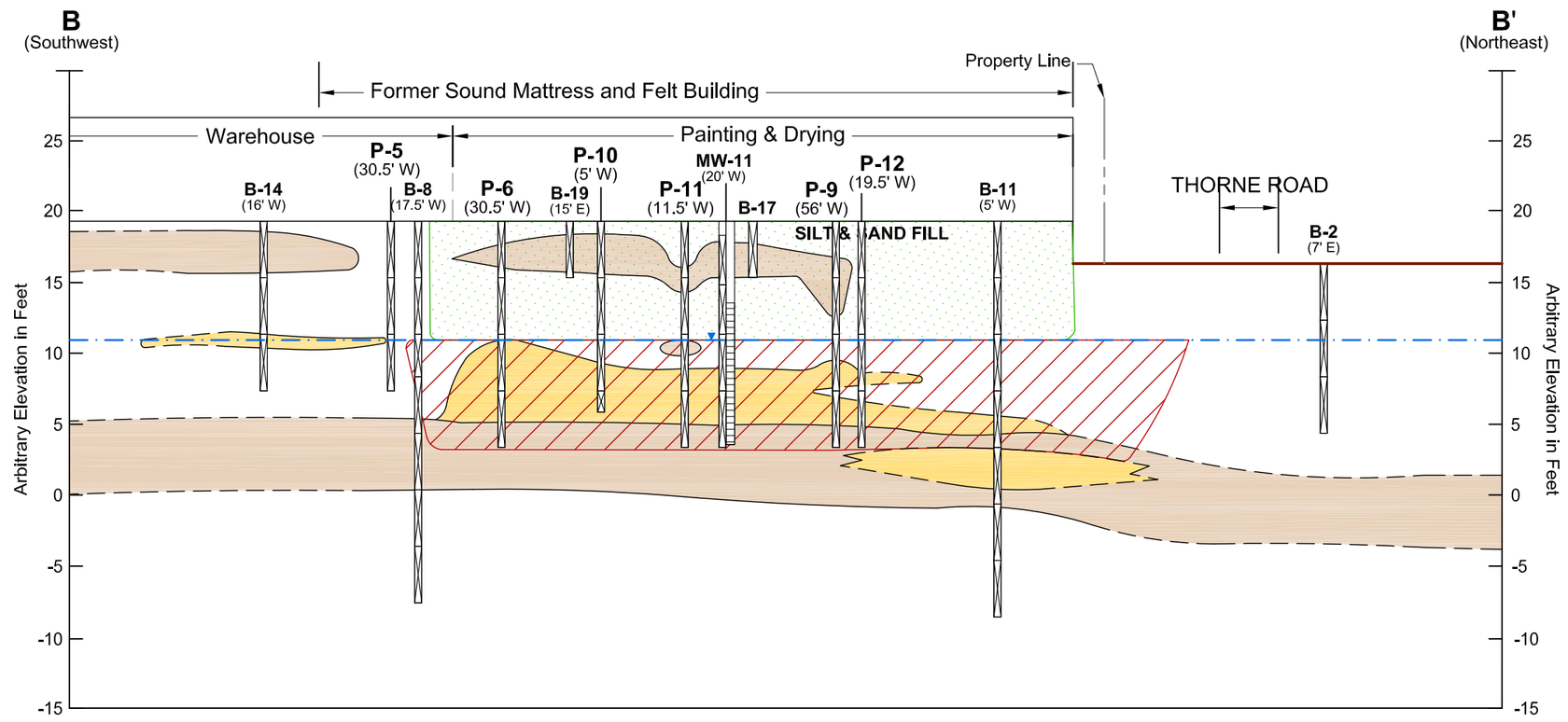
Figure 3

Cross Section A-A'

1/28/2015 Drafting 110-001-040.dwg FIG 3



Legend

- Fill
- SP, GP-SP = Sand, Gravel and Sand
- SM, GM, SM-GM = Sand Gravel or Sand and Gravel containing Silt
- ML = Silt
- Contact Between Sediment Types (Dashed Where Inferred)
- Approximate Groundwater Potentiometric Surface (9/5/2014)
- Sanitary Sewer
- Gas Line

MW-13 (X' X) Boring ID, Offset Distance & Direction

Soil Sample Interval
- Well Location
- Screened Interval
- Potentiometric Elevation in Well
- Bottom of Boring

- Estimated Extent of Groundwater with Concentrations of Site COCs Exceeding Preliminary Cleanup Levels
- Estimated Extent of undisturbed Soil with Concentrations of Site COCs Exceeding Preliminary Cleanup Levels
- COC Contaminant of Concern
- µg/L micrograms per liter
- mg/kg milligrams per kilogram

Approximate Horizontal Scale in Feet
0 50
0 10
Approximate Vertical Scale in Feet
Vertical Exaggeration x 5

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Former Sound Mattress & Felt Company
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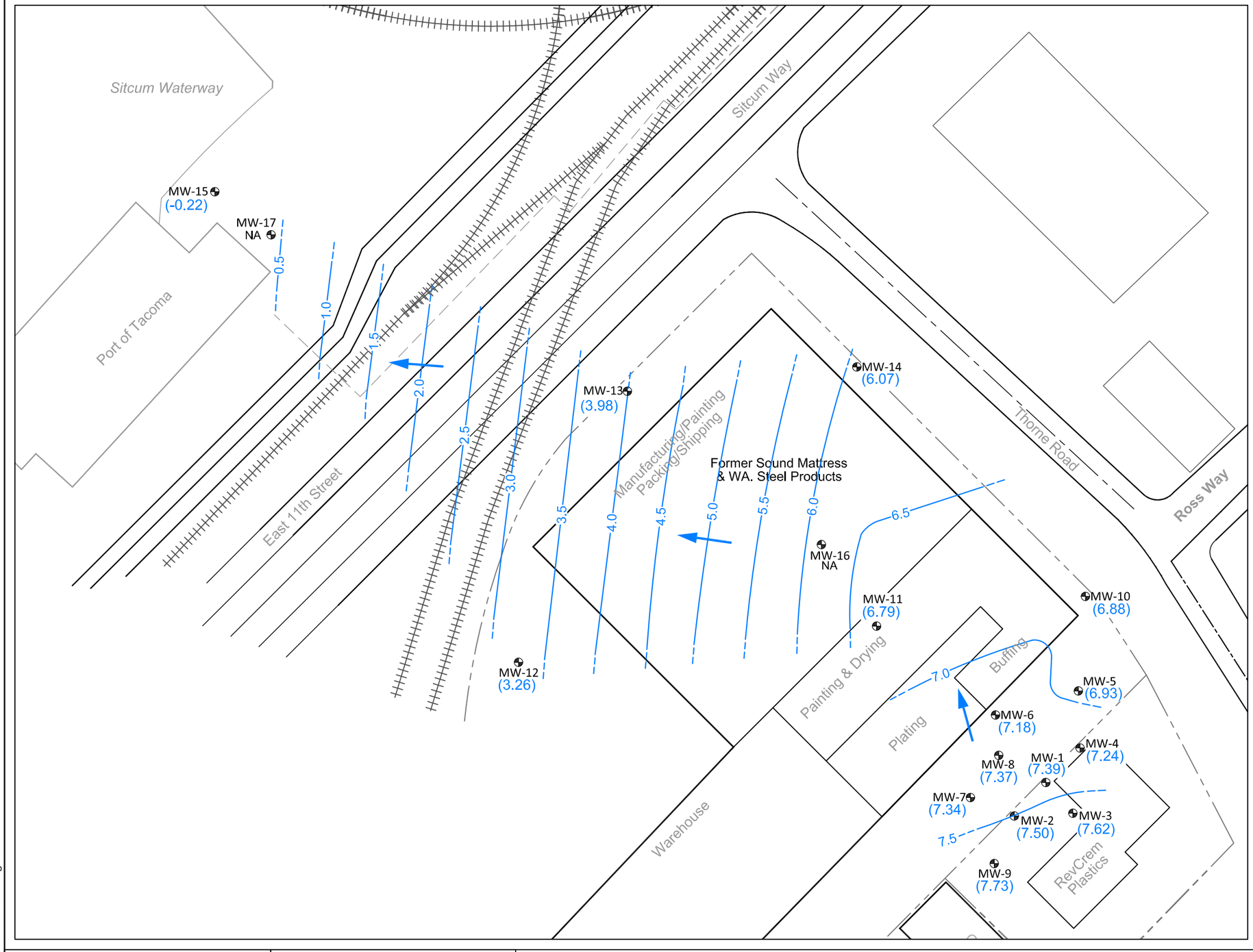
PN: 110-001

Figure 4

Cross Section B-B'

1/28/2015 Drafting 110-001-040.dwg FIG 4



Legend

MW-1	Groundwater Monitoring Well
0.5	Potentiometric Contour in Feet (contour = 0.5 feet) (dashed where inferred)
(7.39)	Groundwater Elevation (September 5, 2014)
	Apparent Direction of Groundwater Flow
NA	not available
	Road
	Building
	Property Boundary
	Pre-1965 Operations
	Railroad Tracks

N

0 80

Approximate Scale in Feet

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12/10/2014 Drafting 110-001-020.dwg FIG 3

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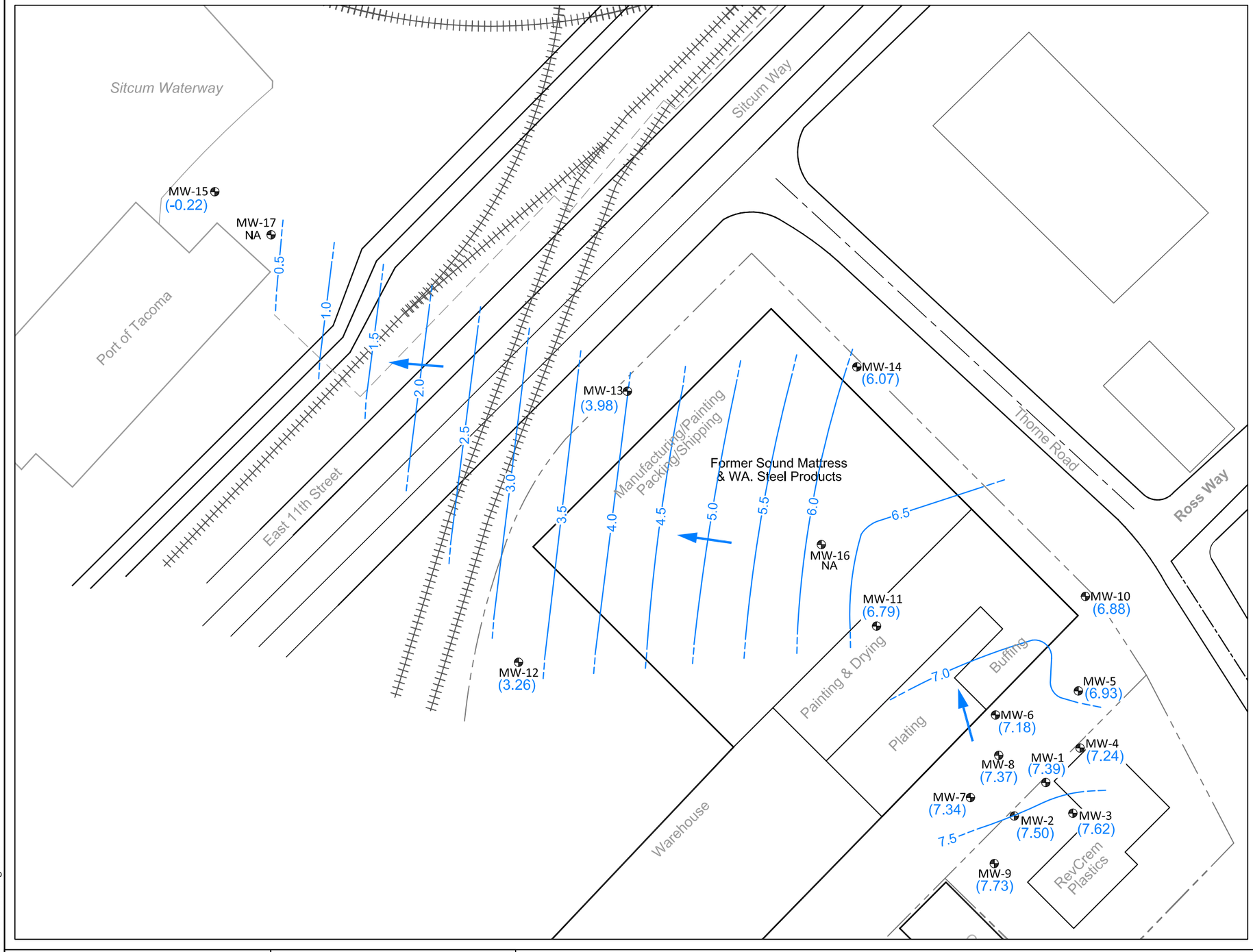
PN: 110-001

Figure 3

Site Plan with Potentiometric Surface Contours
(September 5, 2014)



Legend

MW-1	Groundwater Monitoring Well
0.5	Potentiometric Contour in Feet (contour = 0.5 feet) (dashed where inferred)
(7.39)	Groundwater Elevation (September 5, 2014)
	Apparent Direction of Groundwater Flow
NA	not available
	Road
	Building
	Property Boundary
	Pre-1965 Operations
	Railroad Tracks

N

0 80

Approximate Scale in Feet

DRAFT

1/28/2015 Drafting 110-001-020.dwg FIG 5

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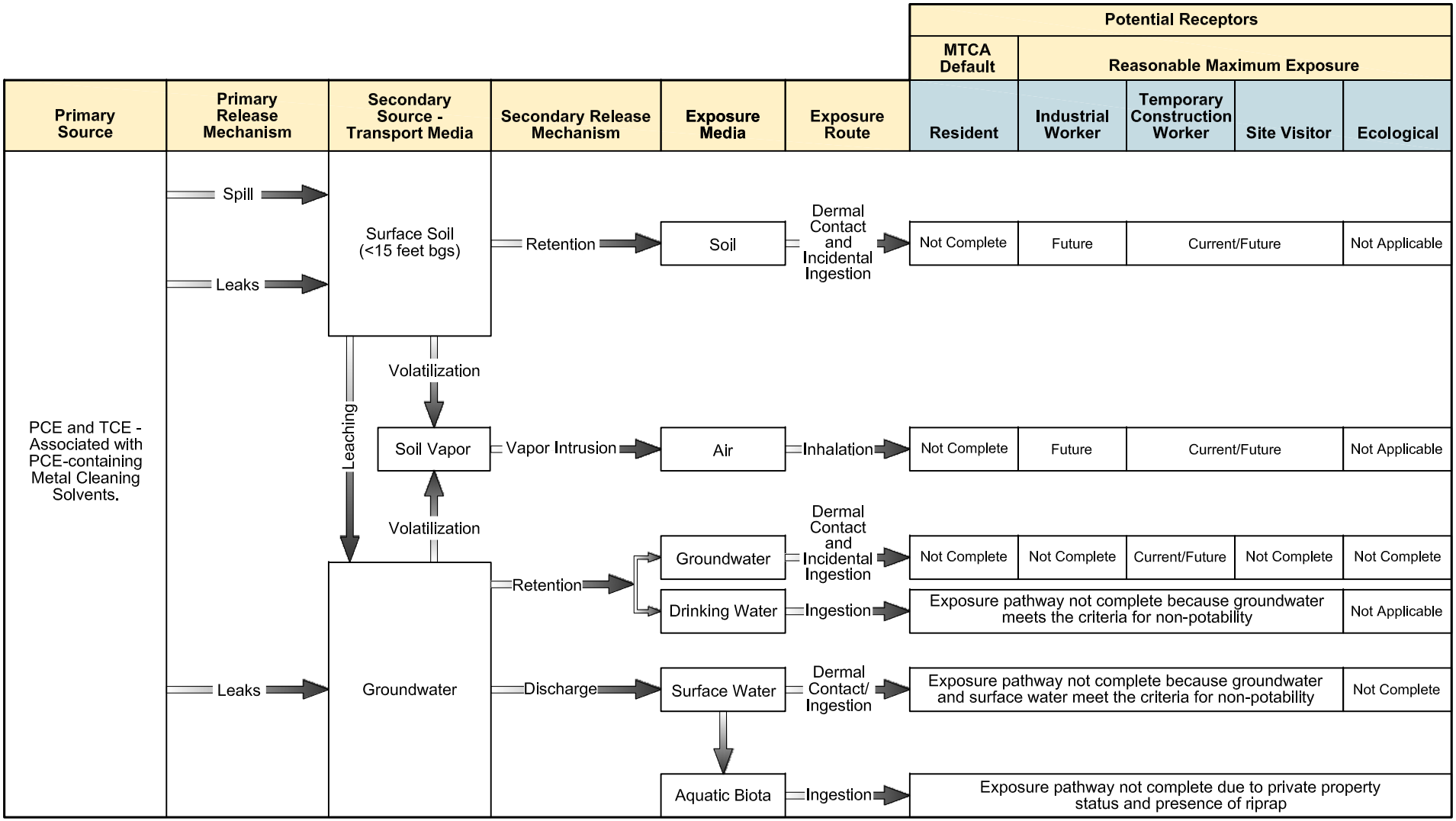
Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure 5

Site Plan with Potentiometric Surface Contours
(September 5, 2014)



Legend

PCE tetrachloroethene
TCE trichloroethene
bgs below ground surface

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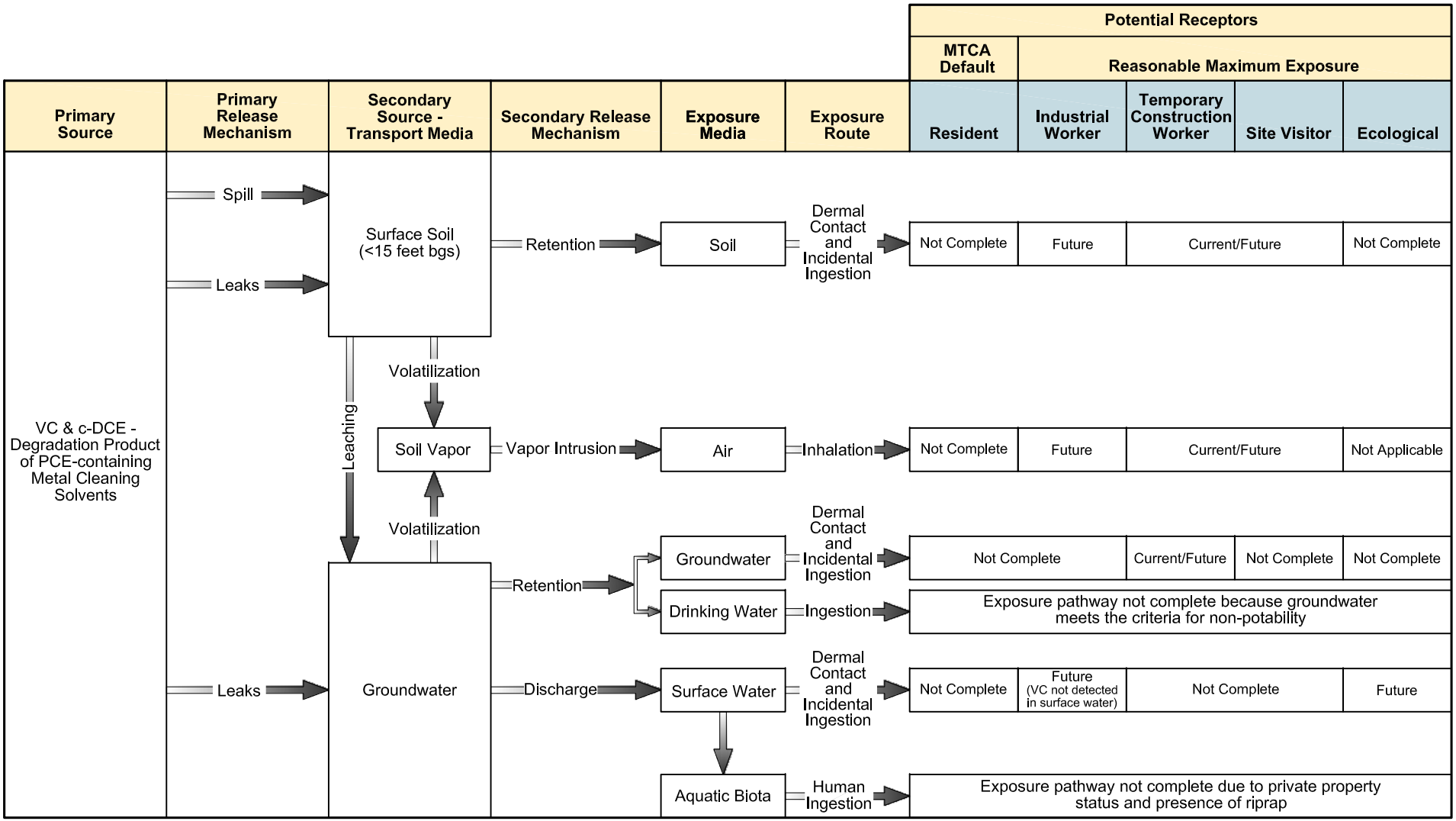
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure 6

Conceptual Site Model - PCE/TCE

1/22/2015 Drafting 110-001-038.dwg FIG 6 PCE-TCE



Legend

VC	vinyl chloride
c-DCE	cis-1,2-Dichloroethene
bgs	below ground surface

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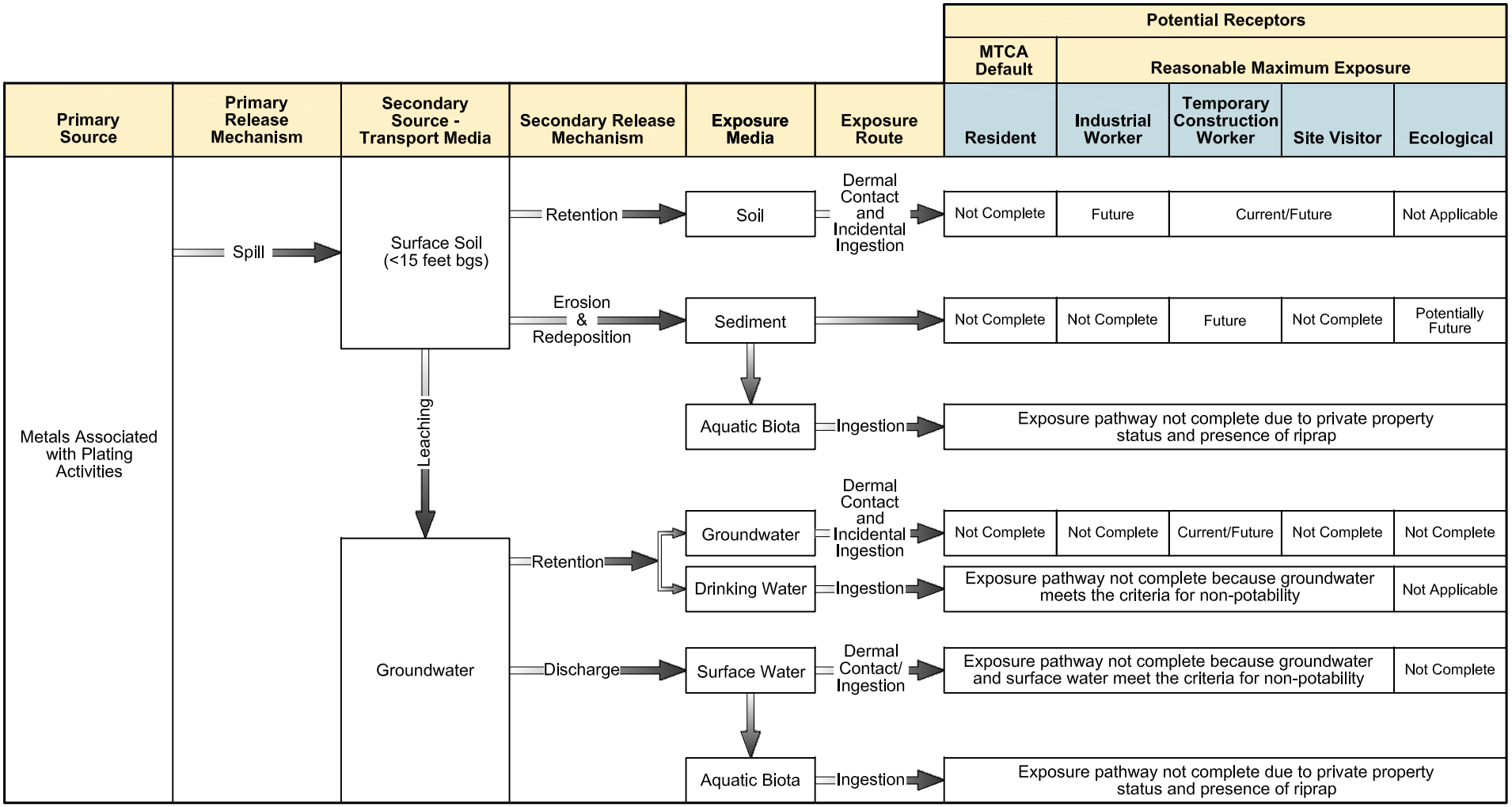
Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure 7

Conceptual Site Model - Vinyl Chloride/cis-1,2-Dichloroethene

1/22/2015 Drafting 110-001-038.dwg FIG 7 VC-c-DCE



Legend

bgs below ground surface

DRAFT

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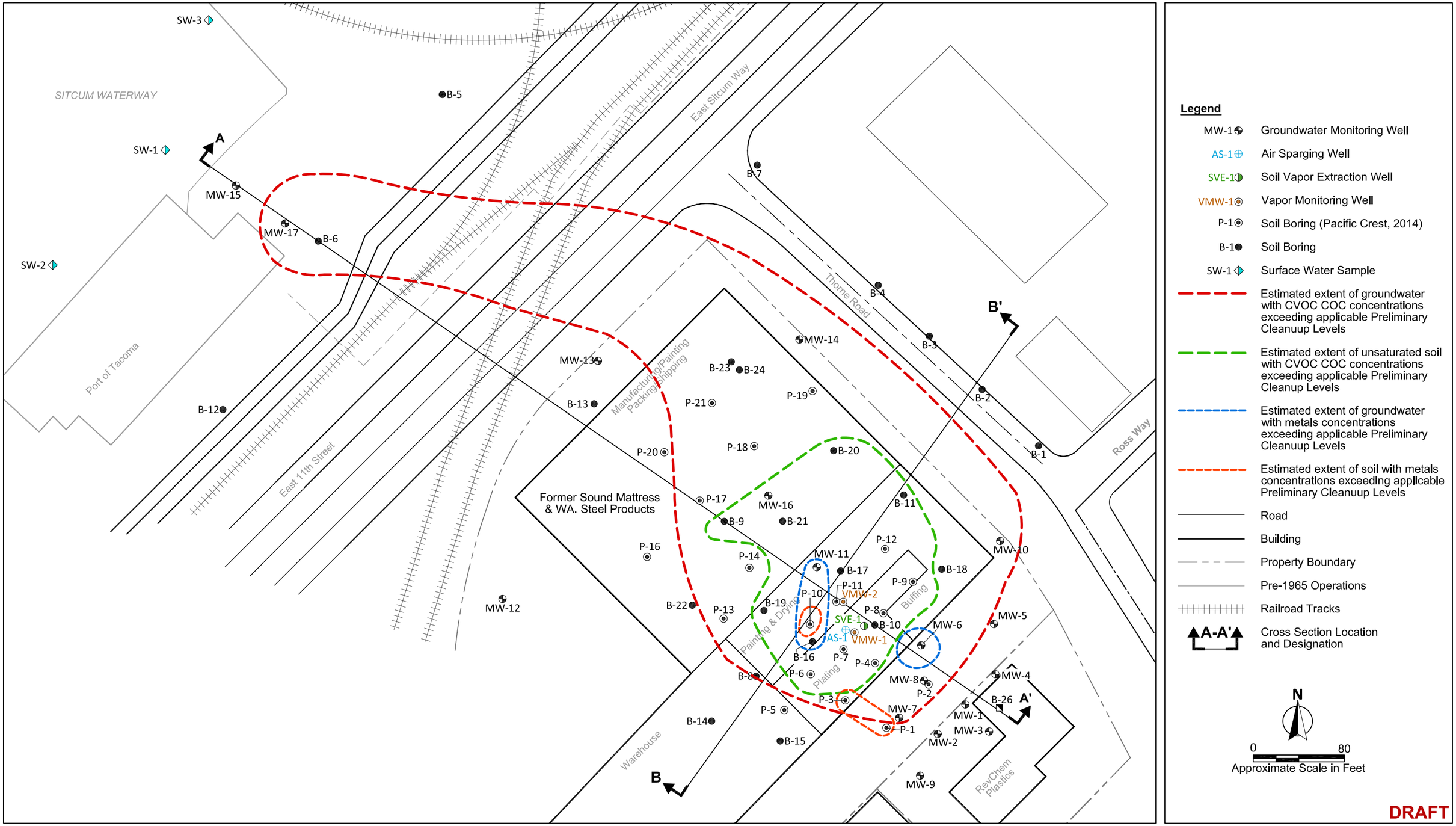
Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure 8

Conceptual Site Model - Metals

1/22/2015 Drafting 110-001-038.dwg FIG 8 Metals



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Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure 9

Site Extent

1/28/2015 Drafting 110-001-007.dwg FIG 9

TABLES

FURTHER INVESTIGATION REPORT

Former Sound Mattress and Felt Property
1940 East 11th Street
Tacoma, Washington

Pacific Crest PN: 110-001

Table 1
Groundwater Elevation Data Summary
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Well Identification	Screen Interval	Date Gauged	Collected By	Top of Casing Elevation (feet)[1]	Total Well Depth (feet)[2]	Depth to Groundwater (feet)[2]	Potentiometric Surface (feet)
MW-1	5-15	7/12/2004	EAI	15.00	--	7.76	7.24
		1/27/2005	EAI	15.00	--	7.43	7.57
		7/7/2005	LSI	15.00	--	7.54	7.46
		9/27/2005	LSI	14.94[3]	--	8.13	6.81
		2/6/2007	Pacific Crest	14.94	14.6	6.44	8.50
		11/20/2008	Pacific Crest	14.94	--	7.71	7.23
		3/10/2009	Pacific Crest	14.94	--	7.09	7.85
		6/17/2010	Pacific Crest	14.94	--	6.46	8.48
		4/10/2012	Pacific Crest	14.94	--	6.56	8.38
		9/4/2014	Pacific Crest	14.94	15.0	7.55	7.39
MW-2	5-15	7/12/2004	EAI	13.88	--	6.48	7.40
		1/27/2005	EAI	13.88	--	6.11	7.77
		7/7/2005	LSI	13.88	--	6.22	7.66
		9/27/2005	LSI	13.88	--	6.96	6.92
		2/6/2007	Pacific Crest	13.88	14.68	5.15	8.73
		11/20/2008	Pacific Crest	13.88	--	6.45	7.43
		3/10/2009	Pacific Crest	13.88	--	5.82	8.06
		6/17/2010	Pacific Crest	13.88	--	5.20	8.68
		4/10/2012	Pacific Crest	13.88	--	4.98	8.90
		9/5/2014	Pacific Crest	13.88	15.5	6.38	7.50
MW-3	5-15	7/12/2004	EAI	14.93	--	7.46	7.47
		1/27/2005	EAI	14.93	--	7.11	7.82
		7/7/2005	LSI	14.93	--	7.22	7.71
		9/27/2005	LSI	14.93	--	7.95	6.98
		2/6/2007	Pacific Crest	14.93	14.92	6.17	8.76
		11/20/2008	Pacific Crest	14.93	--	7.45	7.48
		3/10/2009	Pacific Crest	14.93	--	6.80	8.13
		6/17/2010	Pacific Crest	14.93	--	6.17	8.76
		4/10/2012	Pacific Crest	14.93	--	6.97	7.96
		9/5/2014	Pacific Crest	14.93	15.0	7.31	7.62
MW-4	5-15	7/12/2004	EAI	15.10	--	7.99	7.11
		1/27/2005	EAI	15.10	--	7.68	7.42
		7/7/2005	LSI	15.10	--	7.80	7.30
		9/27/2005	LSI	15.10	--	8.40	6.70
		2/6/2007	Pacific Crest	15.10	14.85	6.81	8.29
		11/20/2008	Pacific Crest	15.10	--	8.02	7.08
		3/10/2009	Pacific Crest	15.10	--	7.43	7.67
		6/17/2010	Pacific Crest	15.10	--	6.83	8.27
		4/10/2012	Pacific Crest	15.10	--	6.95	8.15
		9/5/2014	Pacific Crest	15.10	15.5	7.86	7.24
MW-5	5.5-15.5	1/27/2005	EAI	13.33	--	6.06	7.27
		7/7/2005	LSI	13.33	--	6.21	7.12
		9/27/2005	LSI	13.33	--	NM	--
		2/6/2007	Pacific Crest	13.33	14.58	5.45	7.88
		11/20/2008	Pacific Crest	13.33	--	NM	--
		3/10/2009	Pacific Crest	13.33	--	NM	--
		6/17/2010	Pacific Crest	13.33	--	5.36	7.97
		4/10/2012	Pacific Crest	13.33	--	5.51	7.82
		9/5/2014	Pacific Crest	13.33	15.5	6.40	6.93

Table 1
Groundwater Elevation Data Summary
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Well Identification	Screen Interval	Date Gauged	Collected By	Top of Casing Elevation (feet)[1]	Total Well Depth (feet)[2]	Depth to Groundwater (feet)[2]	Potentiometric Surface (feet)
MW-6	5.5-15.5	1/27/2005	EAI	13.51	--	6.18	7.33
		7/7/2005	LSI	13.51	--	6.29	7.22
		9/27/2005	LSI	13.51	--	NM	--
		2/6/2007	Pacific Crest	13.51	14.03	5.35	8.16
		11/20/2008	Pacific Crest	13.51	--	6.43	7.08
		3/10/2009	Pacific Crest	13.51	--	5.90	7.61
		6/17/2010	Pacific Crest	13.51	--	5.35	8.16
		4/10/2012	Pacific Crest	13.51	--	5.21	8.30
		9/5/2014	Pacific Crest	13.51	15.5	6.33	7.18
MW-7	5.5-15.5	1/27/2005	EAI	13.64	--	5.98	7.66
		7/7/2005	LSI	13.64	--	6.11	7.53
		9/27/2005	LSI	13.64	--	NM	--
		2/6/2007	Pacific Crest	13.64	14.59	5.05	8.59
		11/20/2008	Pacific Crest	13.64	--	6.23	7.41
		3/10/2009	Pacific Crest	13.64	--	4.62	9.02
		6/17/2010	Pacific Crest	13.64	--	5.09	8.55
		4/10/2012	Pacific Crest	13.64	--	4.82	8.82
		9/5/2014	Pacific Crest	13.64	15.5	6.30	7.34
MW-8	5.5-15.5	1/27/2005	EAI	13.68	--	6.18	7.50
		7/7/2005	LSI	13.68	--	6.27	7.41
		9/27/2005	LSI	13.68	--	NM	--
		2/6/2007	Pacific Crest	13.68	14.44	5.21	8.47
		11/20/2008	Pacific Crest	13.68	--	5.84	7.84
		3/10/2009	Pacific Crest	13.68	--	4.69	8.99
		6/17/2010	Pacific Crest	13.68	--	5.35	8.33
		4/10/2012	Pacific Crest	13.68	--	5.29	8.39
		9/5/2014	Pacific Crest	13.68	15.5	6.31	7.37
MW-9	5.5-15.5	9/27/2005	LSI	13.57	--	6.46	7.11
		2/6/2007	Pacific Crest	13.57	14.74	4.35	9.22
		11/20/2008	Pacific Crest	13.57	--	5.69	7.88
		3/10/2009	Pacific Crest	13.57	--	5.12	8.45
		6/17/2010	Pacific Crest	13.57	--	4.52	9.05
		4/10/2012	Pacific Crest	13.57	--	4.19	9.38
		9/5/2014	Pacific Crest	13.57	15.5	5.84	7.73
MW-10	5-15	2/6/2007	Pacific Crest	12.81	14.79	5.19	7.62
		11/20/2008	Pacific Crest	12.81	--	5.89	6.92
		3/10/2009	Pacific Crest	12.81	--	5.60	7.21
		6/17/2010	Pacific Crest	12.81	--	5.28	7.53
		4/10/2012	Pacific Crest	12.81	--	5.06	7.75
		9/5/2014	Pacific Crest	12.81	15.0	5.93	6.88
MW-11	5.8-15.8	11/20/2008	Pacific Crest	15.42	15.8	8.79	6.63
		3/10/2009	Pacific Crest	15.42	--	8.30	7.12
		6/17/2010	Pacific Crest	15.42	--	7.81	7.61
		4/10/2012	Pacific Crest	15.42	--	7.79	7.63
		9/5/2014	Pacific Crest	15.42	15.8	8.63	6.79
MW-12	10-20	3/10/2009	Pacific Crest	12.01	20.0	8.09	3.92
		6/17/2010	Pacific Crest	12.01	--	7.23	4.78
		4/10/2012	Pacific Crest	12.01	--	7.91	4.10
		9/5/2014	Pacific Crest	12.01	--	8.75	3.26

Table 1
Groundwater Elevation Data Summary
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Well Identification	Screen Interval	Date Gauged	Collected By	Top of Casing Elevation (feet)[1]	Total Well Depth (feet)[2]	Depth to Groundwater (feet)[2]	Potentiometric Surface (feet)
MW-13	10-20	3/10/2009	Pacific Crest	12.90	20.0	9.22	3.68
		6/17/2010	Pacific Crest	12.90	--	7.70	5.2
		4/10/2012	Pacific Crest	12.90	--	7.95	4.95
		9/5/2014	Pacific Crest	12.90	--	8.92	3.98
MW-14	6-11	3/10/2009	Pacific Crest	12.34	11.0	5.80	6.54
		6/17/2010	Pacific Crest	12.34	--	5.52	6.82
		4.10/12	Pacific Crest	12.34	--	5.31	7.03
		9/5/2014	Pacific Crest	12.34	--	6.27	6.07
MW-15	20-30	6/15-6/16/2010[4]	Pacific Crest	12.76	30.0	10.11	2.65
		4/10/2012	Pacific Crest	12.76	--	14.40	-1.64
		9/17/2012	Pacific Crest	12.76	--	7.35	5.41
		9/21/2012	Pacific Crest	12.76	--	9.88	2.88
		10/4/2012	Pacific Crest	12.76	--	9.95	2.81
		11/27/2012	Pacific Crest	12.76	--	6.84	5.92
		9/5/2014	Pacific Crest	12.76	30.0	12.98	-0.22
MW-16	3-13	9/5/2014	Pacific Crest	-	13.0	9.12	-
MW-17	20-28.8	9/9/2012	Pacific Crest	-	--	--	-
		9/17/2012	Pacific Crest	-	--	8.02	-
		9/21/2012	Pacific Crest	-	--	9.06	-
		10/4/2012	Pacific Crest	-	--	8.19	-
		11/27/2012	Pacific Crest	-	--	6.97	-
		9/5/2014	Pacific Crest	-	28.8	11.86	-

NOTES:

[1] Elevations are relative to an arbitrary Site benchmark

[2] Depth below top of well casing.

[3] MW-1 casing was repaired and resurveyed.

[4] Depth to groundwater calculated by averaging depths to water measured with pressure transducer.

— = not available

NM = Not Measured

EAI = Environmental Associates, Inc.

LSI = LSI Adapt

Pacific Crest = Pacific Crest Environmental, LLC

Table 2
Groundwater Quality Parameter Summary
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Measured By	Sample Date	Groundwater Quality Parameters				
				Temperature (°C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential (mV)
MW-1	MW-1	LSI	7/7/2005	17.6	-	1.73	7.37	-21.4
	MW-1	LSI	9/27/2005	18.2	-	-	7.36	-33.9
	MW1-020707[1]	Pacific Crest	2/7/2007	12.46	36.23	2.38	7.49	13.6
	MW1-112008[2]	Pacific Crest	11/20/2008	15.04	0.367	0.66	7.1	-151.2
	MW1-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW1-090414	Pacific Crest	9/4/2014	19.71	0.246	1.35	6.03	32.7
MW-2	MW-2	LSI	7/7/2005	17.8	-	1.5	7.19	-11.2
	MW-2	LSI	9/27/2005	18.5	-	-	7.19	-24.2
	MW2-020707[1]	Pacific Crest	2/7/2007	12.4	29.09	2.52	7.25	53.9
	MW2-112008[2]	Pacific Crest	11/20/2008	14.88	0.287	0.99	6.82	-98.1
	MW2-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW2-090514	Pacific Crest	9/5/2014	19.46	0.238	1.13	6.16	29.2
MW-3	MW-3	LSI	7/7/2005	16.7	-	1.54	7.12	-7.8
	MW3-020707[1]	Pacific Crest	2/7/2007	12.42	32.95	1.49	7.43	-40.6
	MW3-112108[2]	Pacific Crest	11/21/2008	15.25	0.341	0.17	7.25	-171.5
	MW3-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW3-090814	Pacific Crest	9/8/2014	17.11	0.220	0.11	6.41	40.3
MW-4	MW-4	LSI	7/7/2005	15	-	1.53	7.25	-13.8
	MW4-020707[1]	Pacific Crest	2/7/2007	12.97	35.64	0.65	7.56	12.3
	MW4-112008[2]	Pacific Crest	11/20/2008	15.08	0.34	0.45	7.02	-153.2
	MW4-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW4-090414	Pacific Crest	9/4/2014	17.37	0.239	1.26	6.03	43.4
MW-5	MW-5	LSI	7/7/2005	17.3	-	1.51	7.5	-28.9
	MW-5[3]	EMS	7/7/2005	17.1	-	1.48	7.53	-30.7
	MW5-020707[1]	Pacific Crest	2/7/2007	12.05	37.38	0.91	7.69	-71.4
	MW5-112108[2]	Pacific Crest	11/21/2008	14.38	0.391	5.43	7.88	-176.7
	MW5-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW5-090414	Pacific Crest	9/4/2014	19.83	0.195	4.00	6.37	28.9
MW-6	MW-6	LSI	7/7/2005	17.2	-	1.21	7.68	-39.8
	MW-6[3]	EMS	7/7/2005	17.2	-	1.21	7.68	-39.8
	MW6-020707[1]	Pacific Crest	2/7/2007	12.09	33.79	0.51	7.77	-9.7
	MW6-112108[2]	Pacific Crest	11/21/2008	14.75	0.28	0.7	7.82	-138.4
	MW6-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW6-090414	Pacific Crest	9/4/2014	19.11	0.261	0.66	6.30	21.5
MW-7	MW-7	LSI	7/7/2005	17.3	-	1.22	7.8	-45.6
	MW-7[3]	EMS	7/7/2005	17.3	-	1.22	7.8	-45.6
	MW7-020707[1]	Pacific Crest	2/7/2007	11.67	34.69	1.48	7.56	10.2
	MW7-112008[2]	Pacific Crest	11/20/2008	14.53	0.311	0.58	7.32	-121.3
	MW7-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW7-090414	Pacific Crest	9/4/2014	21.42	0.291	0.97	6.09	14.8
MW-8	MW-8	LSI	7/7/2005	16.9	-	1.1	7.12	-7.7
	MW-8[3]	EMS	7/7/2005	16.9	-	1.1	7.12	-7.7
	MW8-020607[1]	Pacific Crest	2/6/2007	11.99	31.2	1.41	7.25	-89.8
	MW8-112408-B[2]	Pacific Crest	11/24/2008	14	0.391	1.35	7.24	-64.2
	MW8-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW8-090414	Pacific Crest	9/4/2014	17.41	0.282	1.95	5.72	44.6

Table 2
Groundwater Quality Parameter Summary
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Measured By	Sample Date	Groundwater Quality Parameters				
				Temperature (°C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential (mV)
MW-9	MW-9	LSI	9/27/2005	17.5	--	-	6.92	-9.6
	MW9-112108	Pacific Crest	11/21/2008	14.63	0.26	0.35	6.77	-159.7
	MW9-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW9-090514	Pacific Crest	9/5/2014	19.65	0.211	-0.26	6.06	29.9
MW-10	MW10-020707[1]	Pacific Crest	2/7/2007	9.36	10.67	3.3	7.27	39.5
	MW10-112108[2]	Pacific Crest	11/21/2008	12.63	0.094	2.22	6.81	-69.1
	MW10-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW10-090814	Pacific Crest	9/8/2014	16.69	0.218	0.24	6.21	270
MW-11	MW11-112108[2]	Pacific Crest	11/21/2008	12.9	0.457	0.2	7.12	-121.7
	MW11-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW11-090514	Pacific Crest	9/5/2014	16.14	0.288	1.44	6.09	26.9
MW-12	MW12-031009[2]	Pacific Crest	3/10/2009	13.10	0.788	0.18	6.64	-75.3
	MW12-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW12-090514	Pacific Crest	9/8/2014	16.73	0.587	1.76	6.05	5.7
MW-13	MW13-031009[2]	Pacific Crest	3/10/2009	11.05	3.478	0.72	6.19	113.4
	MW13-090814	Pacific Crest	9/8/2014	18.40	3.211	1.34	5.98	31.9
MW-14	MW14-031009[2]	Pacific Crest	3/10/2009	8.50	0.750	3.46	7.44	36.9
	MW14-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	MW14-090814	Pacific Crest	9/8/2014	16.22	0.565	1.68	6.21	39.2
MW-15	MW15-0617102	Pacific Crest	6/17/2010	13.1	5.083	0.48	7.22	-172.3
	MW15-041012	Pacific Crest	4/10/2012	NA[4]	NA[4]	NA[4]	NA[4]	NA[4]
	NA	Pacific Crest	9/17/2012	14.6	4.799	0.99	7.42	-122.2
	NA	Pacific Crest	9/21/2012	14.76	5.274	1.03	7.48	-129.8
	MW-15-110-001	Pacific Crest	10/4/2012	16.99	4.731	0.92	7.17	-117.4
	MW-15-112712	Pacific Crest	11/27/2012	13.3	5.135	0.9	7.37	-110.8
	MW15-090514	Pacific Crest	9/5/2014	15.42	8.213	2.01	7.05	-61.4
MW-16	MW16-090514	Pacific Crest	9/5/2014	15.99	0.460	1.92	6.89	45.5
MW-17	MW17	Pacific Crest	9/9/2012	17	4.773	1.06	6.9	-107.1
	NA	Pacific Crest	9/17/2012	18.15	11.677	1.62	7.59	-91.4
	NA	Pacific Crest	9/21/2012	14.79	10.680	1.47	7.61	-98.5
	MW-17-110-001	Pacific Crest	10/4/2012	15.28	12.907	1.06	7.51	-100
	MW-17-112712	Pacific Crest	11/27/2012	13.7	12.399	0.87	7.91	-121.7
	MW17-090514	Pacific Crest	9/5/2014	14.95	7.165	1.21	6.92	-100
B-5	B5-12-052510[2]	Pacific Crest	5/25/2010	14.45	38.345	0.57	7.24	-131.7
	B5-26-052510[2]	Pacific Crest	5/25/2010	14.24	24.411	0.35	7.78	-271.1
B-6	B6-12-052510[2]	Pacific Crest	5/25/2010	13.15	21.788	1.77	7.60	-56.4
	B6-30-052510[2]	Pacific Crest	5/25/2010	14.79	6.264	0.44	7.36	-200.0
B-7	B7-12-052510[2]	Pacific Crest	5/25/2010	13.51	4.676	0.66	7.35	26.8
	B7-30-052510[2]	Pacific Crest	5/25/2010	13.87	5.294	0.70	7.93	-105.6
B-8	B8-15-052610[2]	Pacific Crest	5/26/2010	13.30	0.343	0.59	8.14	-109.8
	B8-27-052610[2]	Pacific Crest	5/26/2010	13.83	1.951	0.46	8.16	-208.4
B-9	B9-15-052610[2]	Pacific Crest	5/26/2010	13.60	0.561	0.40	7.47	-108.5

Table 2
Groundwater Quality Parameter Summary
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Measured By	Sample Date	Groundwater Quality Parameters				
				Temperature (°C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential (mV)
B-9	B9-27-052610[2]	Pacific Crest	5/26/2010	13.85	2.381	0.39	8.27	-200.4

Table 2
Groundwater Quality Parameter Summary
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Measured By	Sample Date	Groundwater Quality Parameters				
				Temperature (°C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential (mV)
B-10	B10-16-052610[2]	Pacific Crest	5/26/2010	13.45	0.408	0.71	7.73	-77.5
	B10-28-052610[2]	Pacific Crest	5/26/2010	13.78	2.941	0.57	7.98	-190.2
B-11	B11-16-052610[2]	Pacific Crest	5/26/2010	13.98	0.548	0.58	8.08	-62.0
	B11-28-052610[2]	Pacific Crest	5/26/2010	14.29	2.898	0.54	7.88	-191.9
B-12	B12-10-061610[2]	Pacific Crest	6/16/2010	13.61	0.643	1.86	7.13	-7.4
	B12-28-061610[2]	Pacific Crest	6/16/2010	13.99	1.024	0.56	7.35	-134.2
B-13	B13-28-061610[2]	Pacific Crest	6/16/2010	14.85	3.148	0.44	8.26	-177.9

NOTES:

[1] Measurements by YSI 600 XL Water Analyzer

[2] Measurements by YSI 566 MPS

[3] Split samples collected by EMS

[4] Data unavailable (passive diffusion bags used)

C = celsius

mS/cm = millisiemen per centimeter

mg/L = milligrams per liter

mV = millivolts

- = not reported

EMS = Environmental Management Services

LSI = LSI Adapt

Pacific Crest = Pacific Crest Environmental, LLC

Table 3
Groundwater Analytical Results Summary - VOCs
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Sampled By	Sample Date	Groundwater Analytical Results (micrograms per liter)						
				VOCs[1]						
				Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1-Trichloroethane	1,1-Dichloroethane
MW-1	MW-1	EAI	7/12/2004	**4.1**	<1.0	<1.0	<1.0	<1.0	NA	NA
	MW-1	EAI	1/24/2005	**6.2**	<1.0	<1.0	<1.0	<5.0	NA	NA
	MW-1	LSI	7/7/2005	**13**	0.69	<0.20	<0.20	<0.20	<0.20	<0.20
	MW-1	LSI	9/27/2005	**6.6**	0.48	<0.20	<0.20	<0.20	<0.20	<0.20
	MW1-020707	Pacific Crest	2/7/2007	**37**	1.2	<0.20	<0.20	<0.20	<0.20	<0.20
	MW1-112008	Pacific Crest	11/20/2008	**11**	2.1	0.35	<0.20	<0.20	<0.20	<0.20
	MW1-042512	Pacific Crest	4/25/2012	**63**	1.2	<0.50	<0.50	<0.50	NA	NA
	MW1-090414	Pacific Crest	9/4/2014	**11**	0.53	<0.20	<0.20	<0.20	<0.20	<0.20
MW-2	MW-2	EAI	7/12/2004	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA
	MW-2	EAI	1/24/2005	**9.9**	3.5	3.2	<1.0	<5.0	NA	NA
	MW-2	LSI	7/7/2005	**29**	4.5	1.3	0.26	<0.20	<0.20	<0.20
	MW-2	LSI	9/27/2005	**23**	4.2	2.4	0.58	<0.20	<0.20	<0.20
	MW2-020707	Pacific Crest	2/7/2007	**72**	4.4	0.75	<0.40	<0.40	<0.40	<0.40
	MW2-112008	Pacific Crest	11/20/2008	**30**	3.8	1.6	0.33	<0.20	<0.20	<0.20
	MW2-042512	Pacific Crest	4/25/2012	**89**	4.3	<0.50	<0.50	<0.50	NA	NA
	MW2-090514	Pacific Crest	9/5/2014	**21**	3.4	6.1	0.27	<0.20	<0.20	<0.20
MW-3	MW-3	EAI	7/12/2004	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA
	MW-3	EAI	1/24/2005	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA
	MW-3	LSI	7/7/2005	1.9	<0.20	<0.20	<0.20	<0.20	<0.20	0.35
	MW-3	LSI	9/27/2005	NA	NA	NA	NA	NA	NA	NA
	MW3-020707	Pacific Crest	2/7/2007	2.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	MW3-112108	Pacific Crest	11/21/2008	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.45
	MW3-042512	Pacific Crest	4/25/2012	2.1	<0.50	<0.50	<0.50	<0.50	NA	NA
	MW3-090814	Pacific Crest	9/8/2014	0.33	1	1.4	<0.20	<0.20	<0.20	<0.20
MW-4	B25 (MW-4)	EAI	7/12/2004	1	<1.0	<1.0	<1.0	<1.0	NA	NA
	MW-4	EAI	1/24/2005	1.6	<1.0	<1.0	<1.0	<5.0	NA	NA
	MW-4	LSI	7/7/2005	2.7	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	MW-4	LSI	9/27/2005	NA	NA	NA	NA	NA	NA	NA
	MW4-020707	Pacific Crest	2/7/2007	**4.9**	0.36	<0.20	<0.20	<0.20	<0.20	0.2
	MW4-112008	Pacific Crest	11/20/2008	0.84	1.2	<0.20	<0.20	<0.20	<0.20	<0.20
	MW4-042512	Pacific Crest	4/25/2012	3.4	2.6	0.58	<0.50	<0.50	NA	NA
	MW4-090414	Pacific Crest	9/4/2014	1.2	0.52	0.6	<0.20	<0.20	<0.20	0.21
MW-5	MW-5	EAI	1/27/2005	1.9	0.57	0.29	0.2	<0.20	<0.20	<0.20
	MW-5[3]	EMS	1/27/2005	1.8	<1.0	<1.0	<1.0	<0.2	<1.0	<1.0
	MW-5	LSI	7/7/2005	6	0.82	<0.20	<0.20	<0.20	<0.20	<0.20
	MW-5[3]	EMS	7/7/2005	**5.9**	1	<1.0	<1.0	<0.20	<1.0	<1.0
	MW-5	LSI	9/27/2005	NA	NA	NA	NA	NA	NA	NA
	MW5-020707	Pacific Crest	2/7/2007	**9.8**	1.6	0.22	<0.20	<0.20	<0.20	<0.20
	MW5-112108	Pacific Crest	11/21/2008	3	0.46	<0.20	<0.20	<0.20	<0.20	<0.20
	MW5-042512	Pacific Crest	4/25/2012	<0.50	6.1	6.7	<0.50	<0.50	NA	NA
	MW5-090414	Pacific Crest	9/4/2014	**5.4**	2.1	5.2	<0.20	<0.20	<0.20	<0.20
MW-6	MW-6	EAI	1/27/2005	**53**	12	**75**	6.9	0.63	<0.40	<0.40
	MW-6	LSI	7/7/2005	**11**	2.3	**91**	9.1	1.3	<0.40	<0.40
	MW-6[3]	EMS	7/7/2005	**9.7**	2.8	**64**	5.7	0.48	<1.0	<1.0
	MW-6	LSI	9/27/2005	NA	NA	NA	NA	NA	NA	NA
	MW6-020707	Pacific Crest	2/7/2007	**67**	7	**110**	7.5	**6**	<1.0	<1.0
	MW6-112108	Pacific Crest	11/21/2008	**45**	6.5	**91**	4.2	1.2	<0.40	<0.40
	MW6-042512	Pacific Crest	4/25/2012	**100**	**9.6**	13	<0.50	<0.50	NA	NA
	MW6-090414	Pacific Crest	9/4/2014	**40**	**13**	**76**	4.7	1.8	<0.40	<0.40

Table 3
Groundwater Analytical Results Summary - VOCs
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Sampled By	Sample Date	Groundwater Analytical Results (micrograms per liter)						
				VOCs[1]						
				Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1-Trichloroethane	1,1-Dichloroethane
MW-7	MW-7	EAI	1/27/2005	3.3	0.93	3.8	0.95	<0.20	<0.20	<0.20
	MW-7[3]	EMS	1/27/2005	2.7	<1.0	2.8	<1.0	<0.2	<1.0	<1.0
	MW-7	LSI	7/7/2005	**33**	3.1	2.8	0.96	<0.20	<0.20	<0.20
	MW-7[3]	EMS	7/7/2005	**27**	3.1	2.3	<1.0	<0.2	<1.0	<1.0
	MW-7	LSI	9/27/2005	NA	NA	NA	NA	NA	NA	NA
	MW7-020707	Pacific Crest	2/7/2007	**140**	**12**	3.3	<1.0	<1.0	<1.0	<1.0
	MW7-112008	Pacific Crest	11/20/2008	**24**	**11**	8.4	1.2	<0.20	<0.20	<0.20
	MW7-042512	Pacific Crest	4/25/2012	**77**	7	2.8	<0.50	<0.50	NA	NA
	MW7-090414	Pacific Crest	9/4/2014	1.2	5.3	45	0.26	<0.20	<0.20	<0.20
MW-8	MW-8	EAI	1/27/2005	**21**	3.9	15	1.8	<0.20	<0.20	<0.20
	MW-8	LSI	7/7/2005	**100**	6.6	10	1.4	<0.20	<0.40	<0.40
	MW-8[3]	EMS	7/7/2005	**79**	7.4	7.5	1.2	<0.2	<1.0	<1.0
	MW-8	LSI	9/27/2005	NA	NA	NA	NA	NA	NA	NA
	MW8-020607	Pacific Crest	2/6/2007	**83**	**15**	**24**	1.6	<0.40	<0.40	<0.40
	MW8-112408-B	Pacific Crest	11/24/2008	<0.20	0.3	**24**	2.1	<0.20	<0.20	<0.20
	MW8-042512	Pacific Crest	4/25/2012	<0.50	0.69	5.3	<0.50	<0.50	NA	NA
	MW8-090414	Pacific Crest	9/4/2014	**10**	6.1	**22**	0.91	<0.20	<0.20	<0.20
MW-9	MW-9	LSI	7/7/2005	**13**	0.69	<0.20	<0.20	<0.20	<0.20	<0.20
	MW-9	LSI	9/27/2005	0.56	0.24	<0.20	<0.20	<0.20	<0.20	<0.20
	MW9-112108	Pacific Crest	11/21/2008	0.91	0.31	<0.20	<0.20	<0.20	<0.20	<0.20
	MW9-042512	Pacific Crest	4/25/2012	<0.50	<0.50	<0.50	<0.50	<0.50	NA	NA
	MW9-090514	Pacific Crest	9/5/2014	0.57	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
MW-10	MW-10	LSI	9/27/2005	**6.2**	0.46	<0.20	<0.20	<0.20	<0.20	<0.20
	MW10-020707	Pacific Crest	2/7/2007	**26**	2	**19**	0.23	**3.3**	<0.20	<0.20
	MW10-112108	Pacific Crest	11/21/2008	2.7	2.3	**58**	0.65	**21**	<0.40	<0.40
	MW10-042512	Pacific Crest	4/25/2012	**23**	1.3	2	<0.50	<0.50	NA	NA
	MW10-090814	Pacific Crest	9/8/2014	**13**	5.9	**26**	<1.0	**120**	<1.0	<1.0
MW-11	MW11-112108	Pacific Crest	11/21/2008	**2,600**	**1,400**	**4,800**	<30	*<30*	*<30*	*<30*
	MW11-042512	Pacific Crest	4/25/2012	**470**	**160**	**400**	4.7	<0.50	NA	NA
	MW11-090514	Pacific Crest	9/5/2014	**250**	**180**	**720**	16	**6.9**	<4.0	<4.0
	MW11-090514-Dup	Pacific Crest	9/5/2014	**100**	**150**	**940**	35	**8**	<4.0	<4.0
MW-12	MW12-031009	Pacific Crest	3/10/2009	<0.2	<0.2	<0.20	<0.20	<0.20	<0.20	<0.20
	MW12-042512	Pacific Crest	4/25/2012	<0.50	<0.50	<0.50	<0.50	<0.50	NA	NA
	MW12-090814	Pacific Crest	9/8/2014	<0.20	<0.20	<0.20	<0.20	0.58	<0.20	<0.20
MW-13	MW13-031009	Pacific Crest	3/10/2009	**15**	**17**	**35**	0.21	0.39	<0.20	<0.20
	MW13-042512	Pacific Crest	4/25/2012	2.8	3.2	6.2	<0.50	0.69	NA	NA
	MW13-090814	Pacific Crest	9/8/2014	2.2	4.4	**15**	<0.20	0.83	<0.20	<0.20
MW-14	MW14-031009	Pacific Crest	3/10/2009	**9**	6.5	**20**	0.54	**28**	<0.20	<0.20
	MW14-042512	Pacific Crest	4/25/2012	3.2	**6.6**	1.7	<0.50	<0.50	NA	NA
	MW14-090814	Pacific Crest	9/8/2014	**10**	**8.5**	**25**	0.93	**27**	<0.20	<0.20
MW-15	MW15-061710	Pacific Crest	6/17/2010	<10	<10	**1,400**	12	**280**	<10	*<10*
	MW15-042512	Pacific Crest	4/25/2012	<0.50	<0.50	**1,300**	14	**290**	NA	NA
	MW-15-110-001	Pacific Crest	10/5/2012	<4	<4	**1,400**	12	**180**	<10	*<10*
	MW-15-112712	Pacific Crest	11/27/2012	<10	<10	**1,400**	15	**270**	<10	*<10*
	M15-090514	Pacific Crest	9/5/2014	<1.0	<1.0	**150**	5.7	**51**	<1.0	<1.0
MW-16	MW16-090514	Pacific Crest	9/5/2014	**76**	**19**	**1,200**	13	*<10*	<10	*<10*

Table 3
Groundwater Analytical Results Summary - VOCs
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Sampled By	Sample Date	Groundwater Analytical Results (micrograms per liter)						
				VOCs[1]						
				Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1-Trichloroethane	1,1-Dichloroethane
MW-17	MW17-090912	Pacific Crest	9/9/2012	<4	<4	**460**	6.3	**170**	<4	<4
	MW-17-110-001	Pacific Crest	10/5/2012	<4	<4	**600**	7.1	**180**	<4	<4
	MW-17-112712	Pacific Crest	11/27/2012	<20	<4	**670**	6.5	**130**	<4	<4
	MW17-090912	Pacific Crest	9/5/2014	<10	<10	**950**	<10	**170**	<10	*<10*
Preliminary Screening Level				**3.3**	**8.4**	**16**	**160**	**2.4**	**200**	**7.68**
Preliminary Cleanup Level				**101.5/8.85**	**8.4/81**	**10000**	**10000**	**3.5/92.3**	**--**	**--**

NOTES:

[1] Analyzed by United States Environmental Protection Agency (EPA) Method 8260B/8260C.

BOLD = concentration exceeds applicable Preliminary Screening Level

ITALICS = practical quantitation limit higher than applicable Preliminary Screening Level

Bold and yellow highlight = concentration exceed Preliminary Cleanup Level

Preliminary Cleanup Levels separated by "/" indicates different cleanup levels depentdent on vapor intrusion or discharge to surface water

< = result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit.

- = not reported

-- = not applicable

NA = not analyzed

VOCs = volatile organic compounds

Pacific Crest = Pacific Crest Environmental, LLC

Table 4
Groundwater Analytical Results Summary - Metals
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Sampled by	Sample Date	Groundwater Analytical Results																					
				Metals (micrograms per liter)																				Cyanide (milligrams per liter)	
				Arsenic[1]		Cadmium[1]		Chromium[1]		Cobalt[1]	Copper[1]		Lead[1]		Mercury[2]	Nickel[1]		Selenium[1]	Silver[1]	Tin[1]		Zinc[1]		Free[3]	Weak & Dissociable[4]
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Total	Total	Dissolved	Total	Dissolved		
MW-1	MW1-090414	Pacific Crest	9/4/2014	<3.3	NA	<4.4	NA	<11	NA	<5.6	1.2	<1.0	<1.0	NA	<0.050	2.4	1.2	<1.0	<0.50	<0.50	NA	6.5	<2.5	<0.005	<0.005
MW-2	MW2-090514	Pacific Crest	9/5/2014	<3.3	NA	3.5	<4.0	<11	NA	<5.6	7.5	1.3	<1.0	NA	<0.050	10	6	<1.0	<0.50	<0.50	NA	4.9	<2.5	<0.005	<0.005
MW-3	MW3-090814	Pacific Crest	9/8/2014	<3.3	NA	<4.4	NA	<11	NA	<5.6	<1.0	NA	<1.0	NA	<0.050	1.4	<0.50	<1.0	<0.50	<0.50	NA	5.9	5.4	<0.005	<0.005
MW-4	MW4-090414	Pacific Crest	9/4/2014	<3.3	NA	<4.4	NA	<11	NA	<5.6	<1.0	NA	<1.0	NA	<0.050	0.75	1	<1.0	<0.50	<0.50	NA	3.3	<2.5	<0.005	<0.005
MW-5	MW5-090414	Pacific Crest	9/4/2014	5.9	<3.0	<4.4	NA	<11	NA	<5.6	26	<1.0	24	<1.0	<0.050	17	0.58	<1.0	<0.50	0.99	NA	220	5.6	<0.005	<0.005
MW-6	MW6-090414	Pacific Crest	9/4/2014	<3.3	NA	<4.4	NA	<11	NA	<5.6	1.7	<1.0	<1.0	NA	<0.050	33	**32**	<1.0	<0.50	<0.50	NA	46	30	<0.005	<0.005
MW-7	MW7-090414	Pacific Crest	9/4/2014	5.1	<3.0	14	<4.0	<11	NA	<5.6	15	<1.0	8.7	<1.0	<0.050	15	4.2	<1.0	<0.50	2	<0.5	140	12	0.007	<0.005
MW-8	MW8-090414	Pacific Crest	9/4/2014	3.4	<3.0	<4.4	<4.0	16	<10.0	<5.6	31	<1.0	16	<1.0	<0.050	21	2.7	<1.0	<0.50	2.4	<0.5	340	31	<0.005	<0.005
MW-9	MW9-090514	Pacific Crest	9/5/2014	<3.3	NA	<4.4	NA	<11	NA	<5.6	<1.0	NA	<1.0	NA	<0.050	1.7	0.77	<1.0	<0.50	<0.50	NA	6.3	4	<0.005	<0.005
MW-10	MW10-090814	Pacific Crest	9/8/2014	<3.3	NA	<4.4	NA	<11	NA	<5.6	<1.0	NA	<1.0	NA	<0.050	2.2	1	<1.0	<0.50	<0.50	NA	12	7.9	<0.005	<0.005
MW-11	MW11-090514	Pacific Crest	9/5/2014	<3.3	NA	170	**18**	<11	NA	<5.6	2.9	<1.0	<1.0	NA	<0.050	190	**53**	<1.0	<0.50	<0.50	NA	5.7	<2.5	<0.005	<0.005
	MW11-090514-Dup	Pacific Crest	9/5/2014	<3.3	NA	110	**21**	<11	NA	<5.6	2.1	<1.0	<1.0	NA	<0.050	130	**71**	<1.0	<0.50	<0.50	NA	9.4	<2.5	<0.005	<0.005
MW-12	MW12-090814	Pacific Crest	9/8/2014	<3.3	NA	<4.4	NA	<11	NA	<5.6	<1.0	NA	<1.0	NA	<0.050	1.1	0.97	<1.0	<0.50	<0.50	NA	7.3	3.9	<0.005	<0.005
MW-13	MW13-090814	Pacific Crest	9/8/2014	6.1	<3.0	<4.4	NA	<11	NA	<5.6	2.3	<1.0	<1.0	NA	<0.050	3.9	3.4	<2.5	<0.50	<0.50	NA	15	5.7	<0.005	<0.005
MW-14	MW14-090814	Pacific Crest	9/8/2014	<3.3	NA	<4.4	NA	<11	NA	<5.6	<1.0	NA	<1.0	NA	<0.050	0.94	0.58	<1.0	<0.50	<0.50	NA	3.6	9.4	<0.005	<0.005
MW-15	MW15-090514	Pacific Crest	9/5/2014	<3.3	NA	<4.4	NA	<11	NA	<5.6	1.3	<1.0	<1.0	NA	<0.050	4.2	1.9	<5.0	<0.50	0.53	<0.50	7.0	3.8	<0.005	<0.005
MW-16	MW16-090514	Pacific Crest	9/5/2014	<3.3	NA	<4.4	NA	<11	NA	<5.6	<1.0	NA	<1.0	NA	<0.050	1.3	1.4	<1.0	<0.50	<0.50	NA	5.5	4.4	<0.005	<0.005
MW-17	MW17-090514	Pacific Crest	9/5/2014	<3.3	NA	<4.4	NA	<11	NA	<5.6	1.4	<1.0	<1.0	NA	<0.050	4.2	1.0	<2.5	<0.50	<0.50	NA	9.9	5.8	<0.005	<0.005
Preliminary Screening Level				**5**		**5**		**50**		**NE**	**2.4**		**8.1**		**2**	**8.2**		**71**	**1.9**	**9600**		**81**		**0.7**	
Preliminary Cleanup Level				**--**		**9.3**		**--**		**--**	**--**		**--**		**--**	**8.2**		**--**	**--**	**--**		**--**		**--**	

NOTES:

[1] Analyzed by United States Environmental Protection Agency (EPA) Method 200.8.

[2] Analyzed by EPA Method 7470A.

[3] Analyzed by EPA Method 335.4.

[4] Analyzed by SM 4500 CN.

[5] Method B Cleanup Level (Ingestion) in accordance with the Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 of the Washington Administrative Code, as amended

BOLD = concentration exceeds applicable Preliminary Screening Level

Bold and yellow highlight = concentration exceed Preliminary Cleanup Level

< = result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit.

NE = not established

NA = not analyzed

Pacific Crest = Pacific Crest Environmental, LLC

Table 5
In-Situ Hydraulic Conductivity Slug Test Results
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Well	Date	Screened Interval (feet bgs)	Test Type	Test Duration (seconds)	Hydraulic Conductivity (cm/s)
MW-6	10/30/2014	5.5-15.5	Falling Head	270	7.40E-04
			Rising Head	210	5.80E-04
MW-7	9/11/2014	5.5-15.5	Falling Head	4,200	2.10E-05
			Rising Head	2,400	2.40E-05
MW-11	9/11/2014	6-16	Falling Head	480	2.20E-04
			Rising Head	540	2.60E-04
MW-13	10/30/2014	10-20	Falling Head	780	2.40E-04
			Rising Head	270	4.80E-04
MW-14	10/30/2014	6-11	Falling Head	90	6.20E-03
			Rising Head	210	7.70E-04
MW-16	9/11/2014	3-13	Falling Head	600	2.80E-04
			Rising Head	600	2.70E-04

NOTES:
cm/s = centimeters per second
bgs = below ground surface

Table 6
Soil Analytical Results Summary - VOCs
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Sampled By	Sample Date	Sample Depth[2]	Soil Analytical Results (milligrams per kilogram)[1]																	
					Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1-Dichloroethane	1,1-Dichloroethene	Acetone	Carbon Disulfide	Benzene	Toluene	Ethylbenzene	Total Xylenes	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene	Chloroform	Napthalene	Trichlorofluoromethane
B26	B26-1'-2'	EAI	5/14/2004	1-2	<0.05	<0.03	<0.05	<0.05	*<0.5*	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	B26-5'-6'	EAI	5/14/2004	5-6	<0.05	<0.03	<0.05	<0.05	*<0.5*	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SC-1	SC1-14.5	LSI	8/23/2005	14-14.5	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0012	NA	<0.0012
SC-2	SC2-14.5	LSI	8/23/2005	14-14.5	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0011	NA	<0.0011
SC-3	SC3-14.5	LSI	8/23/2005	14-14.5	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0012	NA	<0.0012
SC-4	SC4-14.5	LSI	8/23/2005	14-14.5	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0014	NA	<0.0014
MW-9	MW9/14.5	LSI	9/21/2005	14-14.5	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0012	NA	<0.0012
MW-10	MW10-5-6.5	Pacific Crest	10/20/2006	5-6.5	0.024	0.0015	0.0035	<0.0012	<0.0012	<0.0012	<0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0012	NA	<0.0012
B-1	B1-6-8	Pacific Crest	11/29/2007	6-8	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0012	NA	<0.0012
B-2	B2-6-8	Pacific Crest	11/29/2007	6-8	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0011	NA	<0.0011
B-3	B3-6-8	Pacific Crest	11/29/2007	6-8	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0012	NA	<0.0012
B-4	B4-6-8	Pacific Crest	11/29/2007	6-8	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0011	NA	<0.0011
MW-11	MW11-8-10-111908	Pacific Crest	11/19/2008	8-10	**1.5**	0.013	<0.0013	<0.0013	<0.0066	<0.0013	<0.0013	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0013	NA	<0.0013
MW-12	MW12-18-22	Pacific Crest	3/4/2009	18-22	<0.00092	<0.00092	<0.00092	<0.00092	<0.0046	<0.00092	<0.00092	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00092	NA	<0.00092
MW-13	MW13-18-19	Pacific Crest	3/4/2009	18-19	0.028	0.013	0.012	<0.0012	<0.0061	<0.0012	<0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0012	NA	<0.0012
MW-14	MW14-7	Pacific Crest	3/6/2009	7	0.002	0.0025	<0.0012	<0.0012	<0.006	<0.0012	<0.0012	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0012	NA	<0.0010
B-5	B5-7.0	Pacific Crest	5/25/2010	7	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0011	NA	<0.0011
B-6	B6-10.0	Pacific Crest	5/25/2010	10	<0.00089	<0.00089	<0.00089	<0.00089	<0.00089	<0.00089	<0.00089	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00089	NA	<0.00089
B-7	B7-6.0	Pacific Crest	5/25/2010	6	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0011	NA	<0.0011
B-8	B8-4.0	Pacific Crest	5/26/2010	4	**0.67**	0.0071	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00088	NA	<0.00088
	B8-10.0	Pacific Crest	5/26/2010	10	**0.065**	0.0012	<0.00096	<0.00096	<0.00096	<0.00096	<0.00096	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00096	NA	<0.00096
B-9	B9-4.0	Pacific Crest	5/26/2010	4	**1.2**	0.013	0.0027	<0.0010	<0.0010	<0.0010	<0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0010	NA	<0.0010
	B9-10.0	Pacific Crest	5/26/2010	10	**0.95**	0.020	0.043	<0.00087	<0.00087	<0.00087	<0.00087	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00087	NA	<0.00087
B-10	B10-4.0	Pacific Crest	5/26/2010	4	**16**	**0.042**	<0.0092	<0.00092	<0.00096	<0.00092	<0.00092	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00092	NA	<0.00092
	B10-10.0	Pacific Crest	5/26/2010	10	0.033	0.0046	0.063	0.0027	<0.00096	<0.00096	<0.00096	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00096	NA	<0.00096
B-11	B11-4.0	Pacific Crest	5/26/2010	4	**2.6**	**0.044**	<0.00089	<0.00089	<0.00089	<0.00089	<0.00089	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00089	NA	<0.00089
	B11-10.0	Pacific Crest	5/26/2010	10	**0.099**	0.0052	<0.00094	<0.00094	<0.00094	<0.00094	<0.00094	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00094	NA	<0.00094
B-12	B12-4.0	Pacific Crest	6/16/2010	4	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0010	NA	<0.0010
B-13	B13-4.0	Pacific Crest	6/16/2010	4	0.029	0.0032	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0010	NA	<0.0010
	B13-10.0	Pacific Crest	6/16/2010	10	0.045	0.013	0.037	<0.00094	<0.00094	<0.00094	<0.00094	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00094	NA	<0.00094
B-14	B14-4.0	Pacific Crest	6/16/2010	4	**0.10**	0.02	<0.00092	<0.00092	<0.00092	<0.00092	<0.00092	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00092	NA	<0.00092
	B14-8.0	Pacific Crest	6/16/2010	8	0.027	0.0042	<0.00098	<0.00098	<0.00098	<0.00098	<0.00098	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00098	NA	<0.00098
MW-15	MW15-8.0	Pacific Crest	6/15/2010	8	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0010	NA	<0.0010
B-15	B15-4.0	Pacific Crest	1/14/2011	1-4	0.029	0.0037	<0.00088	<0.00088	<0.00088	<0.00088	<0.00088	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00088	NA	0.0014
B-16	B16-4.0	Pacific Crest	1/14/2011	1-4	**1.5**	0.012	<0.00088	<0.00088	<0.00088	<0.00076	<0.00076	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00076	NA	<0.00088
B-17	B17-4.0	Pacific Crest	1/14/2011	1-4	**1.1**	0.0079	<0.00076	<0.00076	<0.00076	<0.0010	<0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0010	NA	<0.00076
B-18	B18-4.0	Pacific Crest	1/14/2011	1-4	**0.94**	0.0077	<0.0051	<0.0051	<0.0051	<0.0010	<0.0010	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0010	NA	<0.0010
B-19	B19-4.0	Pacific Crest	1/14/2011	1-4	**7.4**	**0.064**	<0.00084	<0.00084	<0.00084	<0.00084	<0.00084	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00084	NA	<0.00084
B-20	B20-4.0	Pacific Crest	1/14/2011	1-4	**1.2**	**0.035**	<0.00090	<0.00090	<0.00090	<0.00090	<0.00090	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028	NA	<0.00090
B-21	B21-4.0	Pacific Crest	1/14/2011	1-4	**4.9**	**0.085**	0.0023	<0.00095	<0.00095	<0.00095	<0.00095	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.00095	NA	0.0015
B-22	B22-4.0	Pacific Crest	1/14/2011	1-4	**0.17**	0.0017	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0011	NA	<0.0011

Table 6
Soil Analytical Results Summary - VOCs
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Sampled By	Sample Date	Sample Depth[2]	Soil Analytical Results (milligrams per kilogram)[1]																	
					Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1-Dichloroethane	1,1-Dichloroethene	Acetone	Carbon Disulfide	Benzene	Toluene	Ethylbenzene	Total Xylenes	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene	Chloroform	Napthalene	Trichlorofluoromethane
B-24	B24-0.0-2.0	Pacific Crest	11/8/2012	0-2	**0.054**	0.027	0.0014	<0.0012	<0.0016	<0.0012	<0.0012	NA	NA	NA	NA	NA	NA	NA	NA	<0.0012	NA	<0.0012
	B24-4.0-6.0	Pacific Crest	11/8/2012	4-6	**0.053**	0.024	0.0014	<0.0012	<0.0017	<0.0012	<0.0012	NA	NA	NA	NA	NA	NA	NA	NA	<0.0012	NA	<0.0012
P-1	P1-090914-2.5-4.0	Pacific Crest	9/9/2014	2.5-4.0	**1.0**	0.011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0056	<0.0011	<0.0011	<0.0056	<0.0011	<0.0033	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
	P1-090914-10.5-12.0	Pacific Crest	9/9/2014	10.5-12.0	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.012	0.0083	<0.0012	<0.0060	<0.0012	<0.0036	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
P-2	P2-090914-4.0-5.5	Pacific Crest	9/9/2014	4.0-5.5	**0.12**	0.0025	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0058	<0.0012	<0.0012	<0.0058	<0.0012	<0.0035	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
	P2-090914-8.0-9.5	Pacific Crest	9/9/2014	8.0-9.5	**0.15**	0.0032	0.0022	<0.00093	<0.00093	<0.00093	<0.00093	0.017[3]	0.00099	<0.00093	<0.0047	<0.00093	<0.00283	<0.00093	<0.00093	<0.00093	<0.00093	<0.00093
P-3	P3-091014-4.5-6.0	Pacific Crest	9/10/2014	4.5-6.0	**0.22**	0.0017	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0058	<0.0012	<0.0012	<0.0058	<0.0012	<0.0035	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
	P3-091014-14.5-16.0	Pacific Crest	9/10/2014	14.5-16.0	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	0.015[3]	0.0059	<0.0013	<0.0063	<0.0013	<0.0038	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
P-4	P4-091014-3.5-5.0	Pacific Crest	9/10/2014	3.5-5.0	**0.89**	0.0048	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0054	<0.0011	<0.0011	<0.0054	<0.0011	<0.0033	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
	P4-091014-15.0-16.0	Pacific Crest	9/10/2014	15.0-16.0	<0.0012	<0.0012	0.076	0.0045	<0.0012	<0.0012	<0.0012	0.0078[3]	0.0036	<0.0012	<0.0060	<0.0012	<0.0024	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
P-5	P5-090914-2.0-4.0	Pacific Crest	9/9/2014	2.0-4.0	**0.15**	0.0016	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0068	<0.0014	<0.0014	<0.0068	<0.0014	<0.0041	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
	P5-090914-8.5-9.5	Pacific Crest	9/9/2014	8.5-9.5	<0.0013	<0.0013	<0.0013	0.002	<0.0013	<0.0013	<0.0013	0.0072[3]	0.0037	<0.0013	<0.0066	<0.0013	<0.0039	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
P-6	P6-090914-2.5-4.0	Pacific Crest	9/9/2014	2.5-4.0	**17**	**0.53**	0.43	0.0034	<0.0011	<0.0011	<0.0011	<0.0056	<0.0011	<0.0011	<0.0056	<0.0011	<0.0034	<0.0011	0.0014	0.0035	0.0016	<0.0011
	P6-090914-10.5-12.0	Pacific Crest	9/9/2014	10.5-12.0	**2.0**	**4.0**	0.24	0.048	<0.0013	<0.0013	<0.0013	0.025[3]	0.033	<0.0013	<0.0064	0.0013	<0.0039	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
P-7	P7-091014-3.5-5.5	Pacific Crest	9/10/2014	3.5-5.5	**1.9**	0.0046	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0072	<0.0014	<0.0014	<0.0072	<0.0014	0.003	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
	P7-091014-12.0-14.0	Pacific Crest	9/10/2014	12.0-14.0	<0.0011	<0.0011	0.014	0.0034	<0.0011	<0.0011	<0.0011	<0.0054	0.0041	<0.0011	<0.0054	<0.0011	<0.0033	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
P-8	P8-090914-4.0-6.0	Pacific Crest	9/9/2014	4.0-6.0	**0.56**	0.0057	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079	<0.0040	<0.00079	<0.00079	<0.0040	0.00079	<0.00239	<0.00079	<0.00079	<0.00079	<0.00079	<0.00079
	P8-090914-14.0-16.0	Pacific Crest	9/9/2014	14.0-16.0	0.0081	0.0033	4.5	0.05	**0.13**	<0.0016	0.0093	0.017	0.011	<0.0016	<0.0080	<0.0016	<0.0048	<0.0016	<0.0016	<0.0016	<0.0016	<0.0093
P-9	P9-090914-6.0-8.5	Pacific Crest	9/9/2014	6.0-8.5	**34**	**4.9**	0.0043	0.0021	<0.0013	<0.0013	<0.0013	<0.0064	<0.0013	<0.0013	<0.0064	<0.0013	<0.0038	<0.060	<0.060	<0.0013	<0.060	<0.0013
	P9-090914-14.0-16.0	Pacific Crest	9/9/2014	14.0-16.0	0.0029	0.0026	2.7	0.22	0.0037	<0.0014	0.0019	0.013[3]	0.0068	<0.0014	<0.0070	<0.0014	<0.0042	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014
P-10	P10-090914-3.0-4.0	Pacific Crest	9/9/2014	3.0-4.0	**2.0**	0.013	<0.00096	<0.00096	<0.00096	<0.00096	<0.00096	<0.0048	<0.00096	<0.00096	<0.0048	<0.0096	<0.00286	<0.00096	<0.00096	<0.00096	<0.00096	<0.00096
	P10-090914-10.0-12.0	Pacific Crest	9/9/2014	10.0-12.0	**13**	**0.37**	0.061	0.0027	<0.0010	<0.0010	<0.0010	0.011	0.007	<0.0010	<0.0052	<0.0010	<0.0031	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
P-11	P11-090914-3.8-5.0	Pacific Crest	9/9/2014	3.8-5.0	**29**	**0.15**	<0.052	<0.0011	<0.0011	<0.0011	<0.0011	0.011[3]	0.0049	<0.0011	<0.0054	0.0014	0.0062	<0.052	<0.052	0.0029	<0.052	<0.0011
	P11-090914-14.5-16.0	Pacific Crest	9/9/2014	14.5-16.0	0.0036	<0.0013	12	0.072	**0.024**	<0.0013	0.0033	0.019[3]	0.026	<0.0013	<0.0063	<0.0013	<0.0038	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
P-12	P12-090914-4.0-5.5	Pacific Crest	9/9/2014	4.0-5.5	**1.8**	0.064	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0054	<0.0011	<0.0011	0.0060	0.0011	0.0079	0.0011	0.0019	<0.0011	<0.0011	<0.0011
	P12-090914-14.5-16.0	Pacific Crest	9/9/2014	14.5-16.0	**0.15**	0.0028	19	0.97	**0.35**	<0.0012	0.0079	0.022[3]	0.0097	<0.0012	<0.0061	<0.0024	<0.0036	<0.074	<0.074	<0.0012	<0.074	<0.0012
P-13	P13-091014-2.5-4.0	Pacific Crest	9/10/2014	2.5-4.0	**0.92**	0.0039	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0054	<0.0011	<0.0011	<0.0054	<0.0011	<0.0033	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
	P13-091014-14.5-16.0	Pacific Crest	9/10/2014	14.5-16.0	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	0.030[3]	0.013	<0.0016	<0.0081	<0.0016	<0.0049	<0.12	<0.12	<0.0016	<0.12	<0.0016
P-14	P14-091014-2.5-4.0	Pacific Crest	9/10/2014	2.5-4.0	0.22	0.0054	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0063	<0.0013	<0.0013	<0.0063	<0.0013	<0.0026	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
	P14-091014-14.5-16.0	Pacific Crest	9/10/2014	14.5-16.0	0.0029	<0.0017	37	0.33	**0.046**	0.0017	0.048	0.057[3]	0.07	0.0032	<0.0087	<0.0017	<0.0052	<0.0017	<0.0017	<0.0017	<0.0017	<0.0017
P-16	P16-091014-2.5-5.0	Pacific Crest	9/10/2014	2.5-5.0	0.018	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0056	<0.0011	<0.0011	<0.0056	<0.0011	<0.0033	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
	P16-091014-15.0-16.0	Pacific Crest	9/10/2014	15.0-16.0	<0.0013	<0.0013	0.015	<0.0013	0.02	<0.0013	<0.0013	0.021[3]	0.01	<0.0013	<0.0066	<0.0013	<0.0039	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
P-17	P17-091014-2.0-6.0	Pacific Crest	9/10/2014	2.0-6.0	0.05	0.0071	0.0035	<0.0011	<0.0011	<0.0011	<0.0011	<0.0056	<0.0011	<0.0011	<0.0056	<0.0011	<0.0033	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
	P17-091014-2.0-6.0 DUP	Pacific Crest	9/10/2014	2.0-6.0	0.037	0.0054	0.003	<0.0012	0.0012	<0.0012	<0.0012	<0.0062	<0.0012	<0.0012	<0.0062	<0.0012	<0.0037	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
	P17-091014-13.5-16.0	Pacific Crest	9/10/2014	13.5-16.0	0.013	0.0046	47	0.99	**0.075**	<0.0016	0.022	0.063[3]	0.059	0.003	<0.0080	<0.0016	<0.0048	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
	P17-091014-13.5-16.0 DUP	Pacific Crest	9/10/2014	13.5-16.0	0.0046	0.0023	41	0.9	**0.041**	<0.0013	0.015	0.031[3]	0.037	0.002	<0.0063	<0.0013	<0.0038	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
P-18	P18-091114-2.5-4.0	Pacific Crest	9/11/2014	2.5-4.0	0.030	0.022	0.0018	<0.0013	<0.0013	<0.0013	<0.0013	<0.0064	<0.0013	<0.0013	<0.0064	<0.0013	<0.0039	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013
	P18-091114-14.5-16.0	Pacific Crest	9/11/2014	14.5-16.0	<0.0015	<0.0015	7.9	0.10	**0.098**	<0.0015	0.0018	0.012[3]	0.0061	<0.0015	<0.0075	<0.0015	<0.0045	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
P-19	P19-091114-2.5-4.0	Pacific Crest	9/11/2014	2.5-4.0	0.025	0.023	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0057	<0.0011	<0.0011	<0.0057	<0.0011	<0.0034	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011
	P19-091114-14.5-16.0	Pacific Crest	9/11/2014	14.5-16.0	<0.0014	<0.0014	0.24	0.0089	**4.6**	<0.0014	<0.0014	0.0079[3]	0.0062	<0.0014	<0.0070	<0.0014	<0.0042	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014

Table 6
Soil Analytical Results Summary - VOCs
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Sampled By	Sample Date	Sample Depth[2]	Soil Analytical Results (milligrams per kilogram)[1]																	
					Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1-Dichloroethane	1,1-Dichloroethene	Acetone	Carbon Disulfide	Benzene	Toluene	Ethylbenzene	Total Xylenes	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene	Chloroform	Napthalene	Trichlorofluoromethane
P-20	P20-091014-2.0-4.0	Pacific Crest	9/10/2014	2.0-4.0	0.044	0.0083	0.0025	<0.0012	<0.0012	<0.0012	<0.0012	<0.0062	<0.0012	<0.0012	<0.0062	<0.0012	<0.0037	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
	P20-091014-14.5-16.0	Pacific Crest	9/10/2014	14.5-16.0	0.021	0.017	18	0.32	**0.021**	<0.0015	0.012	0.022[3]	0.021	<0.0015	<0.0076	<0.0015	<0.0045	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
P-21	P21-091114-2.5-4.0	Pacific Crest	9/11/2014	2.5-4.0	0.043	0.018	0.0054	<0.0012	<0.0012	<0.0012	<0.0012	<0.0059	<0.0012	<0.0012	<0.0059	<0.0012	<0.0036	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012
	P21-091114-14.5-16.0	Pacific Crest	9/11/2014	14.5-16.0	<0.0015	<0.0015	6.6	0.11	**5.5**	<0.0015	<0.0015	0.016[3]	0.012	<0.0015	<0.0073	<0.0015	<0.0044	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Preliminary Screening Level					**0.05**	**0.03**	**65**	**1,600**	**0.02**	**16,000**	**4000**	**72000**	**8000**	**0.03**	**7**	**6**	**9**	**800**	**NE**	**32**	**5**	**24000**
Preliminary Cleanup Level					**1.01**	**0.053**	**160**	**--**	**0.02**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

NOTES:

[1] Analyzed by U.S. Environmental Protection Agency (EPA) Method 8260B/8260C.

[2] Depth in feet below ground surface.

[3] The reported result should be considered an estimate.

[4] Modified Method B Cleanup Level (Soil Leaching to Groundwater) in accordance with the Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 of the Washington Administrative Code, as amended.

[5] Method B Cleanup Level (Dermal Exposure) in accordance with MTCA.

BOLD = concentration exceeds applicable Preliminary Screening Level
ITALICS = practical quantitation limit higher than applicable Preliminary Screening Level
< = result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit.
- = not applicable
NA = not analyzed
EAI = Environmental Associates, Inc.
LSI = LSI Adapt
Pacific Crest = Pacific Crest Environmental, LLC

Table 7
Soil Analytical Results Summary - Metals
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Sampled By	Sample Date	Sample Depth[2]	Soil Analytical Results (mg/kg)[1]							
					Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Tin	Zinc
P-1	P1-090914-2.5-4.0	Pacific Crest	9/9/2014	2.5-4.0	*<11*	**13**	32	**53**	16	**160**	<5.4	**120**
	P1-090914-10.5-12.0	Pacific Crest	9/9/2014	10.5-12.0	*<12*	<0.12	15	9.6	<6.2	8.6	<6.2	22
P-2	P2-090914-4.0-5.5	Pacific Crest	9/9/2014	4.0-5.5	*<11*	<0.11	24	15	<5.5	8	<5.5	17
	P2-090914-8.0-9.5	Pacific Crest	9/9/2014	8.0-9.5	*<12*	0.15	**130**	9.1	<6.0	12	<6.0	21
P-3	P3-091014-4.5-6.0	Pacific Crest	9/10/2014	4.5-6.0	*<11*	**17**	27	21	<5.7	10	<5.7	19
	P3-091014-14.5-16.0	Pacific Crest	9/10/2014	14.5-16.0	*<14*	<0.14	**160**	24	<7.0	11	<7.0	29
P-4	P4-091014-3.5-5.0	Pacific Crest	9/10/2014	3.5-5.0	*<10*	<0.10	18	10	<5.2	10	<5.2	25
	P4-091014-15.0-16.0	Pacific Crest	9/10/2014	15.0-16.0	*<12*	<0.12	11	8.7	<6.0	10	<6.0	21
P-5	P5-090914-2.0-4.0	Pacific Crest	9/9/2014	2.0-4.0	*<13*	<0.13	17	10	<6.5	8.2	<6.5	22
	P5-090914-8.5-9.5	Pacific Crest	9/9/2014	8.5-9.5	*<13*	<0.13	15	**110**	<6.7	9.3	<6.7	24
P-6	P6-090914-2.5-4.0	Pacific Crest	9/9/2014	2.5-4.0	*<12*	<0.12	18	9.3	<5.9	9.1	6.5	29
	P6-090914-10.5-12.0	Pacific Crest	9/9/2014	10.5-12.0	*<13*	<0.13	15	13	<6.5	9.2	9.8	26
P-7	P7-090914-3.5-5.5	Pacific Crest	9/9/2014	3.5-5.5	*<11*	<0.11	18	9	<5.3	8.8	5.4	25
	P7-090914-12.0-14.0	Pacific Crest	9/9/2014	12.0-14.0	*<12*	<0.12	15	**65**	<6.2	10	18	25
P-8	P8-090914-4.0-6.0	Pacific Crest	9/9/2014	4.0-6.0	*<10*	<0.10	16	11	<5.2	8.4	<5.2	23
	P8-090914-14.0-16.0	Pacific Crest	9/9/2014	14.0-16.0	*<14*	<0.14	12	11	<6.9	8.1	<6.9	21
P-9	P9-090914-6.0-8.5	Pacific Crest	9/9/2014	6.0-8.5	*<11*	<0.11	12	10	<5.7	6.8	<5.7	20
	P9-090914-14.0-16.0	Pacific Crest	9/9/2014	14.0-16.0	*<13*	<0.13	13	12	<6.4	19	<6.4	22
P-10	P10-090914-3.0-4.0	Pacific Crest	9/9/2014	3.0-4.0	*<11*	<0.11	24	13	<5.5	33	<5.5	28
	P10-090914-10.0-12.0	Pacific Crest	9/9/2014	10.0-12.0	*<12*	**99**	17	**180**	<6.1	**92**	<6.1	25
P-11	P11-090914-3.8-5.0	Pacific Crest	9/9/2014	3.8-5.0	*<11*	<0.11	14	11	<5.5	8.6	<5.5	22
	P11-090914-14.5-16.0	Pacific Crest	9/9/2014	14.5-16.0	*<13*	<0.13	13	9.8	<6.3	9	<6.3	19
P-12	P12-090914-4.0-5.5	Pacific Crest	9/9/2014	4.0-5.5	*<10*	<0.10	13	10	<5.2	7.1	<5.2	20
	P12-090914-14.5-16.0	Pacific Crest	9/9/2014	14.0-16.0	*<13*	<0.13	12	10	<6.4	7.8	<6.4	19
P-13	P13-091014-2.5-4.0	Pacific Crest	9/10/2014	2.5-4.0	*<10*	<0.10	14	11	<5.2	7.7	<5.2	33
	P13-091014-14.5-16.0	Pacific Crest	9/10/2014	14.5-16.0	**19**	0.24	25	**54**	19	20	<8.4	67
P-14	P14-091014-2.5-4.0	Pacific Crest	9/10/2014	2.5-4.0	*<10*	<0.10	12	11	<5.2	7.8	<5.2	23
	P14-091014-14.5-16.0	Pacific Crest	9/10/2014	14.5-16.0	*<14*	<0.14	13	20	<6.9	9.2	<6.9	25
P-16	P16-091014-2.5-5.0	Pacific Crest	9/10/2014	2.5-5.0	*<11*	<0.11	11	9.7	<5.3	6.6	<5.3	21
	P16-091014-15.0-16.0	Pacific Crest	9/10/2014	15.0-16.0	*<13*	<0.13	9.4	10	<6.4	7	<6.4	18
P-17	P17-091014-2.0-6.0	Pacific Crest	9/10/2014	2.0-6.0	*<10*	<0.10	12	10	<5.2	7.4	<5.2	20
	P17-091014-2.0-6.0 DUP	Pacific Crest	9/10/2014	2.0-6.0	*<10*	<0.10	12	10	<5.2	7.4	<5.2	22
	P17-091014-13.5-16.0	Pacific Crest	9/10/2014	13.5-16.0	*<15*	<0.15	18	**37**	14	13	<7.4	49
	P17-091014-13.5-16.0 DUP	Pacific Crest	9/10/2014	13.6-16.0	*<13*	<0.13	9.1	9	<6.5	6.4	<6.5	19
P-18	P18-091114-2.5-4.0	Pacific Crest	9/11/2014	2.5-4.0	*<10*	<0.10	9.5	8.6	<5.2	6.0	<5.2	17
	P18-091114-14.5-16.0	Pacific Crest	9/11/2014	14.5-16.0	*<14*	<0.14	9.4	12	<6.9	6.5	<6.9	18
P-19	P19-091114-2.5-4.0	Pacific Crest	9/11/2014	2.5-4.0	*<10*	<0.10	10	8.2	<5.2	6.3	<5.2	19
	P19-091114-14.5-16.0	Pacific Crest	9/11/2014	14.5-16.0	*<14*	<0.14	9.7	10	<6.9	6.9	<6.9	19
P-20	P20-091014-2.0-4.0	Pacific Crest	9/10/2014	2.0-4.0	*<10*	<0.10	10	9.4	<5.1	7.0	<5.1	20
	P20-091014-14.5-16.0	Pacific Crest	9/10/2014	14.5-16.0	*<13*	<0.13	10	10	<6.4	7.0	<6.4	19
P-21	P21-091114-2.5-4.0	Pacific Crest	9/11/2014	2.5-4.0	*<10*	<0.10	12	9.6	<5.2	7.2	<5.2	20
	P21-091114-14.5-16.0	Pacific Crest	9/11/2014	14.5-16.0	*<13*	<0.13	11	11	<6.5	7.0	<6.5	21
Natural Background - 90th Percentile					**7**	**1**	**48**	**36**	**24**	**48**	**NE**	**85**
Preliminary Screening Level					**20**	**1.28**	**260**	**390**	**1000**	**48**	**48,000**	**410**
Preliminary Cleanup Level					**--**	**1.28**	**--**	**--**	**--**	**48**	**--**	**--**

NOTES:

[1] Analyzed by U.S. Environmental Protection Agency (EPA) Method 6010C/6020A

[2] Depth in feet below ground surface

[3] Method A Cleanup Level in accordance with the Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 of the Washington Administrative Code, as amended.

[4] Modified Method B Cleanup Level (Soil Leaching to Groundwater) in accordance with MTCA.

BOLD = concentration exceeds applicable Natural Background

Yellow highlight and bold = concentration exceeds applicable Preliminary Cleanup Level

< = result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit.

mg/kg = milligrams per kilogram

Pacific Crest = Pacific Crest Environmental, LLC

Table 8
Surface Water Analytical Results Summary - CVOCs
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Location ID	Sample ID	Sampled By	Sample Date	Surface Water Analytical Results (micrograms per liter)						
				CVOCs[1]						
				Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1-Dichloroethane	1,1-Dichloroethene
SW-1	SW1-103014	Pacific Crest	10/30/2014	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
SW-2	SW2-103014	Pacific Crest	10/30/2014	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
SW-3	SW3-103014	Pacific Crest	10/30/2014	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

NOTES:

[1] Analyzed by U.S. Environmental Protection Agency (EPA) Method 8260C.

< = result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit.

CVOCs = chlorinated volatile organic compounds

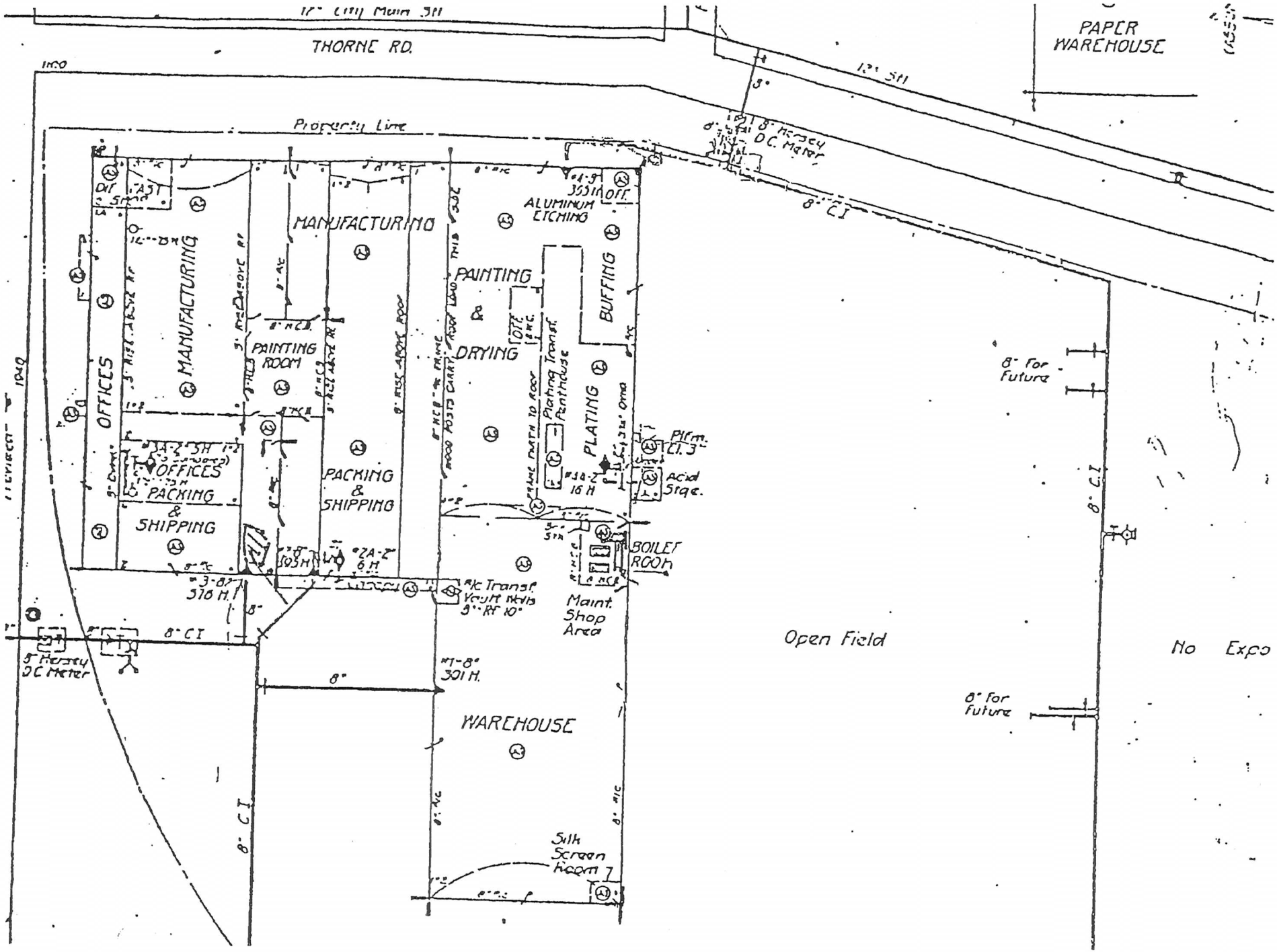
Pacific Crest = Pacific Crest Environmental, LLC

APPENDIX A
SANBORN MAP

FURTHER INVESTIGATION REPORT

Former Sound Mattress and Felt Property
1940 East 11th Street
Tacoma, Washington

Pacific Crest PN: 110-001


12" CIPI Main 3H
THORNE RD.
PAPER WAREHOUSE
12" SH
Property Line
8" Hersey D.C. Meter
8" CI
ALUMINUM ETCHING
MANUFACTURING
PAINTING
&
DRYING
BUFFING
PLATING
OFFICES
MANUFACTURING
PAINTING ROOM
PACKING & SHIPPING
OFFICES
PACKING & SHIPPING
Acid Stge.
BOILER ROOM
Maint. Shop Area
WAREHOUSE
Silk Screen Room 1
Open Field
No Exp
8" for Future
8" for Future
8" CI
8" CI
8" CI
8" Hersey D.C. Meter

APPENDIX B
LABORATORY ANALYTICAL REPORTS

FURTHER INVESTIGATION REPORT

Former Sound Mattress and Felt Property
1940 East 11th Street
Tacoma, Washington

Pacific Crest PN: 110-001

APPENDIX C
SLUG TEST DATA AND SOFTWARE OUTPUT

FURTHER INVESTIGATION REPORT

Former Sound Mattress and Felt Property
1940 East 11th Street
Tacoma, Washington

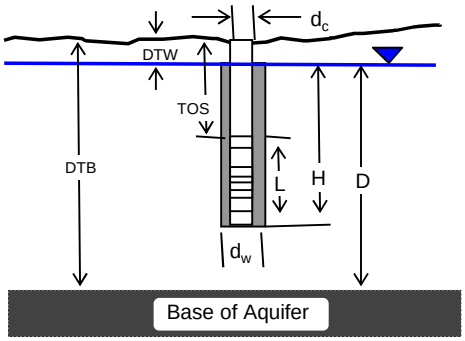
Pacific Crest PN: 110-001

WELL ID: Sound Mattress Site - Falling Head

Local ID: MW-11
Date: 9/11/2014
Time: 0:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	8.75	Feet
top of screen (TOS)	5.8	Feet
Base of Aquifer (DTB)	15.8	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	fine sand and silt	



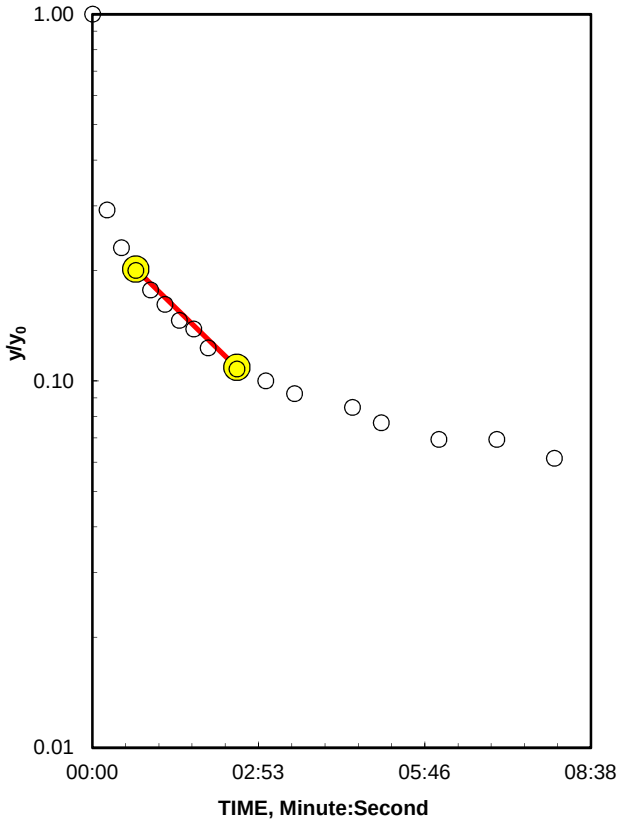
COMPUTED

L_{wetted}	7.05	Feet
D =	7.05	Feet
H =	7.05	Feet
L/r_w =	28.20	
$y_{0\text{-DISPLACEMENT}}$ =	39.59	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	2.009	
ln(Re/rw) =	2.496	
Re =	3.03	cm
Slope =	0.002552	$\log_{10}$/sec
$t_{90\%}$ recovery =	392	sec

Input is consistent.

K = 0.00022 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

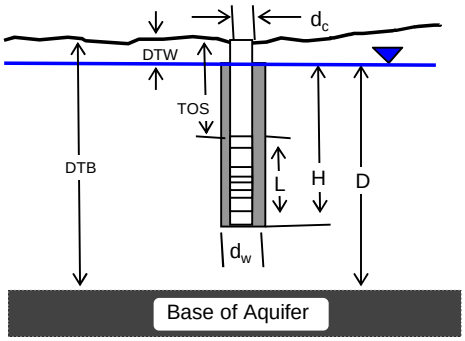
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	7.90
2	0:00:15.0	6.98
3	0:00:30.0	6.90
4	0:00:45.0	6.86
5	0:01:00.0	6.83
6	0:01:15.0	6.81
7	0:01:30.0	6.79
8	0:01:45.0	6.78
9	0:02:00.0	6.76
10	0:02:30.0	6.74
11	0:03:00.0	6.73
12	0:03:30.0	6.72
13	0:04:30.0	6.71
14	0:05:00.0	6.70
15	0:06:00.0	6.69
16	0:07:00.0	6.69
17	0:08:00.0	6.68

WELL ID: Sound Mattress Site - Rising Head

Local ID: MW-11
Date: 9/11/2014
Time: 16:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	8.75	Feet
top of screen (TOS)	5.8	Feet
Base of Aquifer (DTB)	15.8	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	fine sand and silt	



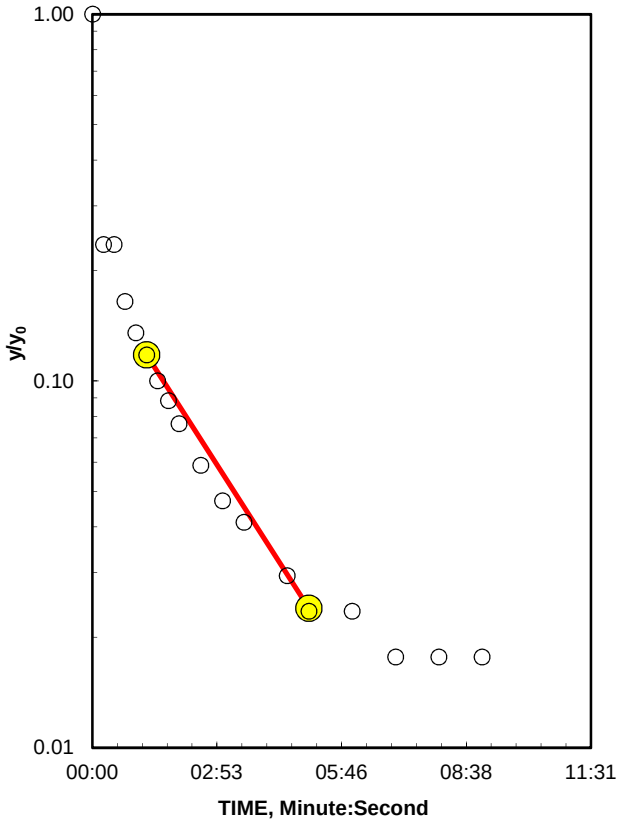
COMPUTED

L_{wetted}	7.05	Feet
D =	7.05	Feet
H =	7.05	Feet
L/r_w =	28.20	
$y_{0\text{-DISPLACEMENT}}$ =	51.78	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	2.009	
ln(Re/rw) =	2.496	
Re =	3.03	cm
Slope =	0.003074	log_{10}/sec
$t_{90\%}$ recovery =	325	sec

Input is consistent.

K = 0.00026 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

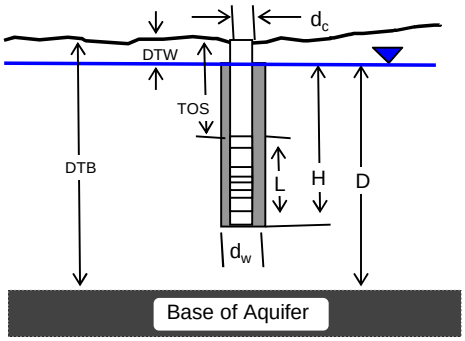
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	16:00:00.0	5.00
2	16:00:15.0	6.30
3	16:00:30.0	6.30
4	16:00:45.0	6.42
5	16:01:00.0	6.47
6	16:01:15.0	6.50
7	16:01:30.0	6.53
8	16:01:45.0	6.55
9	16:02:00.0	6.57
10	16:02:30.0	6.60
11	16:03:00.0	6.62
12	16:03:30.0	6.63
13	16:04:30.0	6.65
14	16:05:00.0	6.66
15	16:06:00.0	6.66
16	16:07:00.0	6.67
17	16:08:00.0	6.67
18	16:09:00.0	6.67

WELL ID: Sound Mattress Site - Falling Head

Local ID: MW-13
Date: 10/30/2014
Time: 0:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	6.85	Feet
top of screen (TOS)	10	Feet
Base of Aquifer (DTB)	20	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	fine sand and silt	



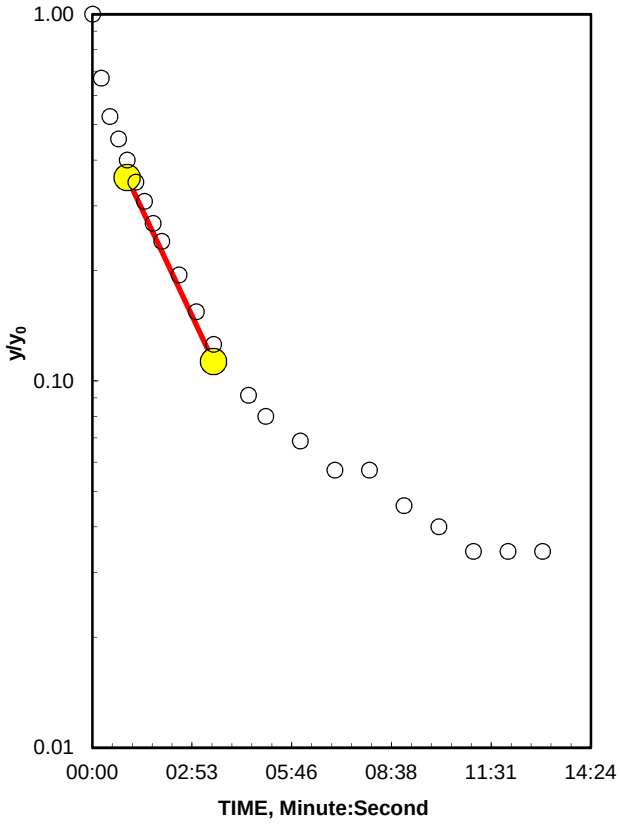
COMPUTED

L_{wetted}	10	Feet
D =	13.15	Feet
H =	13.15	Feet
L/r_w =	40.00	
$y_{0\text{-DISPLACEMENT}}$ =	53.30	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	2.451	
ln(Re/rw) =	2.951	
Re =	4.78	cm
Slope =	0.003347	$\log_{10}$/sec
$t_{90\%}$ recovery =	299	sec

Input is consistent.

K = 0.00024 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

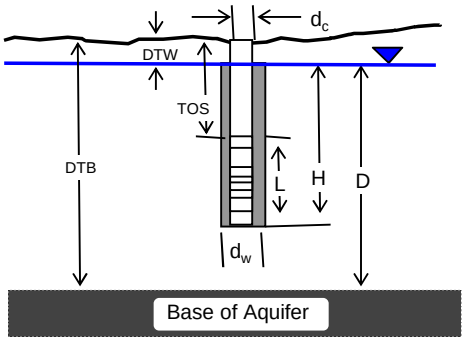
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	7.80
2	0:00:15.0	7.22
3	0:00:30.0	6.97
4	0:00:45.0	6.85
5	0:01:00.0	6.75
6	0:01:15.0	6.66
7	0:01:30.0	6.59
8	0:01:45.0	6.52
9	0:02:00.0	6.47
10	0:02:30.0	6.39
11	0:03:00.0	6.32
12	0:03:30.0	6.27
13	0:04:30.0	6.21
14	0:05:00.0	6.19
15	0:06:00.0	6.17
16	0:07:00.0	6.15
17	0:08:00.0	6.15
18	0:09:00.0	6.13
19	0:10:00.0	6.12
20	0:11:00.0	6.11
21	0:12:00.0	6.11
22	0:13:00.0	6.11

WELL ID: Sound Mattress Site - Rising Head

Local ID: MW-13
Date: 10/30/2014
Time: 0:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	6.85	Feet
top of screen (TOS)	10	Feet
Base of Aquifer (DTB)	20	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	fine sand and silt	



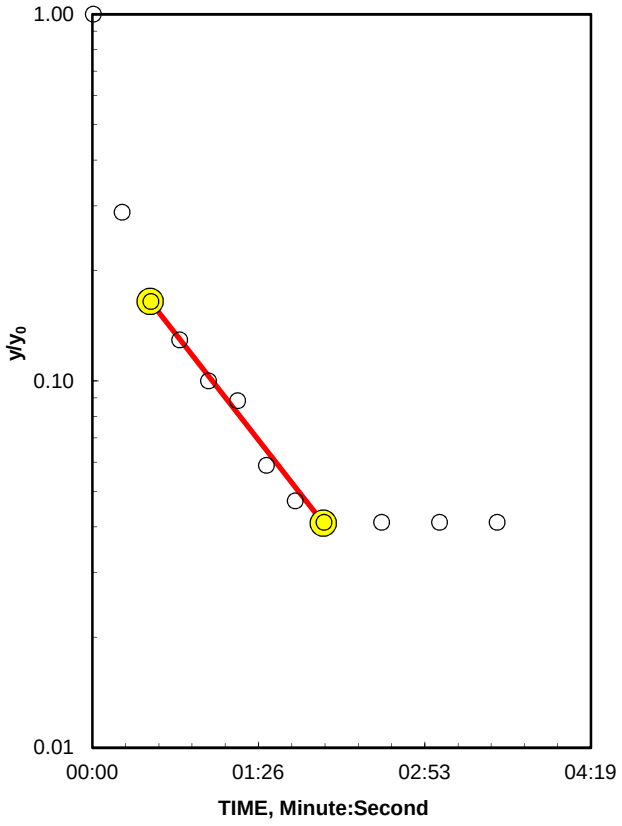
COMPUTED

L_{wetted}	10	Feet
D =	13.15	Feet
H =	13.15	Feet
L/r_w =	40.00	
$y_{0\text{-DISPLACEMENT}}$ =	51.78	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	2.451	
ln(Re/rw) =	2.951	
Re =	4.78	cm
Slope =	0.006719	$\log_{10}$/sec
$t_{90\%}$ recovery =	149	sec

Input is consistent.

K = 0.00048 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

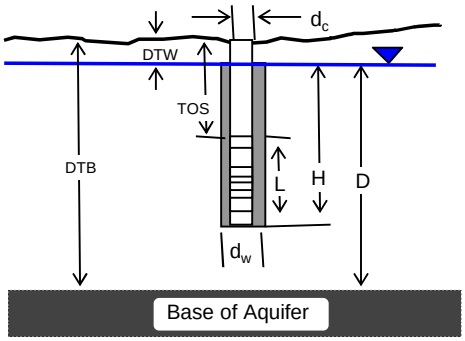
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	4.50
2	0:00:15.0	5.71
3	0:00:30.0	5.92
4	0:00:45.0	5.98
5	0:01:00.0	6.03
6	0:01:15.0	6.05
7	0:01:30.0	6.10
8	0:01:45.0	6.12
9	0:02:00.0	6.13
10	0:02:30.0	6.13
11	0:03:00.0	6.13
12	0:03:30.0	6.13

WELL ID: Sound Mattress Site - Falling Head

Local ID: MW-14
Date: 10/30/2014
Time: 0:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	5.86	Feet
top of screen (TOS)	6	Feet
Base of Aquifer (DTB)	11	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	fine sand and silt	



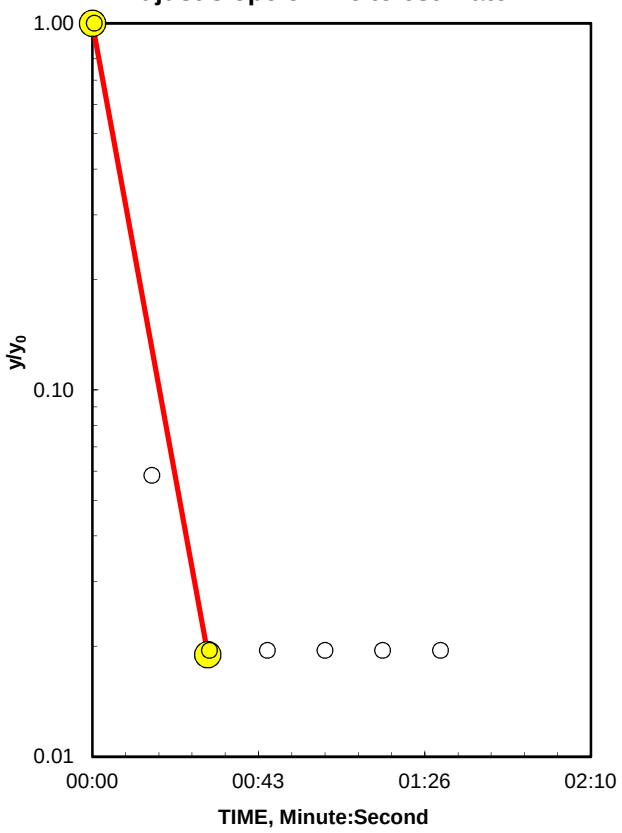
COMPUTED

L_{wetted}	5	Feet
D =	5.14	Feet
H =	5.14	Feet
L/r_w =	20.00	
$y_{0\text{-DISPLACEMENT}}$ =	46.90	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	1.726	
ln(Re/rw) =	2.221	
Re =	2.31	cm
Slope =	0.057375	$\log_{10}$/sec
$t_{90\%}$ recovery =	17	sec

Input is consistent.

K = 0.0062 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

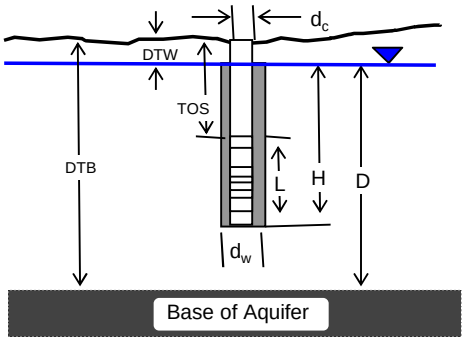
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	8.00
2	0:00:15.0	6.55
3	0:00:30.0	6.49
4	0:00:45.0	6.49
5	0:01:00.0	6.49
6	0:01:15.0	6.49
7	0:01:30.0	6.49

WELL ID: Sound Mattress Site - Rising Head

Local ID: MW-14
Date: 10/30/2014
Time: 16:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	5	Feet
Depths to:		
water level (DTW)	5.86	Feet
top of screen (TOS)	6	Feet
Base of Aquifer (DTB)	11	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	fine sand and silt	



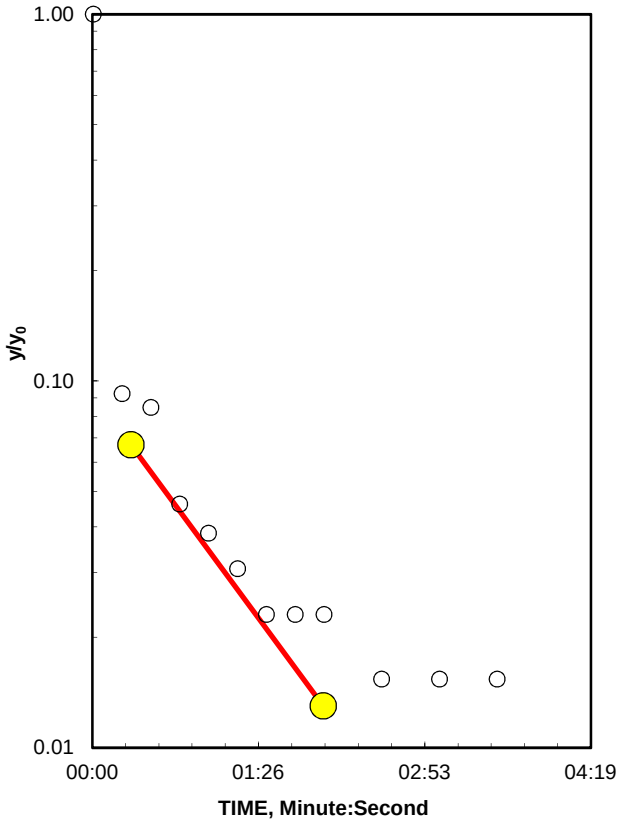
COMPUTED

L_{wetted}	5	Feet
D =	5.14	Feet
H =	5.14	Feet
L/r_w =	20.00	
$y_{0\text{-DISPLACEMENT}}$ =	39.59	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	1.726	
ln(Re/rw) =	2.221	
Re =	2.31	cm
Slope =	0.007121	$\log_{10}$/sec
$t_{90\%}$ recovery =	140	sec

Input is consistent.

K = 0.00077 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

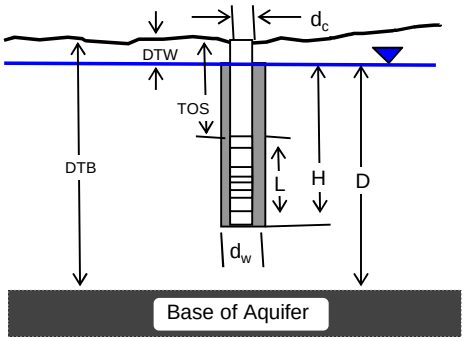
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	16:00:00.0	5.20
2	16:00:15.0	6.38
3	16:00:30.0	6.39
4	16:00:45.0	6.44
5	16:01:00.0	6.45
6	16:01:15.0	6.46
7	16:01:30.0	6.47
8	16:01:45.0	6.47
9	16:02:00.0	6.47
10	16:02:30.0	6.48
11	16:03:00.0	6.48
12	16:03:30.0	6.48

WELL ID: Sound Mattress Site - Falling Head

Local ID: MW-16
Date: 9/11/2014
Time: 0:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	9.16	Feet
top of screen (TOS)	3	Feet
Base of Aquifer (DTB)	13	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	fine sand and silt	



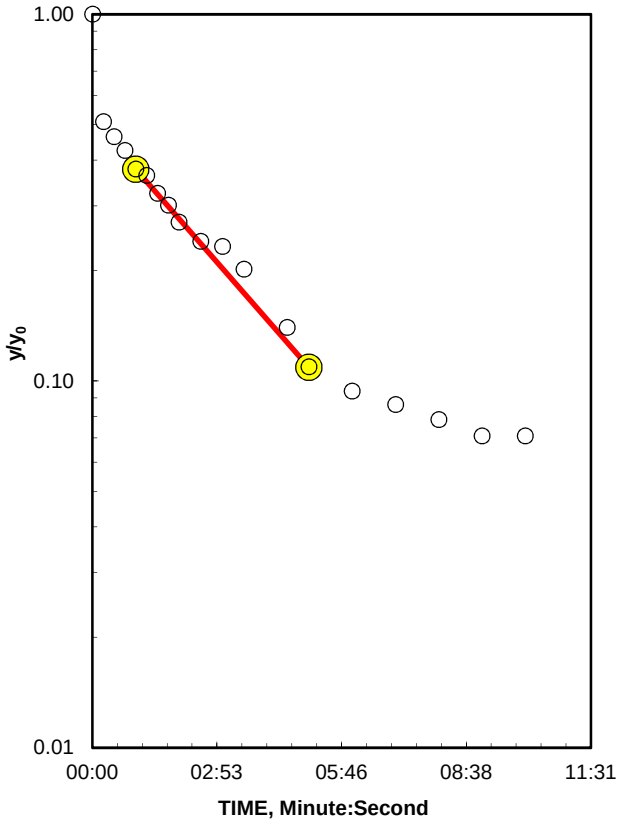
COMPUTED

L_{wetted}	3.84	Feet
D =	3.84	Feet
H =	3.84	Feet
L/r_w =	15.36	
$y_{0\text{-DISPLACEMENT}}$ =	39.59	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	1.528	
ln(Re/rw) =	1.991	
Re =	1.83	cm
Slope =	0.00225	$\log_{10}$/sec
$t_{90\%}$ recovery =	444	sec

Input is consistent.

K = 0.00028 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

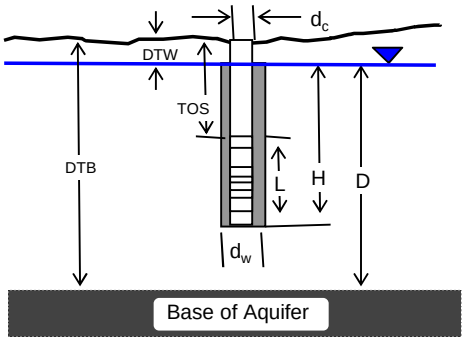
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	7.50
2	0:00:15.0	6.86
3	0:00:30.0	6.80
4	0:00:45.0	6.75
5	0:01:00.0	6.69
6	0:01:15.0	6.67
7	0:01:30.0	6.62
8	0:01:45.0	6.59
9	0:02:00.0	6.55
10	0:02:30.0	6.51
11	0:03:00.0	6.50
12	0:03:30.0	6.46
13	0:04:30.0	6.38
14	0:05:00.0	6.34
15	0:06:00.0	6.32
16	0:07:00.0	6.31
17	0:08:00.0	6.30
18	0:09:00.0	6.29
19	0:10:00.0	6.29

WELL ID: Sound Mattress Site - Rising Head

Local ID: MW-16
Date: 9/11/2014
Time: 16:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	9.16	Feet
top of screen (TOS)	3	Feet
Base of Aquifer (DTB)	13	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	fine sand and silt	



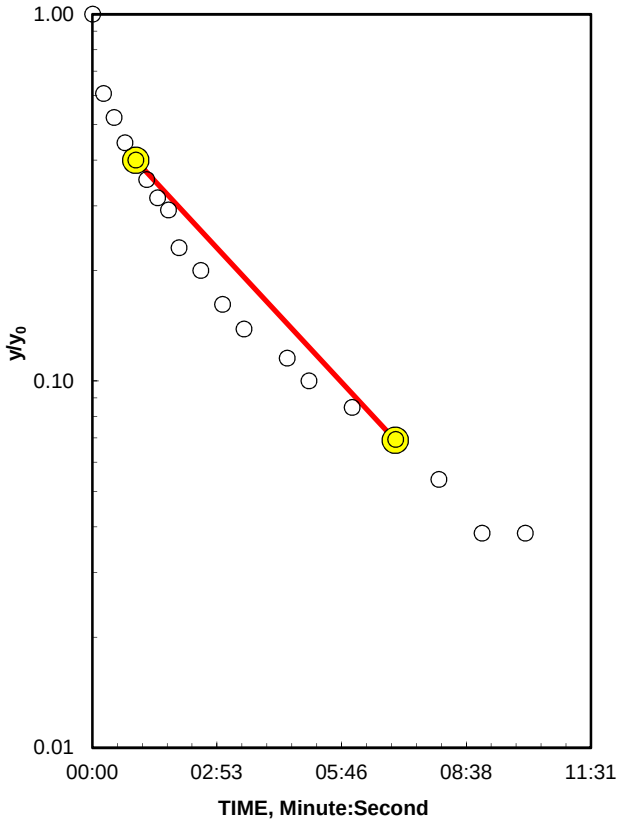
COMPUTED

L_{wetted}	3.84	Feet
D =	3.84	Feet
H =	3.84	Feet
L/r_w =	15.36	
$y_{0\text{-DISPLACEMENT}}$ =	39.59	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	1.528	
ln(Re/rw) =	1.991	
Re =	1.83	cm
Slope =	0.00212	$\log_{10}$/sec
$t_{90\%}$ recovery =	472	sec

Input is consistent.

K = 0.00027 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

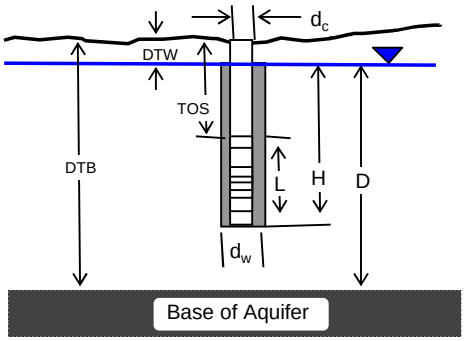
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	16:00:00.0	5.00
2	16:00:15.0	5.51
3	16:00:30.0	5.62
4	16:00:45.0	5.72
5	16:01:00.0	5.78
6	16:01:15.0	5.84
7	16:01:30.0	5.89
8	16:01:45.0	5.92
9	16:02:00.0	6.00
10	16:02:30.0	6.04
11	16:03:00.0	6.09
12	16:03:30.0	6.12
13	16:04:30.0	6.15
14	16:05:00.0	6.17
15	16:06:00.0	6.19
16	16:07:00.0	6.21
17	16:08:00.0	6.23
18	16:09:00.0	6.25
19	16:10:00.0	6.25

WELL ID: Sound Mattress Site - Falling Head

Local ID: MW-6
Date: 10/30/2014
Time: 0:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	6.06	Feet
top of screen (TOS)	6	Feet
Base of Aquifer (DTB)	16	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	fine sand and silt	



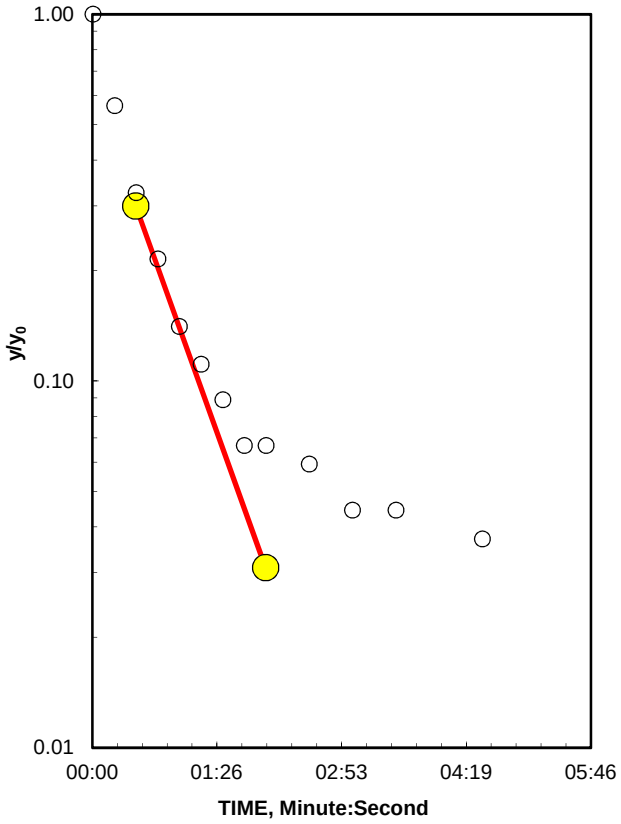
COMPUTED

L_{wetted}	9.94	Feet
D =	9.94	Feet
H =	9.94	Feet
L/r_w =	39.76	
$y_{0\text{-DISPLACEMENT}}$ =	41.12	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	2.443	
ln(Re/rw) =	2.777	
Re =	4.02	cm
Slope =	0.010953	$\log_{10}$/sec
$t_{90\%}$ recovery =	91	sec

Input is consistent.

K = 0.00074 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

Reduced Data

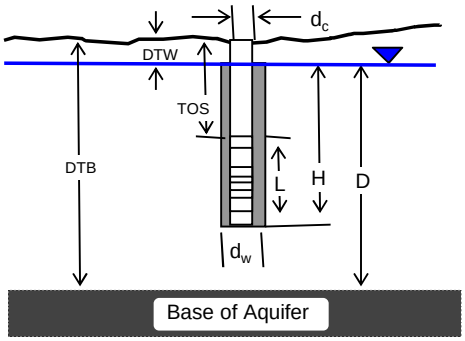
Entry	Time, Hr:Min:Sec	Water Level
1	0:00:00.0	8.75
2	0:00:15.0	8.16
3	0:00:30.0	7.84
4	0:00:45.0	7.69
5	0:01:00.0	7.59
6	0:01:15.0	7.55
7	0:01:30.0	7.52
8	0:01:45.0	7.49
9	0:02:00.0	7.49
10	0:02:30.0	7.48
11	0:03:00.0	7.46
12	0:03:30.0	7.46
13	0:04:30.0	7.45

WELL ID: Sound Mattress Site - Rising Head

Local ID: MW-6
Date: 10/30/2014
Time: 0:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	6.06	Feet
top of screen (TOS)	6	Feet
Base of Aquifer (DTB)	16	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	fine sand and silt	



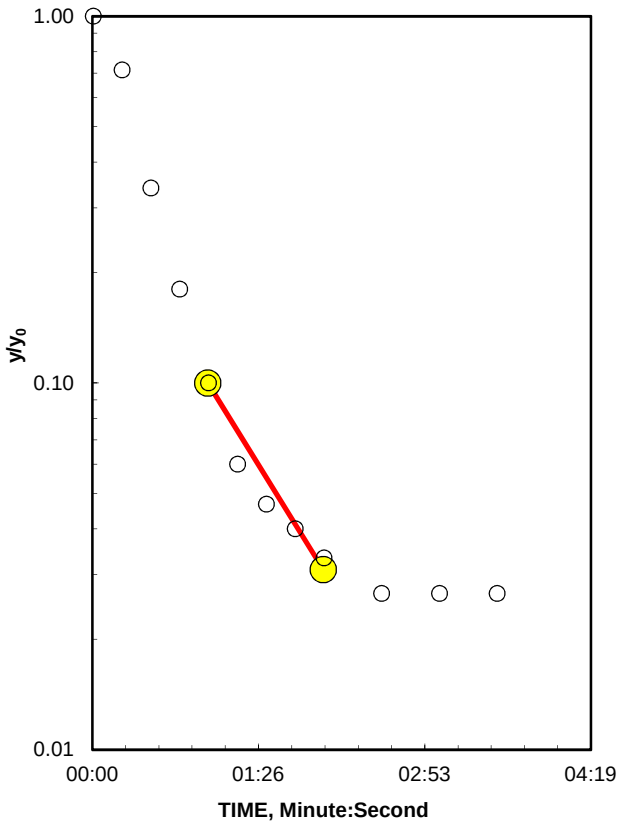
COMPUTED

L_{wetted}	9.94	Feet
D =	9.94	Feet
H =	9.94	Feet
L/r_w =	39.76	
$y_{0\text{-DISPLACEMENT}}$ =	45.69	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	2.443	
ln(Re/rw) =	2.777	
Re =	4.02	cm
Slope =	0.008477	$\log_{10}$/sec
$t_{90\%}$ recovery =	118	sec

Input is consistent.

K = 0.00058 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

Reduced Data

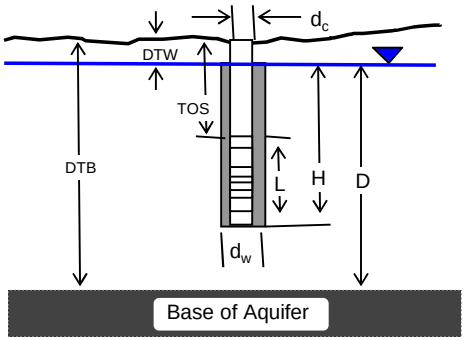
Entry	Time, Hr:Min:Sec	Water Level
1	0:00:00.0	6.00
2	0:00:15.0	6.43
3	0:00:30.0	6.99
4	0:00:45.0	7.23
5	0:01:00.0	7.35
6	0:01:15.0	7.41
7	0:01:30.0	7.43
8	0:01:45.0	7.44
9	0:02:00.0	7.45
10	0:02:30.0	7.46
11	0:03:00.0	7.46
12	0:03:30.0	7.46

WELL ID: Sound Mattress Site - Falling Head

Local ID: MW-7
Date: 9/11/2014
Time: 0:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	6.22	Feet
top of screen (TOS)	5.5	Feet
Base of Aquifer (DTB)	15.5	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	



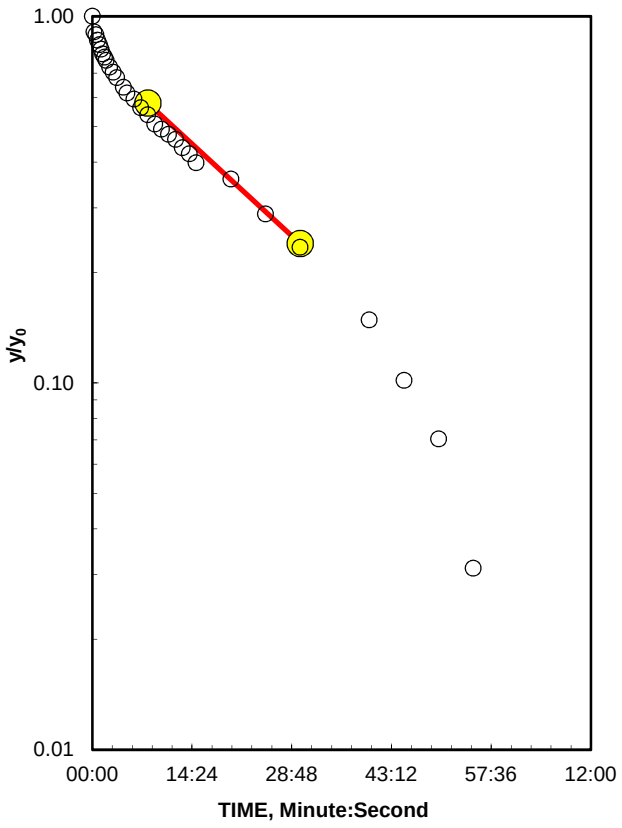
COMPUTED

L_{wetted}	9.28	Feet
D =	9.28	Feet
H =	9.28	Feet
L/r_w =	37.12	
$y_{0\text{-DISPLACEMENT}}$ =	38.98	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	2.354	
ln(Re/rw) =	2.719	
Re =	3.79	cm
Slope =	0.00029	$\log_{10}$/sec
$t_{90\%}$ recovery =	3445	sec

Input is consistent.

K = 0.000021 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

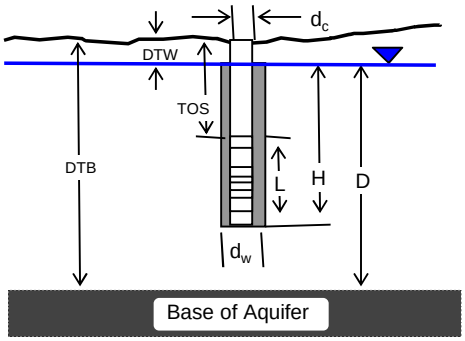
Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	0:00:00.0	9.16
2	0:00:15.0	9.04
3	0:00:30.0	9.02
4	0:00:45.0	8.98
5	0:01:00.0	8.95
6	0:01:15.0	8.92
7	0:01:30.0	8.89
8	0:01:45.0	8.87
9	0:02:00.0	8.85
10	0:02:30.0	8.81
11	0:03:00.0	8.78
12	0:03:30.0	8.75
13	0:04:30.0	8.70
14	0:05:00.0	8.67
15	0:06:00.0	8.64
16	0:07:00.0	8.60
17	0:08:00.0	8.57
18	0:09:00.0	8.53
19	0:10:00.0	8.51
20	0:11:00.0	8.49
21	0:12:00.0	8.47
22	0:13:00.0	8.44
23	0:14:00.0	8.42
24	0:15:00.0	8.39
25	0:20:00.0	8.34
26	0:25:00.0	8.25
27	0:30:00.0	8.18
28	0:40:00.0	8.07
29	0:45:00.0	8.01
30	0:50:00.0	7.97
31	0:55:00.0	7.92
32	1:00:00.0	7.89

WELL ID: Sound Mattress Site - Rising Head

Local ID: MW-7
Date: 9/11/2014
Time: 16:00

INPUT

Construction:		
Casing dia. (d_c)	2	Inch
Annulus dia. (d_w)	6	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	6.22	Feet
top of screen (TOS)	5.5	Feet
Base of Aquifer (DTB)	15.5	Feet
Annular Fill:		
across screen --	Coarse Sand	
above screen --	Bentonite	
Aquifer Material --	Clay soils (surface)	



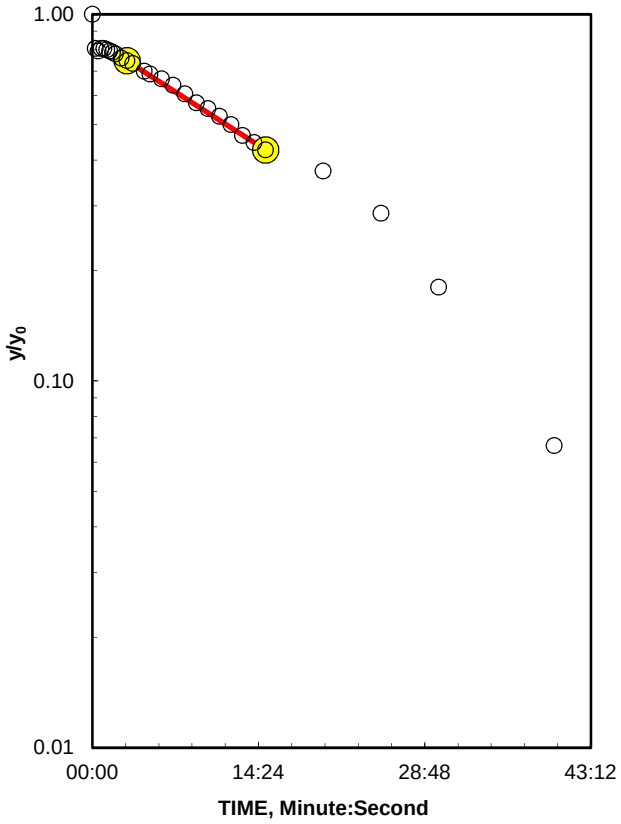
COMPUTED

L_{wetted}	9.28	Feet
D =	9.28	Feet
H =	9.28	Feet
L/r_w =	37.12	
$y_{0\text{-DISPLACEMENT}}$ =	45.69	cm
$y_{0\text{-SLUG}}$ =	47.59	cm
From look-up table using L/r_w		
Fully penetrate C =	2.354	
ln(Re/rw) =	2.719	
Re =	3.79	cm
Slope =	0.000337	$\log_{10}$/sec
$t_{90\%}$ recovery =	2964	sec

Input is consistent.

K = 0.000024 cm/Second

Adjust slope of line to estimate K



REMARKS:

Bouwer and Rice analysis of slug test, WRR 1976

Entry	Reduced Data Time, Hr:Min:Sec	Water Level
1	16:00:00.0	5.50
2	16:00:15.0	5.79
3	16:00:30.0	5.81
4	16:00:45.0	5.79
5	16:01:00.0	5.79
6	16:01:15.0	5.80
7	16:01:30.0	5.81
8	16:01:45.0	5.82
9	16:02:00.0	5.83
10	16:02:30.0	5.86
11	16:03:00.0	5.88
12	16:03:30.0	5.90
13	16:04:30.0	5.95
14	16:05:00.0	5.97
15	16:06:00.0	6.00
16	16:07:00.0	6.04
17	16:08:00.0	6.09
18	16:09:00.0	6.14
19	16:10:00.0	6.17
20	16:11:00.0	6.21
21	16:12:00.0	6.25
22	16:13:00.0	6.30
23	16:14:00.0	6.33
24	16:15:00.0	6.36
25	16:20:00.0	6.44
26	16:25:00.0	6.57
27	16:30:00.0	6.73
28	16:40:00.0	6.90

APPENDIX D
BORING LOGS

FURTHER INVESTIGATION REPORT

Former Sound Mattress and Felt Property
1940 East 11th Street
Tacoma, Washington

Pacific Crest PN: 110-001

LOG OF BORING P-1

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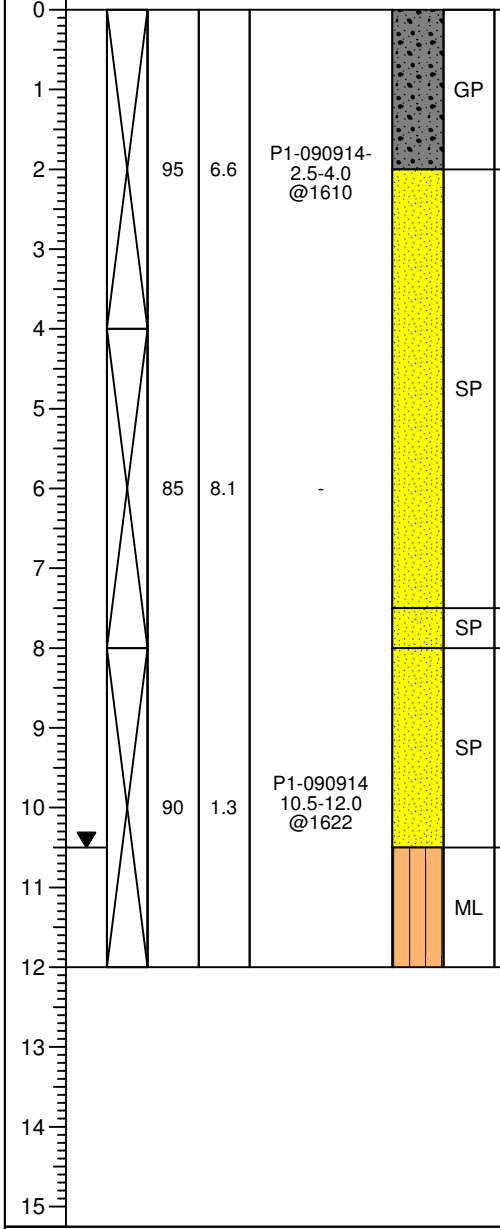
PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-9-2014 / 1608
Date/Time Completed	: 9-9-2014 / 1630
Total Boring Depth (bgs)	: 12.0'
Depth to Water ATD (bgs)	: 10.5'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core



DESCRIPTION

0.0-2.0 Sandy GRAVEL (65% coarse gravel, 35% fine sand), gray to light brown, dry, no odor.

2.0-7.5 SAND, minor silt (90% medium sand, 10% silt), brown, dry to moist, no odor.

7.5-8.0 SAND, minor silt (90% medium sand, 10% silt), brown, very moist, no odor.

8.0-10.5 SAND, minor silt (90% medium sand, 10% silt), black, very moist, no odor.

10.5-12.0 Sandy SILT (70% silt, 30% medium sand), dark gray-black, moist to wet, no odor.

Bottom of boring at 12.0 feet below ground surface (bgs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite
Pacific Crest Rep.	: M. DeCaro / M. Scofield

LOG OF BORING P-1

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LOG OF BORING P-2

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-9-2014 / 1530
Date/Time Completed	: 9-9-2014 / 1602
Total Boring Depth (bgs)	: 16.0'
Depth to Water ATD (bgs)	: 10.5'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0-1							GP	0.0-1.5 Sandy GRAVEL (65% coarse gravel, 35% fine sand), gray (rocks) to light brown, dry, no odor.
1-2			95	6.4	-		SP	1.5-2.5 SAND, minor silt, trace organics (85% fine sand, 10% silt, 5% woody debris), darker brown, moist, no odor.
2-8					P2-090914-4.0-5.5 @1540		SP	2.5-8.0 SAND, minor silt (90% fine sand, 10% silt), dark brown, moist, no odor.
8					P2-090914-8.0-9.5 @1556		SM	8.0-8.5 Sandy, gravelly SILT (40% silt, 30% fine gravel, 30% medium sand), dark gray-brown, very moist, no odor.
8.5-16	▼		80	5.1			SP	8.5-16.0 SAND, minor silt, trace shells (85% medium to coarse sand, 10% silt, 5% shells), dark brown-black, very moist to wet, no odor.
10			95	2.9				
12					-			
14			80	1.5				
16								Bottom of boring at 16.0 feet below ground surface (bgs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite
Pacific Crest Rep.	: M. DeCaro / M. Scofield

LOG OF BORING P-2

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LOG OF BORING P-3

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-10-2014 / 1000
Date/Time Completed	: 9-10-2014 / 1025
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 10.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-1.5 CONCRETE.
2			33	2.1	-		SM	1.5-4.5 Gravelly SAND with silt. (50% fine to medium sand, 30% coarse gravel, 20% silt), light to dark brown, dry to moist, no odor.
5					P3-091014-4.5-6.0 @1010			4.5-10.0 SAND (100% medium to coarse sand), brown mottled, moist, no odor.
6			70	2.8			SP	
10	▼		-	0.7	-			10.0-14.0 SAND (100% medium to coarse sand), brown mottled, wet, no odor.
12							SP	
14			-	1.1				14.0-16.0 SILT (100% silt), gray, moist, no odor.
15					P3-091014-14.5-16.0 @1025		ML	
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

LOG OF BORING P-3

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LOG OF BORING P-4

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-10-2014 / 0925
Date/Time Completed	: 9-10-2014 / 0955
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 12.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-1.5 CONCRETE.
2			75				SM	1.5-3.5 Gravelly SAND with silt (50% fine sand, 30% coarse gravel, 20% silt), light brown, dry, no odor.
4					P4-091014-3.5-5.0 @0935			3.5-10.0 SAND, trace shells (95% medium to coarse sand, 5% shells), white (shells) to mottled brown, moist, no odor.
6			100	3.3	-		SP	
8				-				
10			100	2.3	-			
11							SP	10.0-12.0 SAND, trace shells (95% medium to coarse sand, 5% shells), white (shells) to mottled brown, very moist, no odor.
12	▼							
13							SP	12.0-15.0 SAND, trace shells (95% medium to coarse sand, 5% shells), white (shells) to mottled brown, wet, no odor.
14			100					
15				1.0	P4-091014-15.0-16.0 @0945		SM	15.0-16.0 Silty SAND, trace shells (60% coarse sand, 35% silt, 5% shells), gray and black, moist to very moist, no odor.
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

LOG OF BORING P-4

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LOG OF BORING P-5

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-9-2014 / 0845
Date/Time Completed	: 9-9-2014 / 0920
Total Boring Depth (bcs)	: 12.0'
Depth to Water ATD (bcs)	: 9.5'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-0.5 CONCRETE.
1								0.5-4.5 SAND with silt, trace gravel (75% medium sand, 20% silt, 5% coarse gravel), mottled light to dark brown, dry, no odor.
2			80					
3				169	P5-090914-2.0-4.0 @0858		SM	
4								
5				12.3			SM	4.5-5.5 SAND, minor silt, minor shells, trace gravel (60% medium to coarse sand, 20% silt, 15% shell fragments, 5% gravel), white (shells), light brown, moist, no odor.
6			100		-			5.5-9.5 SAND, minor silt, trace gravel (75% medium to coarse sand, 20% silt, 5% gravel), light brown, moist, no odor.
7							SM	
8				12.8				
9	▼				P5-090914-8.5-9.5 @0915			
10			90	5.7				9.5-11.5 SAND, minor silt, trace gravel (75% medium to coarse sand, 20% silt, 5% gravel), light brown, wet, no odor.
11							SM	
12							SM	11.5-12.0 SAND, minor silt, trace gravel (75% medium to coarse sand, 20% silt, 5% gravel), light brown, dry, no odor.
								Bottom of boring at 12.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

LOG OF BORING P-5

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LOG OF BORING P-6

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-10-2014 / 1415
Date/Time Completed	: 9-10-2014 / 1430
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 9.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-1.5 CONCRETE.
2			60	13.3	P6-090914-2.5-4.0 @1430		ML	1.5-3.0 SILT with sand (80% silt, 20% fine sand), light brown, dry, no odor.
3								3.0-9.0 SAND, trace silt (95 medium to coarse sand, 5% silt), dark brown, moist, no odor.
4				1.2				
6			90		-		SP	
8				1.7				
9	▼							9.0-12.8 Silty SAND (65% coarse sand, 35% silt), brown, very moist to wet, no odor.
10			95					
11					P6-090914-10.5-12.0 @1443		SM	
12								
13							SM	12.8-13.5 SAND, minor silt, trace gravel (60% medium to coarse sand, 20% silt, 5% fine gravel), light brown, moist, no odor.
14			95		-		SP	13.5-14.5 SAND, trace silt (95% coarse sand, 5% silt), brown/black, very moist, no odor.
15							ML	14.5-16.0 SILT (100% silt), gray, very moist, no odor.
16				0.4				
								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

LOG OF BORING P-6

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LOG OF BORING P-7

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-10-2014 / 0810
Date/Time Completed	: 9-10-2014 / 0900
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 10.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-2.0 CONCRETE.
2							SM	2.0-3.5 SAND with gravel and silt (50% fine sand, 30% coarse gravel, 20% silt), light brown, dry, no odor.
4			95		P7-091014-3.5-5.5 @0830			3.5-10.0 SAND, trace shell (95% medium sand, 5% shell), white (shell) to mottled brown, moist, no odor.
5				0.0				
6								
7							SP	
8			100		-			
9				6.6				
10	▼							
10							SP	10.0-11.0 SAND, trace shell (95% medium sand, 5% shell), white (shell) to mottled brown, wet, no odor.
11				3.1				
12			100		P7-091014-12.5-14.0 @0850		SM	11.0-12.5 SAND, minor silt, trace shells (80% coarse sand, 15% silt, 5% shells), mottled gray/black, very moist to wet, no odor.
13							SM	12.5-14.0 Silty SAND, trace shells (60% coarse sand, 35% silt, 5% shells), mottled grey/black, very moist to wet, no odor.
14								
15							SM	14.0-18.0 SAND, minor silt, trace shells (80% coarse sand, 15% silt, 5% shells), mottled gray/black, very moist to wet, no odor.
16			60	1.7	-			
17								
18								
19								Bottom of boring at 18.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

LOG OF BORING P-7

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LOG OF BORING P-8

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-9-2014 / 1145
Date/Time Completed	: 9-9-2014 / 1210
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 10.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-1.5 CONCRETE.
2			40	34.2	-		SP	1.5-3.5 Gravelly SAND (60% medium sand, 40% coarse gravel), light brown, dry to moist, no odor.
4							SP	3.5-4.5 SAND (100% medium sand), brown, mottled, dry, no odor.
5					P8-090914-4.0-6.0 @1153		ML	4.5-5.5 Sandy SILT (55% silt, 45% medium sand), light brown, moist, no odor.
6			100	11.9			SP	5.5-9.0 SAND (100% medium sand), mottled, moist.
9							SP	9.0-10.0 SAND, minor silt, trace shell fragments (85% medium to coarse sand, 10% silt, 5% shells), white (shells) to dark brown, moist to very moist, no odor.
10	▼		100	34.2	-		SP	10.0-13.0 SAND, minor silt, trace shell fragments (85% medium to coarse sand, 10% silt, 5% shells), white (shells) to dark brown, wet, no odor.
13							ML	13.0-16.0 Sandy SILT, trace shell (60% silt, 35% medium sand, 5% shell), grey to brown, very moist, no odor.
14			100	NM	P8-090914-14.0-16.0 @1206			
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

LOG OF BORING P-8

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LOG OF BORING P-9

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-9-2014 / 1110
Date/Time Completed	: 9-9-2014 / 1140
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 10.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-1.5 CONCRETE.
2			20	0.0	-		SP	1.5-4.0 SAND, minor gravel (90% medium sand, 10% coarse gravel), mottled brown, moist, no odor.
4							SP	4.0-6.5 SAND, trace gravel (95% medium sand, 5% coarse gravel), mottled brown, moist, no odor.
6			95	5.9	P9-090901-6.0-8.5 @1120		ML	6.5-7.5 SILT (100% silt), gray, dry to moist, no odor.
8							SP	7.5-9.0 SAND (100% medium sand), dark brown, dry to moist, no odor.
9							SP	9.0-12.0 SAND with gravel, minor silt (60% medium to coarse sand, 30% fine gravel, 10% silt), mottled, moist to very moist, no odor.
10	▼		100	6.5	-		SP	10.0-12.0 SAND with gravel, minor silt (60% medium to coarse sand, 30% fine gravel, 10% silt), mottled, wet, no odor.
12							SP	12.0-14.0 SAND with gravel, minor silt, trace shells (55% medium to coarse sand, 30% fine gravel, 10% silt, 5% shells), mottled, wet, no odor.
14			100	7.5	P9-090914-14.0-16.0 @1135		ML	14.0-16.0 SILT (100% silt), mottled, wet, no odor.
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

LOG OF BORING P-9

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LOG OF BORING P-10

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-9-2014 / 0940
Date/Time Completed	: 9-9-2014 / 1020
Total Boring Depth (bcs)	: 13.5'
Depth to Water ATD (bcs)	: 10.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-0.5 CONCRETE.
1							GM	0.5-1.5 GRAVEL with silt, with sand (60% coarse gravel, 20% silt, 20% medium sand), light brown, dry, no odor.
2			80	8.9				1.5-4.5 Sandy SILT, minor gravel (50% silt, 40% medium sand, 10% coarse gravel), light to medium brown, dry, no odor.
3					P10-090914-3.0-4.0 @0947		SM	
4								
5								4.5-10.0 SAND, minor silt (90% medium to coarse sand, 10% silt), mottled light to dark brown, moist, no odor.
6			90	20.5	-			
7							SP	
8								
9								
10	▼		100	46.3				10.0-13.5 Silty SAND, trace gravel (60% medium to coarse sand, 35% silt, 5% coarse gravel) mottled light to dark brown, very moist to wet, no odor.
11					P10-090914-10.0-12.0 @1008			
12							SM	
13			20	NM	-			
14								Refusal at 13.5 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

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LOG OF BORING P-11

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-9-2014 / 1328
Date/Time Completed	: 9-9-2014 / 1405
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 10.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-0.5 CONCRETE.
1								0.5-3.5 Gravelly SAND (65% medium sand, 35% coarse gravel), light brown, moist, no odor.
2			75	75.3	-		SP	
3								
4					P11-090914-3.8-5.0 @1345		SP	3.5-3.8 SAND (100% medium sand), mottled brown, dry to moist, no odor.
							ML	3.8-4.6 SILT, trace sand (95% silt, 5% fine sand), brown, moist, no odor.
5							SP	4.6-6.8 SAND (100% medium sand), brown, moist, no odor.
6			90	2.0				
7							SP	6.8-8.0 SAND, trace shells,(95% medium to coarse sand, 5% shell), brown, moist, no odor.
8								8.0-12.0 Sandy SILT (60% silt, 40% fine sand), brown, moist, no odor.
9								
10	▼		95	8.2	-		ML	
11								
12								12.0-15.0 SAND with silt, trace shell fragments (80% sand, 17% silt, 3% shell), brown, very moist, no odor.
13							SM	
14			85	3.6				
15					P11-090914-14.5-16.0 @1400		ML	15.0-16.0 SILT, minor sand (90% silt, 10% sand), gray, very moist, no odor.
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-9-2014 / 1230
Date/Time Completed	: 9-9-2014 / 1315
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 12.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-1.5 CONCRETE.
2			0	NM	-			1.5-4.0 No recovery.
4					P12-090914-4.0-5.5 @1250		SM	4.0-4.5 SAND with silt (70% medium sand, 30% silt), mottled brown, moist, no odor.
5							SP	4.5-8.0 SAND (100% medium sand), mottled brown, moist, no odor.
6			100	NM				
8							SP	8.0-12.0 SAND (100% medium to coarse sand), brown, moist, no odor.
10			95	4.3	-			
12	▼						SM	12.0-15.0 SAND with silt (70% medium sand, 30% silt) brown, wet, no odor.
14			95	3.2				
15					P12-090914-14.5-16.0 @1300		ML	15.0-16.0 SILT with sand (70% silt, 30% sand) brown, wet, no odor.
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-10-2014 / 1055
Date/Time Completed	: 9-10-2014 / 1125
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 10.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-0.5 CONCRETE.
1								0.5-8.5 SAND, trace shells (95% medium sand, 5% shells), mottled brown, dry to moist, no odor.
2			60	1.7	P13-091014-2.5-4.0 @1105			
3								
4							SP	
5								
6			75	4.3	-			
7								
8								
9							GP	8.5-9.0 Sandy GRAVEL (60% coarse gravel, 40% medium sand), light brown, dry, no odor.
							SP	9.0-10.0 SAND, trace shells (95% medium sand, 5% shells), mottled brown, dry to moist, no odor.
10	▼		90	1.8	P13-091014-10.0-11.0 @1110			10.0-14.0 Sandy GRAVEL (60% coarse gravel, 40% medium sand), light brown, wet, no odor.
11								
12							GP	
13								
14			100	1.4				14.0-16.0 SILT (100% silt), gray, wet, no odor.
15					P13-091014-14.5-16.0 @1120		ML	
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

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LOG OF BORING P-14

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-10-2014 / 1145
Date/Time Completed	: 9-10-2014 / 1215
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 9.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-0.5 CONCRETE.
1								0.5-5.0 SAND, trace gravel (97% coarse sand, 3% fine gravel) brown, moist, no odor.
2			50	0.0	P14-091014-2.5-4.0 @1150		SP	
3								
4								
5								5.0-7.5 SAND (100% medium sand), brown, moist, no odor.
6			90	0.0	-		SP	
7								
8							SM	7.5-9.0 Silty SAND (60% medium sand, 40% silt), brown, moist, no odor.
9	▼							9.0-11.75 SAND with silt (80% medium sand, 20% silt), brown, very moist to wet, no odor.
10			100	2.8	P14-091014-10.0-10.5 @1205		SM	
11								
12								11.75-14.5 SAND with silt (75% medium sand, 25% silt), brown, very moist, no odor.
13							SM	
14			100	115				
15					P14-091014-14.5-16.0 @1210		ML	14.5-15.0 SILT with sand (80% silt, 20% fine sand), brown, very moist, no odor.
							ML	15.0-16.0 SILT (100% silt), gray, wet, no odor.
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-10-2014 / 1232
Date/Time Completed	: 9-10-2014 / 1305
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 10.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-0.5 CONCRETE.
1							SP	0.5-4.0 SAND, trace gravel, trace shells (90% medium sand, 5% coarse gravel, 5% shells), mottled brown, moist, no odor.
2			45	NM				
3					P16-091014-2.5-5.0 @1240			
4								4.0-10.0 SAND, trace shells (95% medium sand, 5% shells), mottled brown, moist, no odor.
5				0.8				
6			95		-			
7							SP	
8				4.8				
9								
10	▼		100	8.3	-			
10							SP	10.0-11.0 SAND, trace shells (95% medium sand, 5% shells), mottled brown, wet, no odor.
11							SM	11.0-12.0 SAND with silt (70% medium sand, 30% silt), mottled brown, wet, no odor.
12							SM	12.0-12.5 SAND with silt (70% fine to medium sand, 30% silt), mottled brown, wet, no odor.
13							SM	12.5-15.0 SAND with silt (70% medium to coarse sand, 30% silt), mottled brown, wet, no odor.
14			100	5.4				
15					P16-091014-15.0-16.0 @1300		ML	15.0-16.0 Sandy SILT (60% silt, 40% fine sand), gray, wet, no odor.
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-10-2014 / 1322
Date/Time Completed	: 9-10-2014 / 1345
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 10.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-0.5 CONCRETE.
1								0.5-5.0 SAND (100% medium sand), brown, moist, no odor.
2			60	0.0			SP	
3					P17-091014-2.0-6.0 @1345			
4					P17-091014-2.0-6.0 dup @1350			
5								5.0-5.5 CONCRETE.
6			-	0.8	-			5.5-8.5 SAND, trace silt (97% medium sand, 3% silt), brown, moist, no odor.
7							SP	
8								
9							SP	8.5-9.0 SAND with gravel (70% coarse sand, 30% medium gravel), light brown, dry, no odor.
10	▼		-	2.2	-		SP	9.0-10.0 SAND, minor silt (90% medium sand, 10% silt), brown, moist, no odor.
11							SP	10.0-12.0 SAND, minor silt (90% medium sand, 10% silt), brown, very moist to wet, no odor.
12							SM	12.0-13.0 Silty SAND (60% medium sand, 40% silt), brown, moist, no odor.
13								13.0-15.0 Silty SAND (55% medium sand, 45% silt), brown, very moist, no odor.
14			-	59.6	P17-091014-13.5-16.0 @1415		SM	
15					P17-091014-13.5-16.0 dup @1420		ML	15.0-16.0 SILT (100% silt), gray, wet, no odor.
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-11-2014 / 0905
Date/Time Completed	: 9-11-2014 / 0950
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 11.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-0.5 CONCRETE.
1								0.5-7.5 SAND with silt (75% fine sand, 25% silt), light brown, dry, no odor.
2			60	0.5				
3					P18-091114-2.5-4.0 @0925			
4							SM	
5								
6			95	0.4	-			
7								
8							SM	7.5-8.5 Silty SAND (65% fine sand, 35% silt), light brown, dry, no odor
9								8.5-11.0 SAND with silt (70% fine sand, 30% silt), brown, moist, no odor.
10			98	0.1	-		SM	
11	▼						SM	11.0-11.5 SAND with silt (70% fine sand, 30% silt), dark brown, very moist to wet, no odor.
12							ML	11.5-12.0 SILT with sand (85% silt, 15% fine sand), dark brown, very moist, no odor. Layer of shells at 11.75 feet.
13							SM	12.0-14.75 SAND with silt (70% fine sand, 30% silt), dark brown, wet, no odor.
14			95	8.5				
15					P18-091114-14.5-16.0 @0945		ML	14.75-16.0 SILT with sand (80% silt, 20% fine sand), dark brown, wet, no odor.
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: A. Wiebenga / M. Scofield

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LOG OF BORING P-19

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-11-2014 / 0840
Date/Time Completed	: 9-11-2014 / 0910
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 12.5'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-0.5 CONCRETE.
1							SM	0.5-2.0 Silty SAND (65% fine sand, 35% silt), light brown, dry, no odor.
2			60	0.2				
3					P19-091114-2.5-4.0 @0845		SM	2.0-5.5 SAND with silt (70% fine sand, 30% silt), dark brown, dry, no odor.
4								
5								
6			95	0.2	-		SM	5.5-7.5 SAND with silt, trace shells (80% fine sand, 15% silt, 15% shells), dark brown, moist, no odor, shell fragments concentrated at 5.5 feet.
7								
8							SM	7.5-11.0 SAND with silt (70% fine sand, 30% silt), dark brown, moist, no odor.
9								
10			100		-			
11							SM	11.0-12.5 Silty SAND (55% fine sand, 45% silt), dark brown, moist, no odor.
12	▼			0.3				
13							SM	12.5-15.0 SAND with silt (80% fine sand, 20% silt), dark brown, very moist, no odor.
14			90	5.5				
15					P19-091114-14.5-16.0 @0905		ML	15.0-16.0 SILT, trace sand (97% silt, 3% fine sand), dark brown, very moist, no odor.
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: A. Wiebenga / M. Scofield

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LOG OF BORING P-20

Date/Time Started	: 9-10-2014 / 1450
Date/Time Completed	: 9-102014 / 1520
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 9.0'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-0.5 CONCRETE.
1							SP	0.5-2.0 SAND (100% medium sand), light brown, dry, no odor.
2			90	0.0				
3					P20-091014-2.0-4.0 @1450		SP	2.0-4.0 SAND (100% medium to coarse sand), brown, dry, no odor.
4								
5							SP	4.0-5.5 SAND, minor silt (90% medium sand, 10% silt), brown, moist, no odor.
6			100	0.0	-		SM	5.5-7.0 SAND with silt (80% medium sand, 20% silt), brown, moist, no odor.
7								
8							SM	7.0-9.0 Silty SAND (60% fine sand, 40% silt), light brown, moist, no odor.
9	▼							
10			100	1.4				9.0-15.0 SAND, minor silt (85% medium sand, 15% silt), dark brown, wet, no odor.
11								
12					P20-091014-11.5-12.0 @1530		SM	
13								
14			90	0.0				
15					P20-091014-14.5-16.0 @1525		ML	15.0-16.0 SILT (100% silt)
16								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: M. DeCaro / M. Scofield

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LOG OF BORING P-21

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Site: Former Sound Mattress and Felt Company Property
Client: Mr. Robert Shea

Project #: 110-001

Date/Time Started	: 9-11-2014 / 0805
Date/Time Completed	: 9-11-2014 / 0835
Total Boring Depth (bcs)	: 16.0'
Depth to Water ATD (bcs)	: 12.5'
Elevation (ft)	: N/A
Drilling Method	: Direct Push
Sampler Type	: 4-foot Macro-Core

Depth In Feet	Water Level ATD	Sample	% Recovery	PID (ppm)	Sample ID	GRAPHIC	USCS	DESCRIPTION
0								0.0-0.5 CONCRETE
1							SM	0.5-2.0 Silty SAND (65% medium sand, 35% silt), light brown, dry, no odor.
2			60	0.1				
3					P21-091114-2.5-4.0 @0810		SM	2.0-4.5 SAND with silt (75% medium sand, 25% silt), dark brown, dry, no odor.
4								
5								4.5-10.5 Silty SAND (55% fine sand, 45% silt), light brown, dry, no odor.
6			95	0.3	-			
7							SM	
8								
9								
10			90					
11							SM	10.5-12.5 SAND with silt (75% fine sand, 25% silt), dark brown, moist, no odor.
12	▼			0.5	P21-091114-12.5-13.5 @0835			
13							SM	12.5-15.0 Silty SAND (65% fine sand, 35% silt), brown, wet, no odor.
14			95	12.4				
15					P21-091114-14.5-16.0 @0830		ML	15.0-15.5 SILT with sand (80% silt, 20% fine sand), gray/brown, wet, no odor.
16							ML	15.5-16.0 SILT, trace sand (97% silt, 3% fine sand), gray, wet, no odor.
								Bottom of boring at 16.0 feet below concrete surface (bcs).

Drilling Company	: ESN
Drilling Foreman	: Trevor Anderson
Equipment	: Geoprobe
Back-Fill Material	: Bentonite/Concrete
Pacific Crest Rep.	: A. Wiebenga / M. Scofield

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APPENDIX E
WASTE DISPOSAL DOCUMENTATION

FURTHER INVESTIGATION REPORT

Former Sound Mattress and Felt Property
1940 East 11th Street
Tacoma, Washington

Pacific Crest PN: 110-001

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
	CESQG	1	206-285-8010	013258454 JJK

GENERATOR

5. Generator's Name and Mailing Address
Sound Mattress and Felt Company
7424 Bridgeport Way, Suite 206
Lakewood WA 98499-8134
425 888-4990
Generator's Phone:

Generator's Site Address (if different than mailing address)
1940 E. 11th St
Tacoma, WA 98421-3301

6. Transporter 1 Company Name: Kleen Environmental Technologies, Inc.
U.S. EPA ID Number: WAH000004457

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Chemical Waste Management of the NW
17629 Cedar Springs Lane
Arlington, OR 97812
541-454-2030
Facility's Phone:
U.S. EPA ID Number: ORD089452353

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. UN3077, Environmentally Hazardous Substance, solid, n.o.s., 9, PG II, ERG#(171) (1,2,Dichloroethene, Trichloroethene)	2	DM	1300	P	
X	2. UN3082, Environmentally Hazardous Substance, Liquid, n.o.s., 9, PG II, ERG#(171) (1,2,Dichloroethene, Trichloroethene)	1	DM	55	G	
	3.					
	4.					

14. Special Handling Instructions and Additional Information
9b.1) OR325474, 2 ea x 55 gal 1A2 steel drums 2) OR325475, 1 ea x 55 gal 1A2 steel drums

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Robert T. Shea
Signature: Robert T. Shea
Month Day Year
DO NOT DATE

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name	Signature	Month	Day	Year
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name	Signature	Month	Day	Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

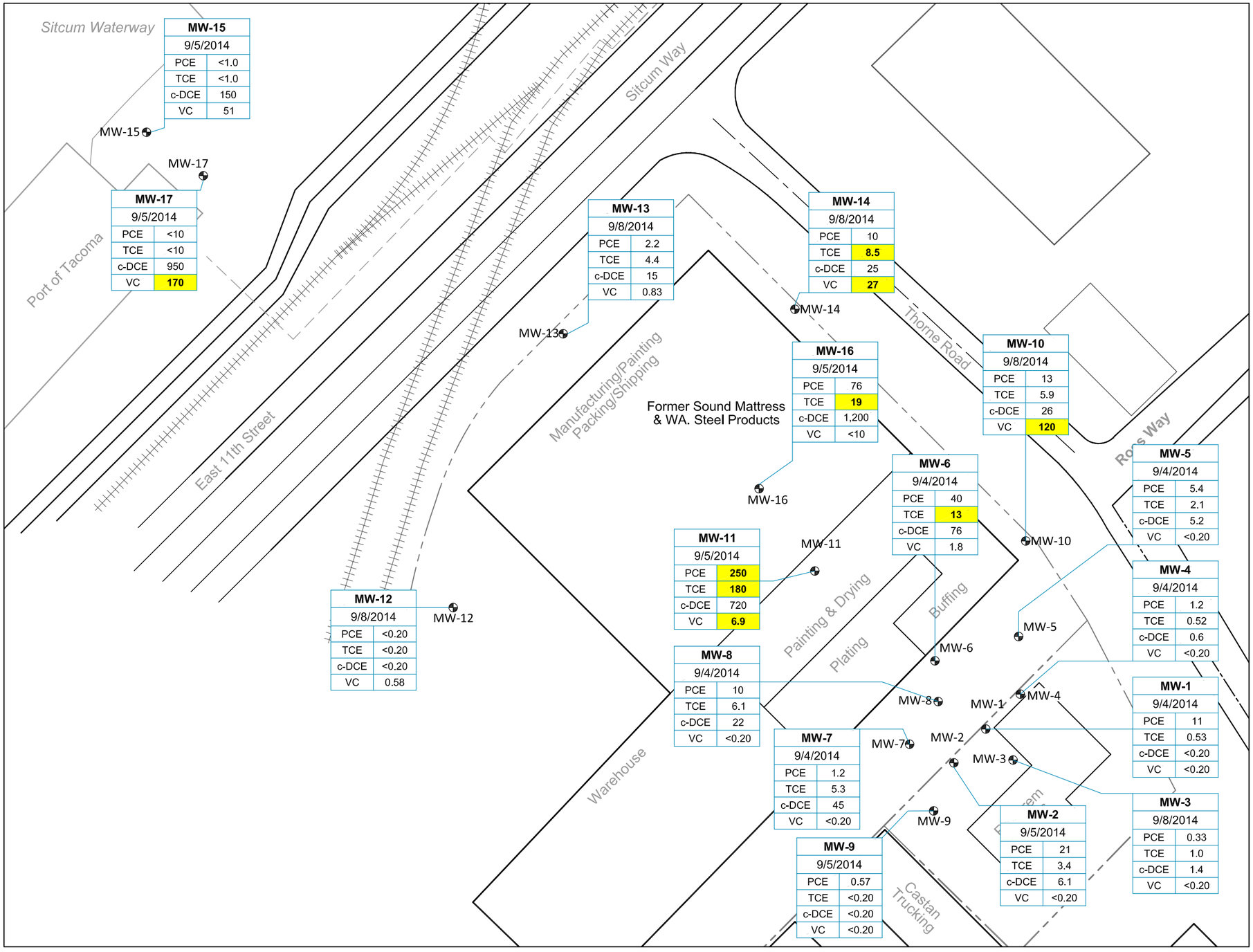
DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

APPENDIX F
SITE PLANS WITH GROUNDWATER ANALYTICAL RESULTS

FURTHER INVESTIGATION REPORT

Former Sound Mattress and Felt Property
1940 East 11th Street
Tacoma, Washington

Pacific Crest PN: 110-001



MW-15	9/5/2014
PCE	<1.0
TCE	<1.0
c-DCE	150
VC	51

MW-17	9/5/2014
PCE	<10
TCE	<10
c-DCE	950
VC	**170**

MW-13	9/8/2014
PCE	2.2
TCE	4.4
c-DCE	15
VC	0.83

MW-14	9/8/2014
PCE	10
TCE	**8.5**
c-DCE	25
VC	**27**

MW-16	9/5/2014
PCE	76
TCE	**19**
c-DCE	1,200
VC	<10

MW-10	9/8/2014
PCE	13
TCE	5.9
c-DCE	26
VC	**120**

MW-6	9/4/2014
PCE	40
TCE	**13**
c-DCE	76
VC	1.8

MW-5	9/4/2014
PCE	5.4
TCE	2.1
c-DCE	5.2
VC	<0.20

MW-11	9/5/2014
PCE	**250**
TCE	**180**
c-DCE	720
VC	**6.9**

MW-4	9/4/2014
PCE	1.2
TCE	0.52
c-DCE	0.6
VC	<0.20

MW-12	9/8/2014
PCE	<0.20
TCE	<0.20
c-DCE	<0.20
VC	0.58

MW-8	9/4/2014
PCE	10
TCE	6.1
c-DCE	22
VC	<0.20

MW-1	9/4/2014
PCE	11
TCE	0.53
c-DCE	<0.20
VC	<0.20

MW-7	9/4/2014
PCE	1.2
TCE	5.3
c-DCE	45
VC	<0.20

MW-2	9/5/2014
PCE	21
TCE	3.4
c-DCE	6.1
VC	<0.20

MW-3	9/8/2014
PCE	0.33
TCE	1.0
c-DCE	1.4
VC	<0.20

MW-9	9/5/2014
PCE	0.57
TCE	<0.20
c-DCE	<0.20
VC	<0.20

Legend

MW-1 Groundwater Monitoring Well

Well ID	Date
PCE	101.5[1] / 8.85[2] µg/L
TCE	8.4[1] / 81[2] µg/L
c-DCE	10,000 µg/L
VC	3.5[1] / 92.3[2] µg/L

Preliminary Screening Level

BOLD Concentration exceeds applicable Preliminary Cleanup Level

µg/L micrograms per liter

PCE tetrachloroethene

TCE trichloroethene

cis-DCE cis -1,2-dichloroethene

VC vinyl chloride

HVOCs halogenated volatile organic compounds

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

Notes:

1. Preliminary Screening Level for PCE, TEC, & VC in groundwater wells on and up-gradient of the former Sound Mattress Property.
2. Preliminary Screening Level for PCE, TEC, & VC in groundwater wells on and down-gradient of the former Sound Mattress Property (MW-15 & MW-17).

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

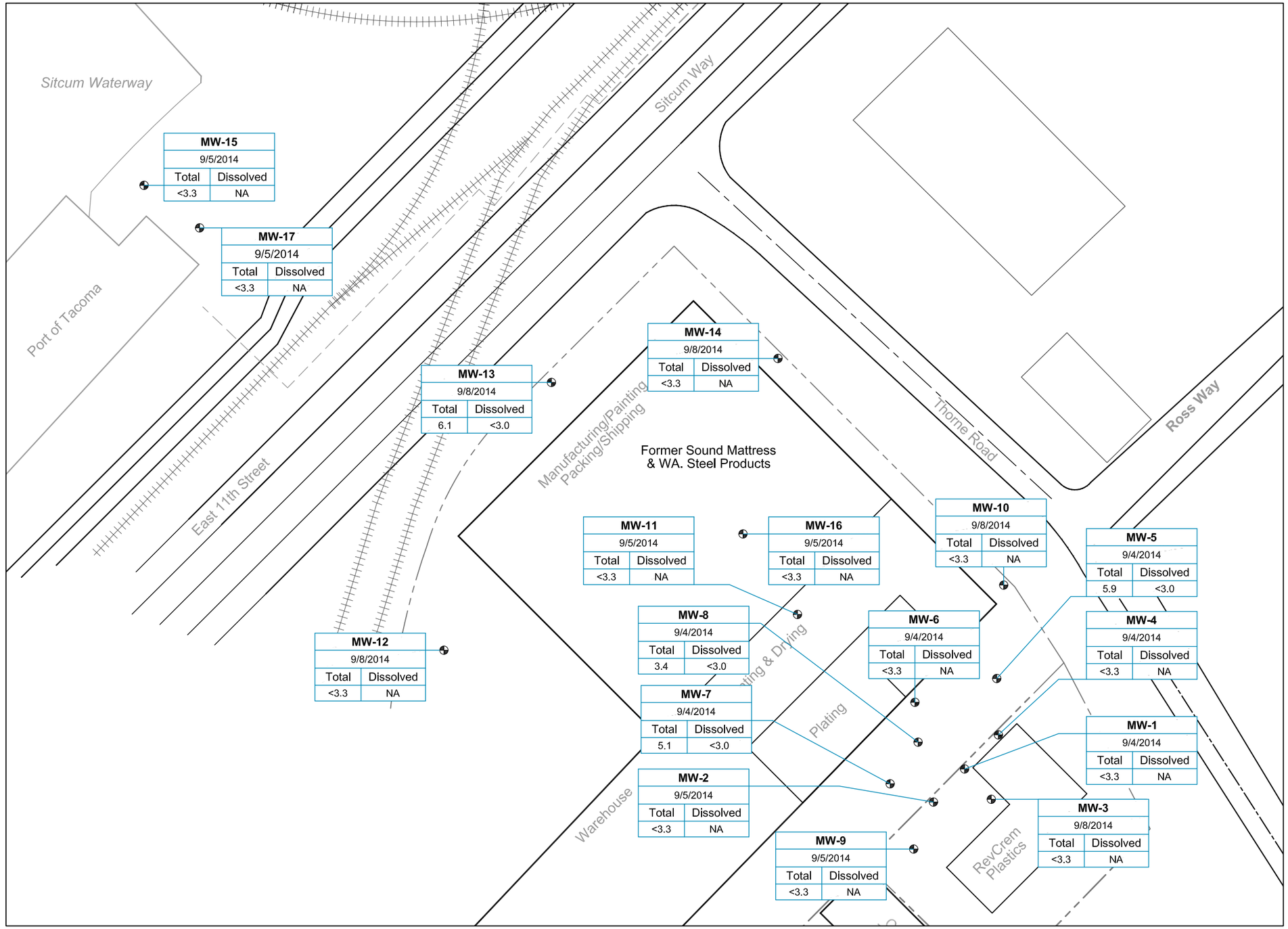
Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure F-1

Groundwater Analytical Results - HVOCs

1/28/2015 Drafting 110-001-034.dwg FIG F-1 GW HVOCs



Legend

MW-1 ◓ Groundwater Monitoring Well

Well ID	
Date	
Total (µg/L)	Dissolved (µg/L)

µg/L micrograms per liter

NA not analyzed

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

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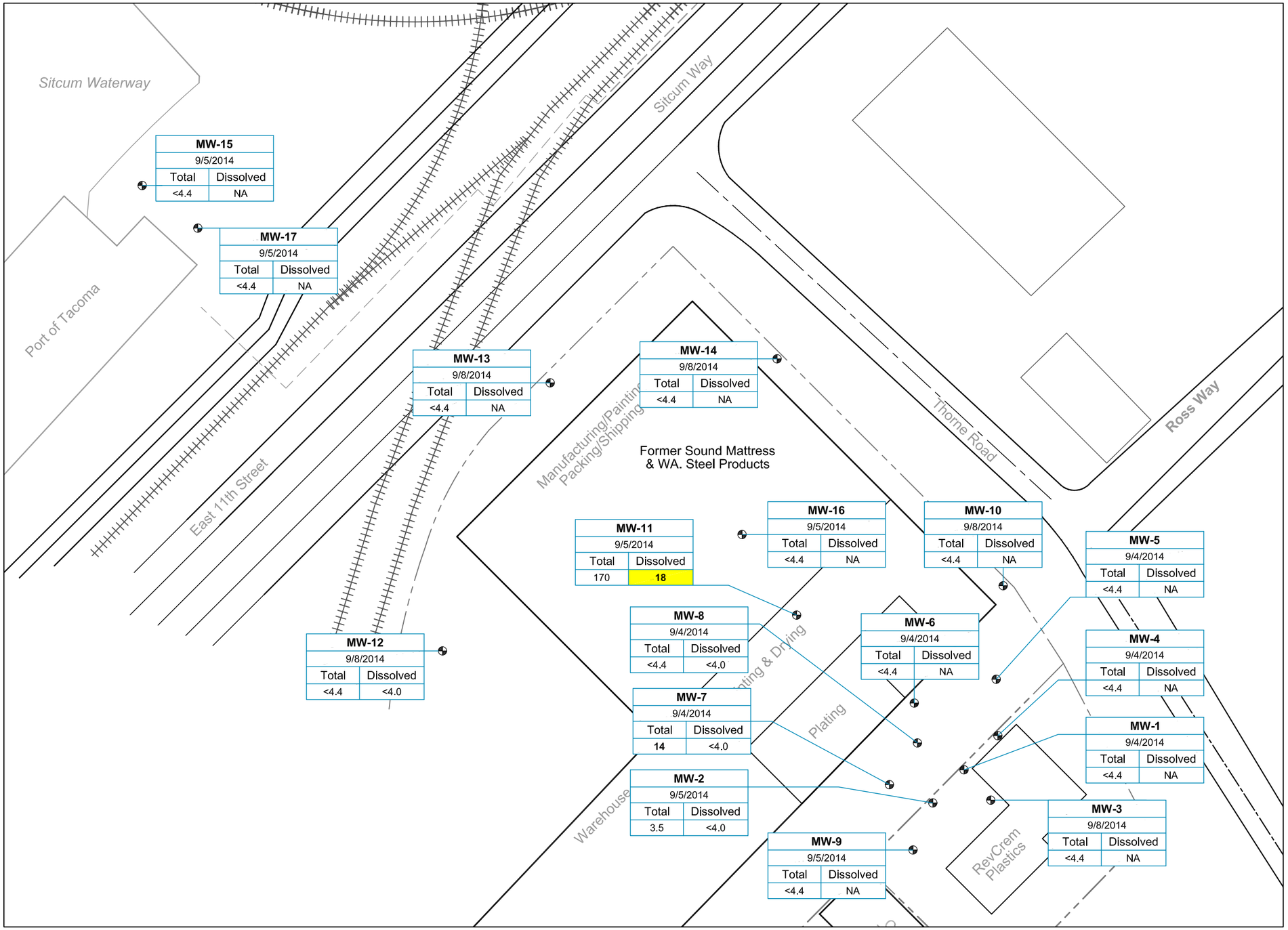
Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure F-2

Groundwater Analytical Results - Total and Dissolved Arsenic

1/28/2015 Drafting 110-001-022.dwg FIG F-2 GW As



PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

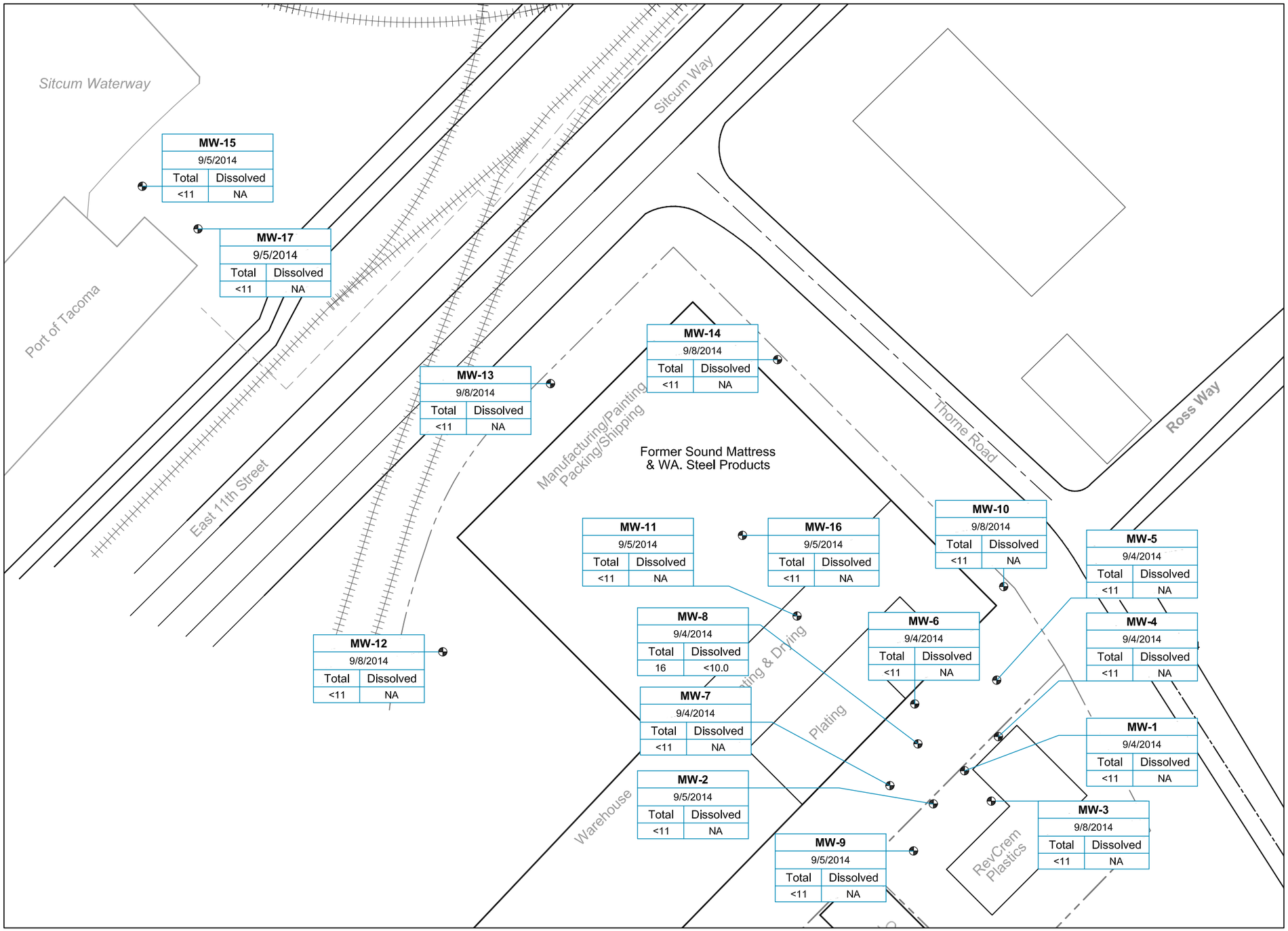
Former Sound Mattress & Felt Company
1940 ECdt 11th Street
Tacoma, Washington

PN: 110-001

Figure F-3

Groundwater Analytical Results - Total and Dissolved Cadmium

1/28/2015 Drafting 110-001-023.dwg FIG F-3 GW Cd



Legend

MW-1 ⊕ Groundwater Monitoring Well

Well ID	
Date	
Total (µg/L)	Dissolved (µg/L)

µg/L micrograms per liter

NA not analyzed

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

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1/28/2015 Drafting 110-001-024.dwg FIG F-4 GW Cr

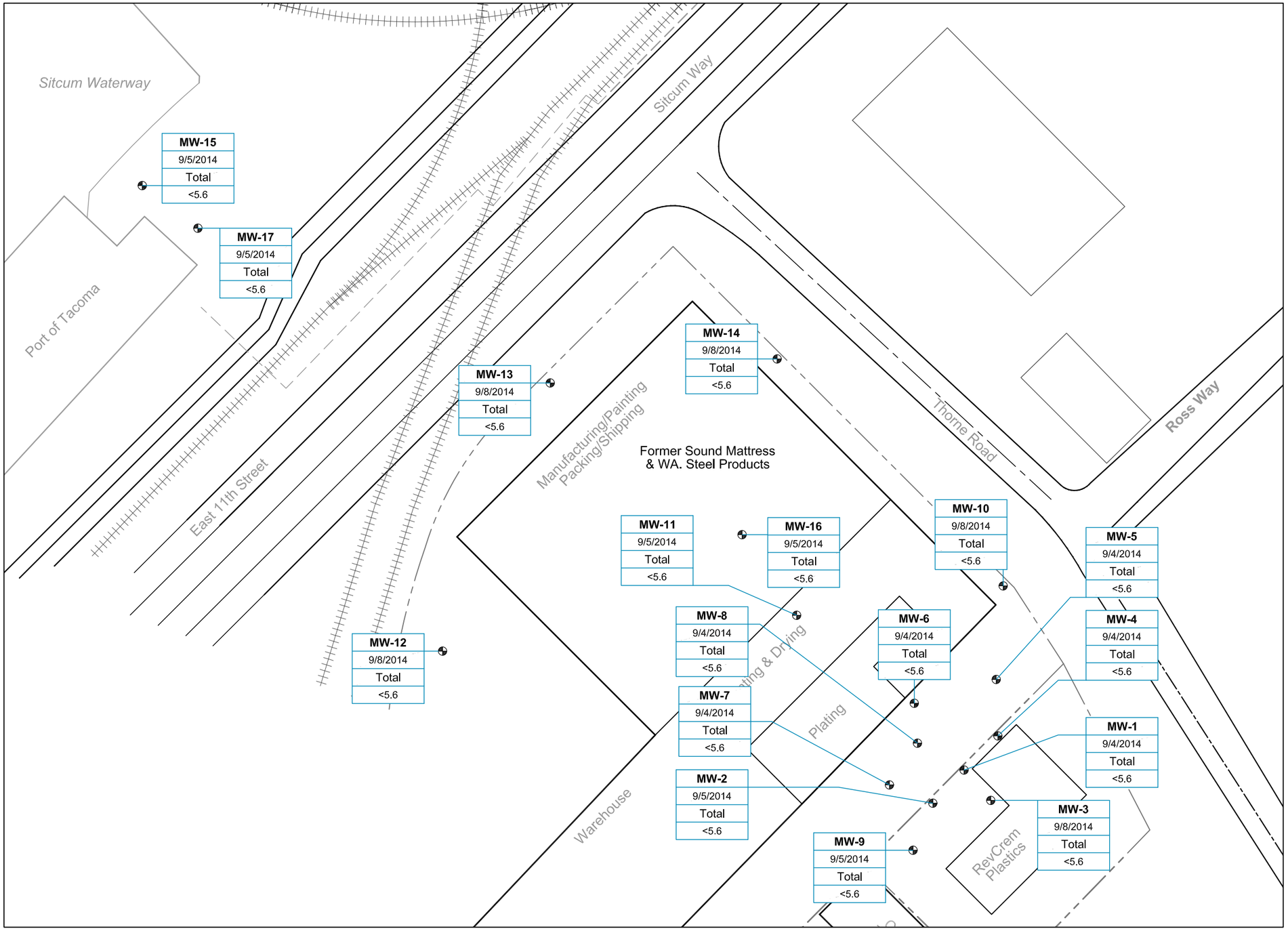
PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure F-4

Groundwater Analytical Results - Total and Dissolved Chromium



Legend

MW-1 Groundwater Monitoring Well

Well ID
Date
Total (µg/L)

µg/L micrograms per liter

NA not analyzed

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

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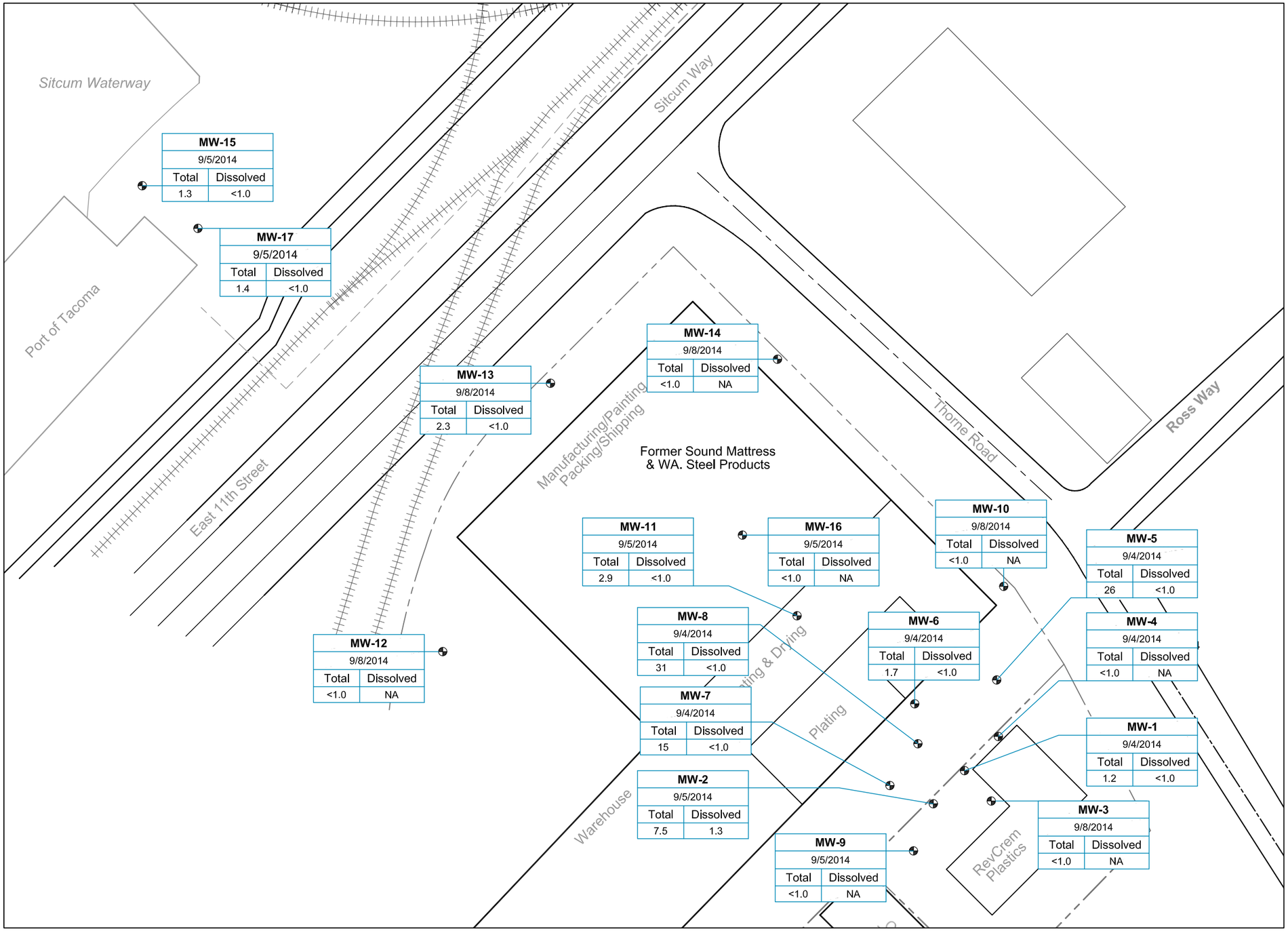
Tacoma, Washington

PN: 110-001

Figure F-5

Groundwater Analytical Results - Total Cobalt

1/28/2015 Drafting 110-001-025.dwg FIG F-5 GW Co



Legend

MW-1 ⊕ Groundwater Monitoring Well

Well ID	
Date	
Total (µg/L)	Dissolved (µg/L)

Preliminary Screening Level
Dissolved Copper - 2.4 µg/L

µg/L micrograms per liter

NA not analyzed

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

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1/28/2015 Drafting 110-001-026.dwg FIG F-6 GW Cu

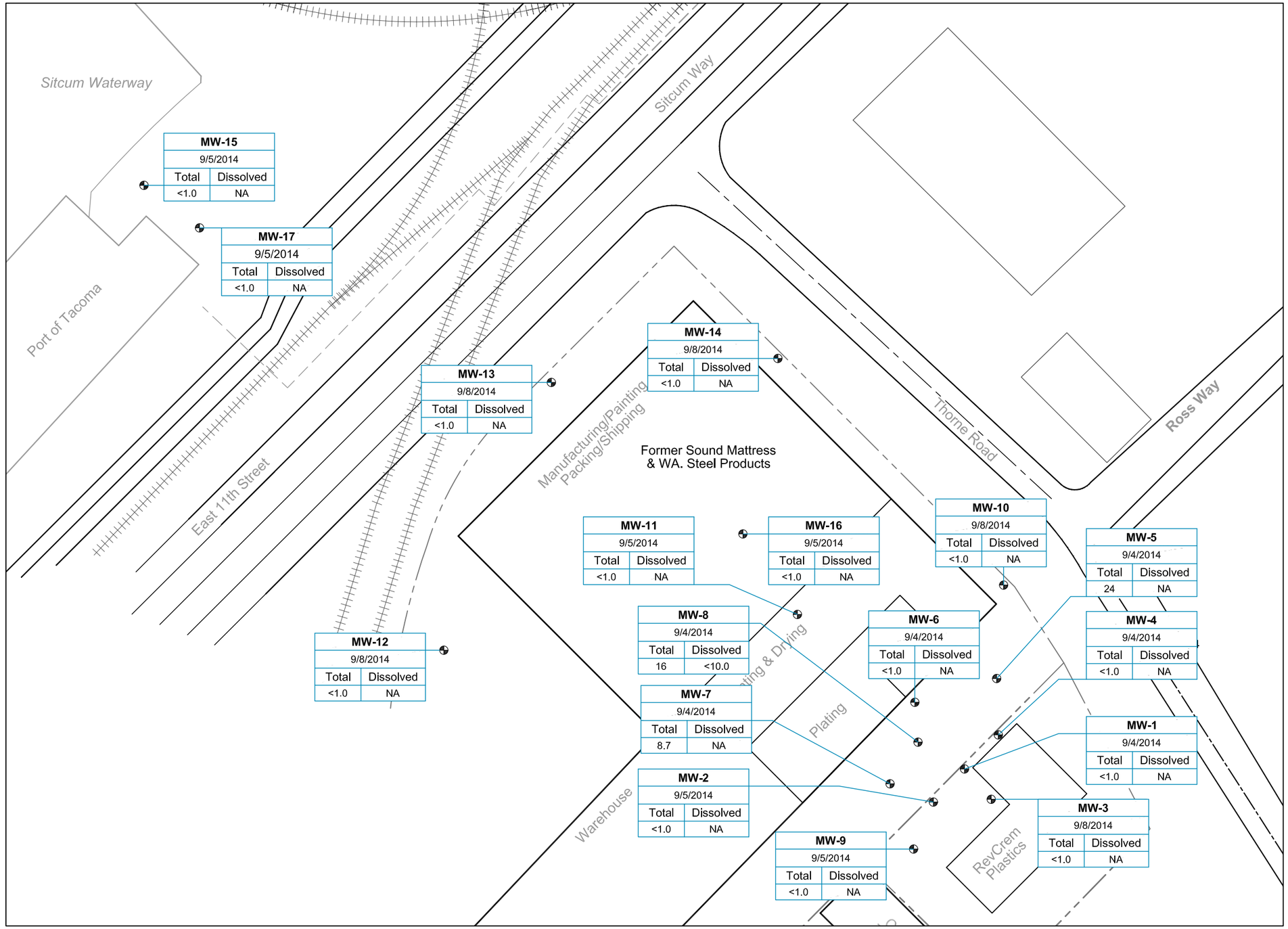
PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure F-6

Groundwater Analytical Results - Total and Dissolved Copper



Legend

MW-1 ⊕ Groundwater Monitoring Well

Well ID	
Date	
Total (µg/L)	Dissolved (µg/L)

µg/L micrograms per liter

NA not analyzed

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

DRAFT

1/28/2015 Drafting 110-001-027.dwg FIG F-7 GW Pb

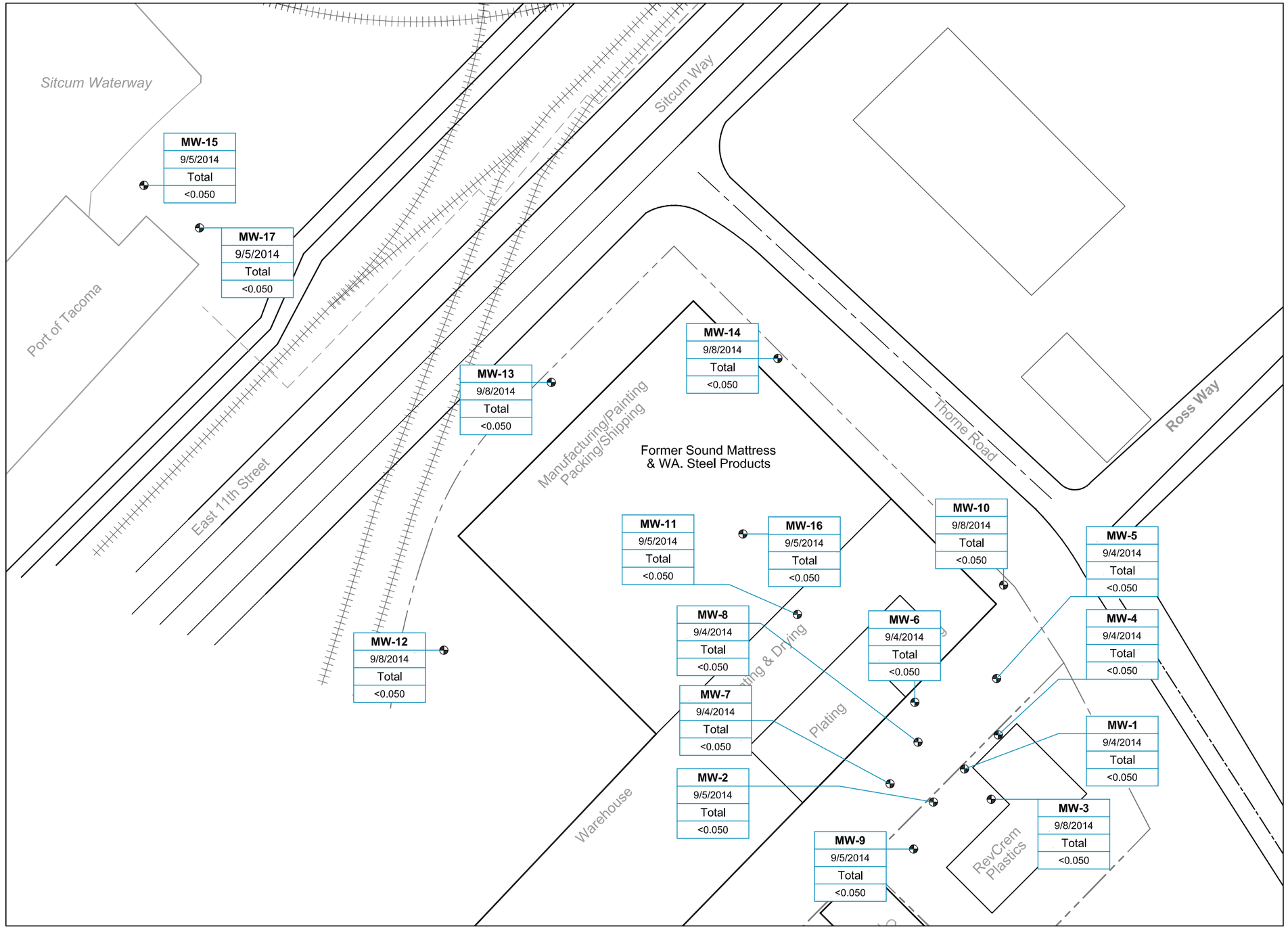
PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure F-7

Groundwater Analytical Results - Total and Dissolved Lead



Legend

MW-1 Groundwater Monitoring Well

Well ID
Date
Total (µg/L)

µg/L micrograms per liter

NA not analyzed

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

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1/28/2015 Drafting 110-001-028.dwg FIG F-8 GW Hg

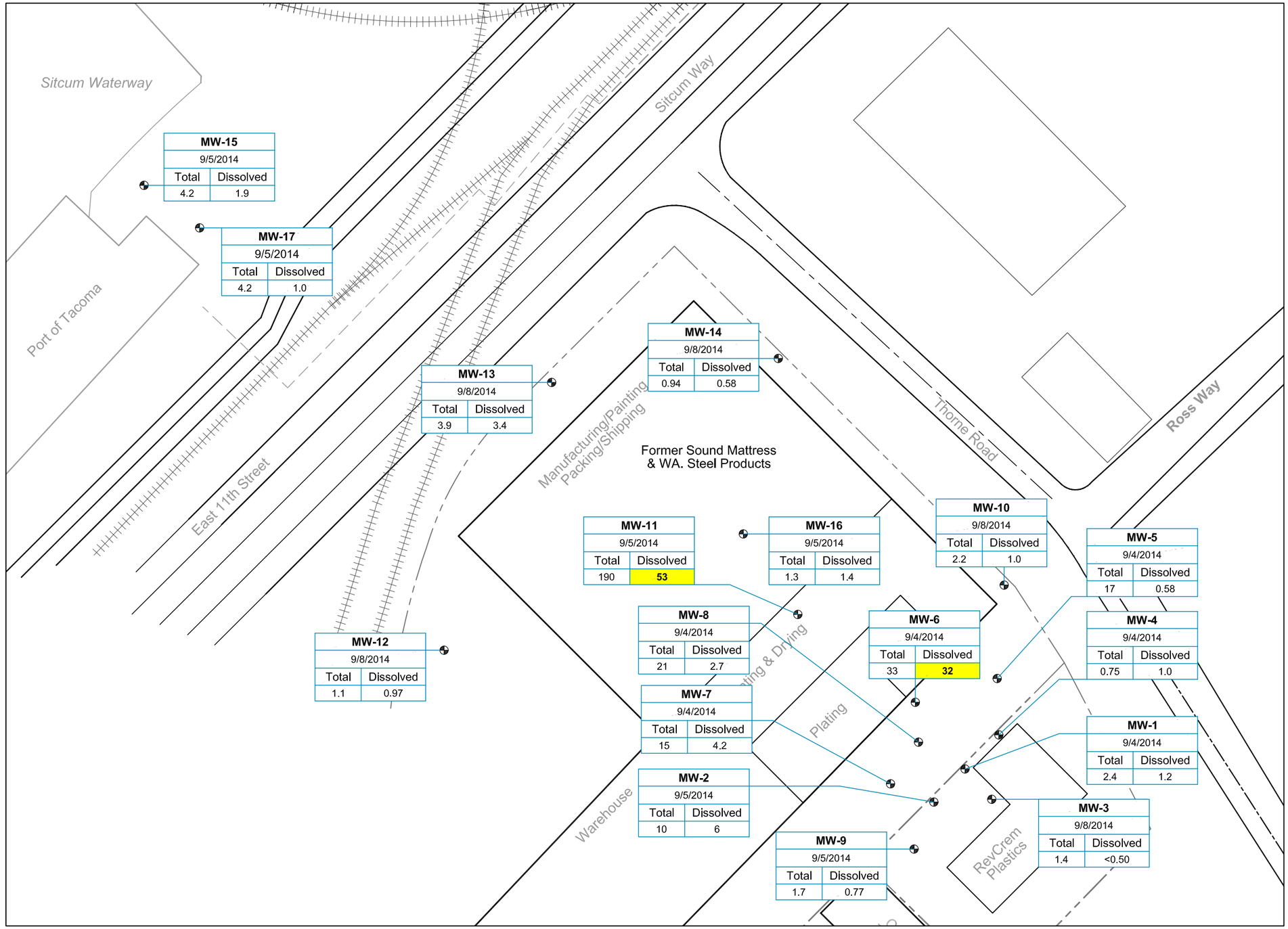
PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure F-8

Groundwater Analytical Results - Total Mercury



Legend

MW-1 ⊕ Groundwater Monitoring Well

Well ID	
Date	
Total (µg/L)	Dissolved (µg/L)

Preliminary Screening Level and Cleanup Level
Dissolved Nickel - 8.2 µg/L

BOLD Concentration exceeds applicable Preliminary Cleanup Level

µg/L micrograms per liter

NA not analyzed

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

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PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

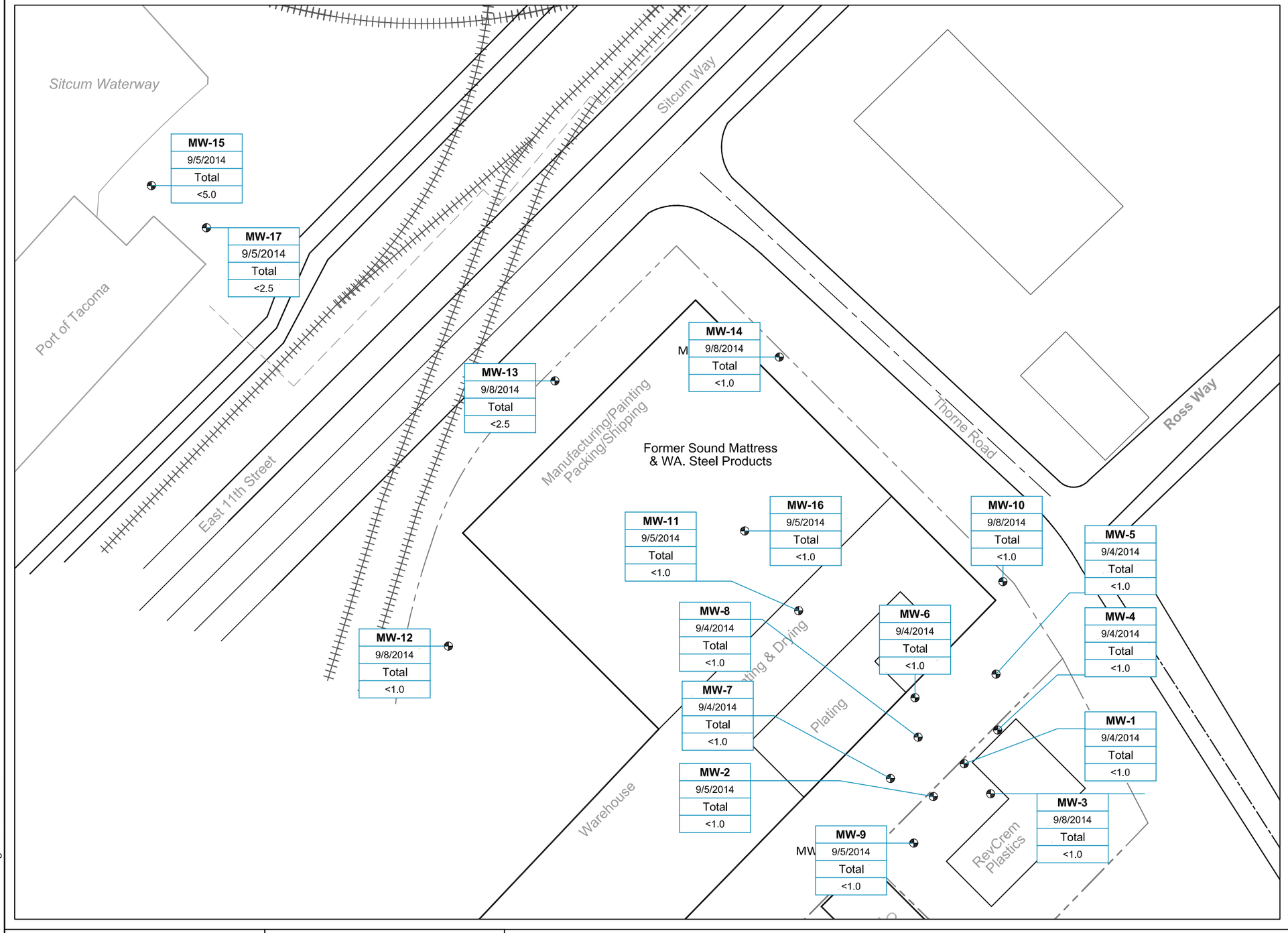
Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure F-9

Groundwater Analytical Results - Total and Dissolved Nickel

1/28/2015 Drafting 110-001-029.dwg FIG F-9 GW Ni



Legend

MW-1 Groundwater Monitoring Well

Well ID
Date
Total (µg/L)

µg/L micrograms per liter

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

DRAFT

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

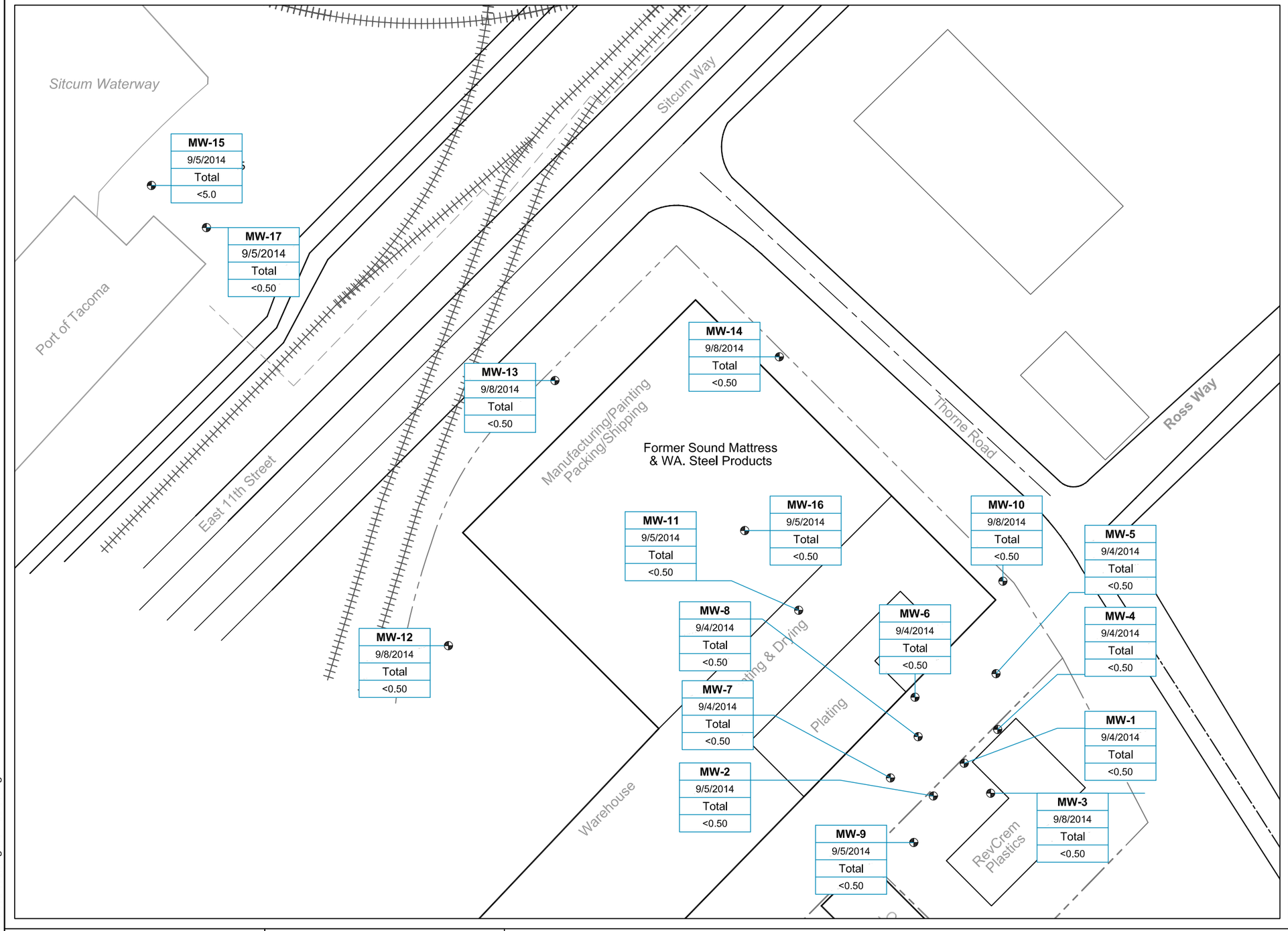
Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure F-10

Groundwater Analytical Results - Total Selenium

1/28/2015 Drafting 110-001-030.dwg FIG F-10 GW Se



Legend

MW-1 Groundwater Monitoring Well

Well ID
Date
Total (µg/L)

µg/L micrograms per liter

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

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1/28/2015 Drafting 110-001-031.dwg FIG F-11 GW Ag

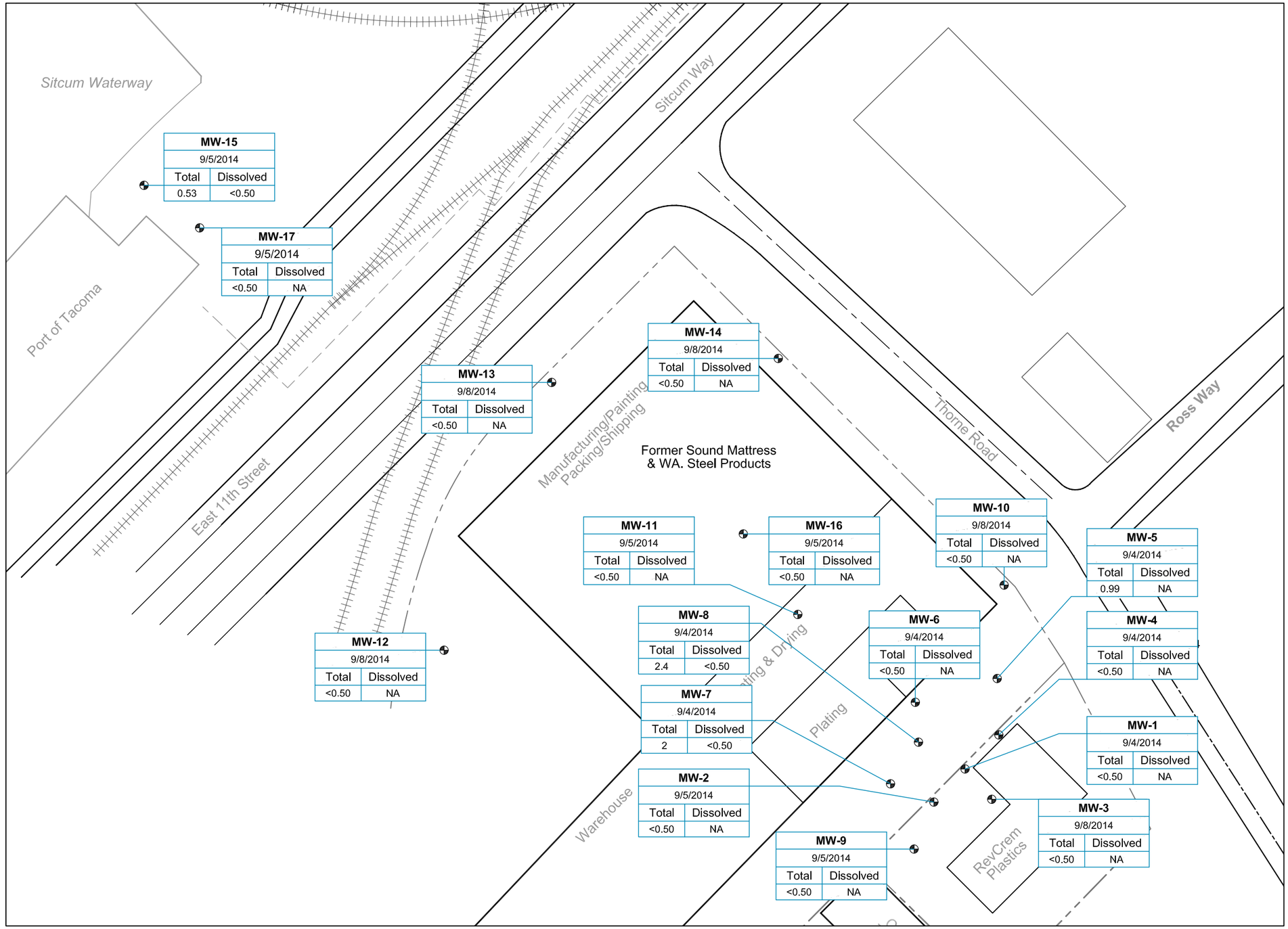
PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure F-11

Groundwater Analytical Results - Total Silver



Legend

MW-1 Groundwater Monitoring Well

Well ID	
Date	
Total (µg/L)	Dissolved (µg/L)

µg/L micrograms per liter

NA not analyzed

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

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1/28/2015 Drafting 110-001-032.dwg FIG F-12 GW Sn

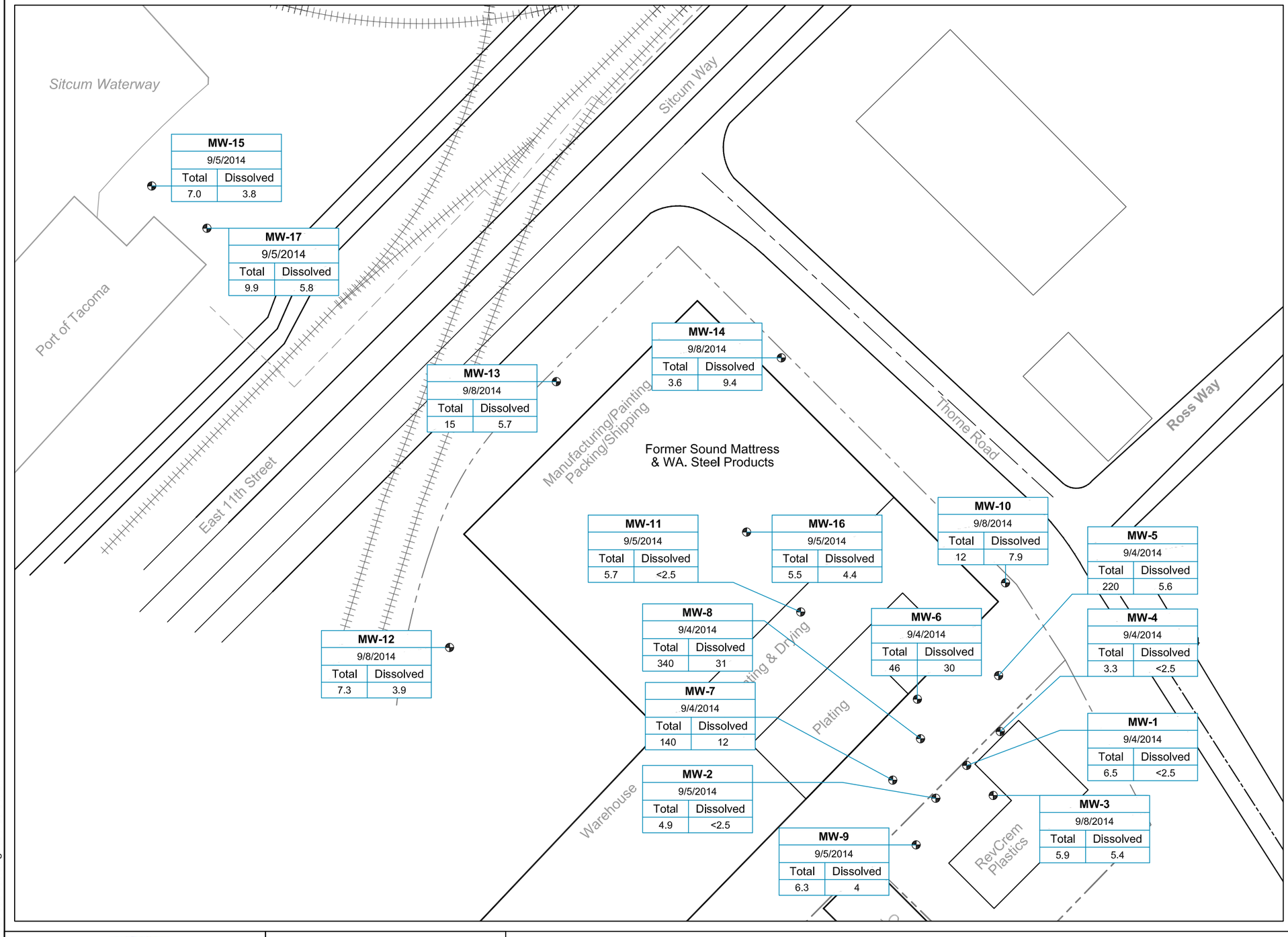
PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure F-12

Groundwater Analytical Results - Total and Dissolved Tin



Legend

MW-1 ⊕ Groundwater Monitoring Well

Well ID	
Date	
Total (µg/L)	Dissolved (µg/L)

Preliminary Screening Level
Dissolved Zinc - 81 µg/L

µg/L micrograms per liter

NA not analyzed

< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 80

Approximate Scale in Feet

DRAFT

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure F-13

Groundwater Analytical Results - Total and Dissolved Zinc

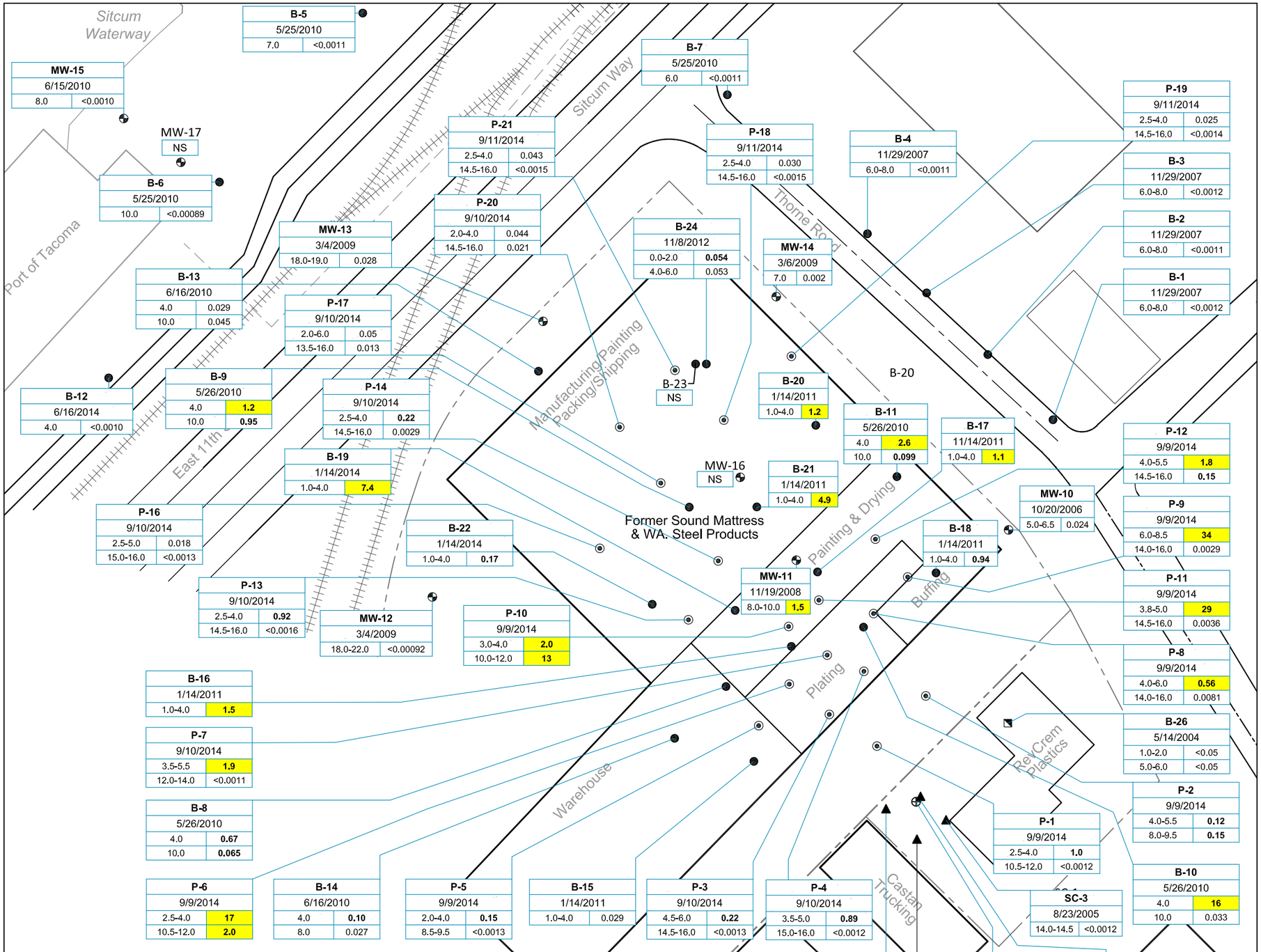
1/28/2015 Drafting 110-001-033.dwg FIG F-13 GW Zn

APPENDIX G
SITE PLANS WITH SOIL ANALYTICAL RESULTS

FURTHER INVESTIGATION REPORT

Former Sound Mattress and Felt Property
1940 East 11th Street
Tacoma, Washington

Pacific Crest PN: 110-001



Legend

- ● ⊙ Boring Location (Pacific Crest, 2006-2014)
- ▲ Boring Location (LSI, 2005)
- ◓ Monitoring Well (Pacific Crest, 2006-2010)
- ⊕ Monitoring Well (LSI, 2005)
- ◹ Boring Location (Environmental Associates, Inc., 2004)

Well/Boring ID	
Date	
Depth (bgs)	mg/kg

Preliminary Screening Level
PCE - 0.05 mg/kg

BOLD Concentration exceeds applicable Preliminary Screening Level

Preliminary Cleanup Level
PCE - 1.01 mg/kg

BOLD Concentration exceeds applicable Preliminary Cleanup Level

mg/kg milligrams per kilogram
PCE tetrachloroethene
bgs below ground surface
NS not sampled
< result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road
Building
Property Boundary
Pre-1965 Operations
Railroad Tracks

N

0 80
Approximate Scale in Feet

DRAFT

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

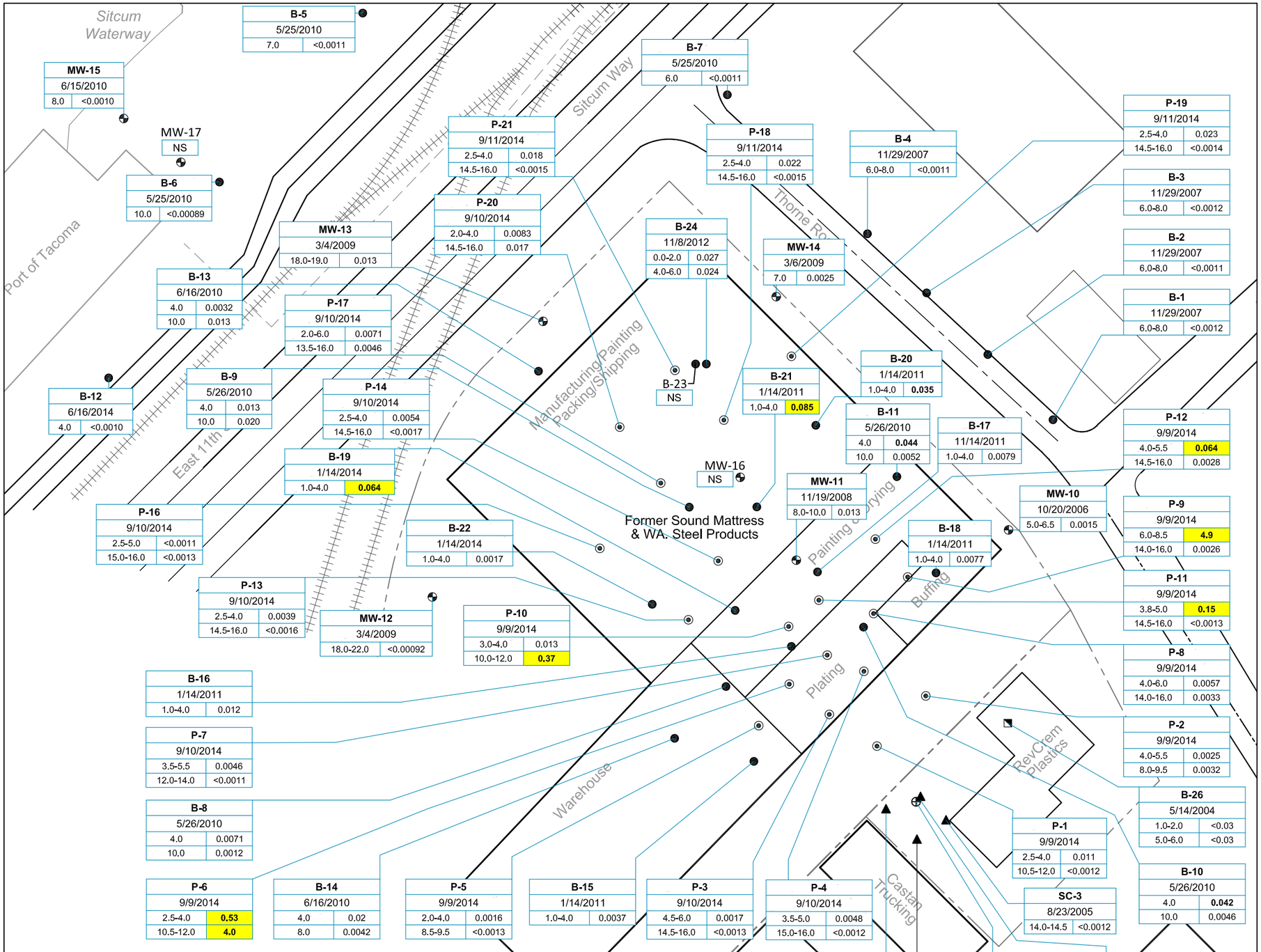
Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure G-1

Soil Analytical Results - PCE

1/28/2015 Drafting 110-001-037.dwg FIG G-1 Soil PCE



Legend

- ● ◉ Boring Location (Pacific Crest, 2006-2014)
- ▲ Boring Location (LSI, 2005)
- ◓ Monitoring Well (Pacific Crest, 2006-2010)
- ⊕ Monitoring Well (LSI, 2005)
- ◹ Boring Location (Environmental Associates, Inc., 2004)

Well/Boring ID	
Date	
Depth (bgs)	mg/kg

Preliminary Screening Level
PCE - 0.03 mg/kg

BOLD — Concentration exceeds applicable Preliminary Screening Level

Preliminary Cleanup Level
PCE - 0.053 mg/kg

BOLD — Concentration exceeds applicable Preliminary Cleanup Level

mg/kg — milligrams per kilogram
PCE — tetrachloroethene
bgs — below ground surface
NS — not sampled
< — result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road
Building
Property Boundary
Pre-1965 Operations
Railroad Tracks

N

0 80
Approximate Scale in Feet

DRAFT

1/28/2015 Drafting 110-001-037.dwg FIG G-2 Soil TCE

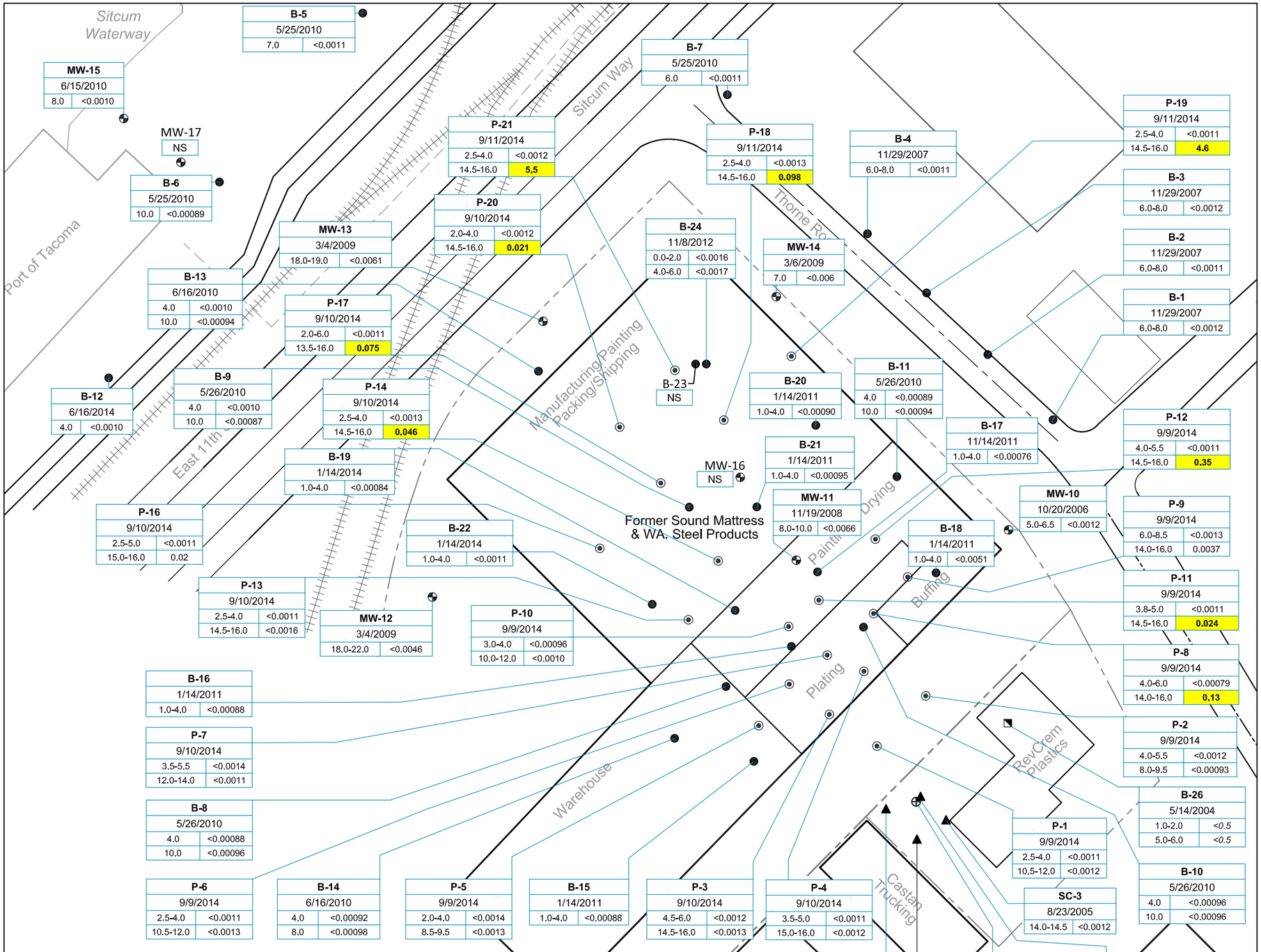
PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure G-2

Soil Analytical Results - TCE



Legend

- ● ◉ Boring Location (Pacific Crest, 2006-2014)
- ▲ Boring Location (LSI, 2005)
- ◓ Monitoring Well (Pacific Crest, 2006-2010)
- ⊕ Monitoring Well (LSI, 2005)
- ◹ Boring Location (Environmental Associates, Inc., 2004)

Well/Boring ID	
Date	
Depth (bgs)	mg/kg

Preliminary Screening Level and Cleanup Level
VC - 0.02 mg/kg

- **BOLD** Concentration exceeds applicable Preliminary Screening Level and Cleanup Level
- *italics* Practical quantitation limit higher than applicable Preliminary Screening Level
- mg/kg milligrams per kilogram
- VC vinyl chloride
- bgs below ground surface
- NS not sampled
- < result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit

Road
Building
Property Boundary
Pre-1965 Operations
Railroad Tracks

N
0 80
Approximate Scale in Feet

DRAFT

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

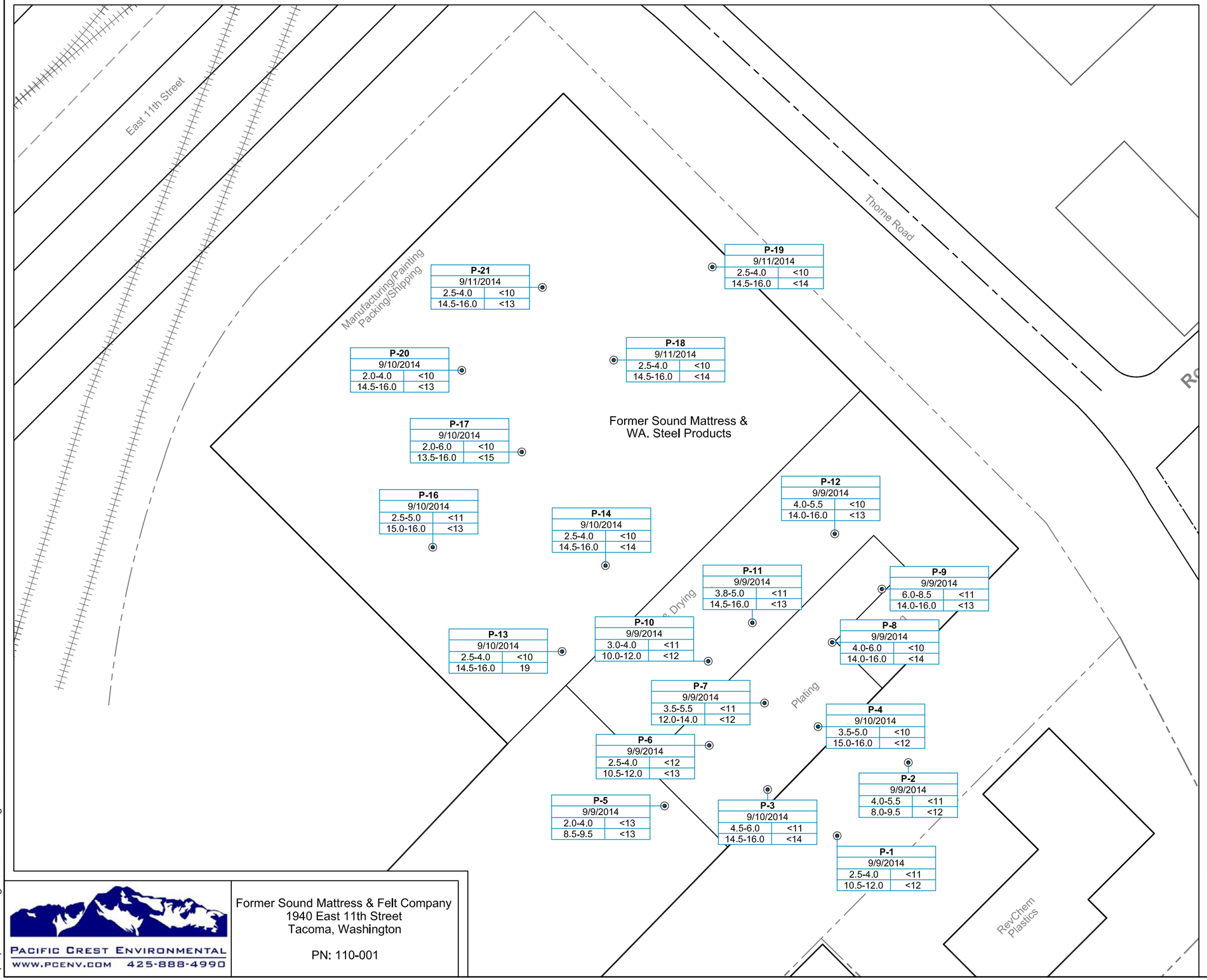
Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure G-3

Soil Analytical Results - VC

1/28/2015 Drafting 110-001-037.dwg FIG G-3 Soil VC



Legend

P-1 ◉ Soil Boring (approximately 12 feet bgs)

Well/Boring ID	
Date	
Depth (bgs)	mg/kg

Preliminary Screening Level
Arsenic - 20 mg/kg

mg/kg milligrams per kilogram

bgs below ground surface

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 50

Approximate Scale in Feet

DRAFT

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

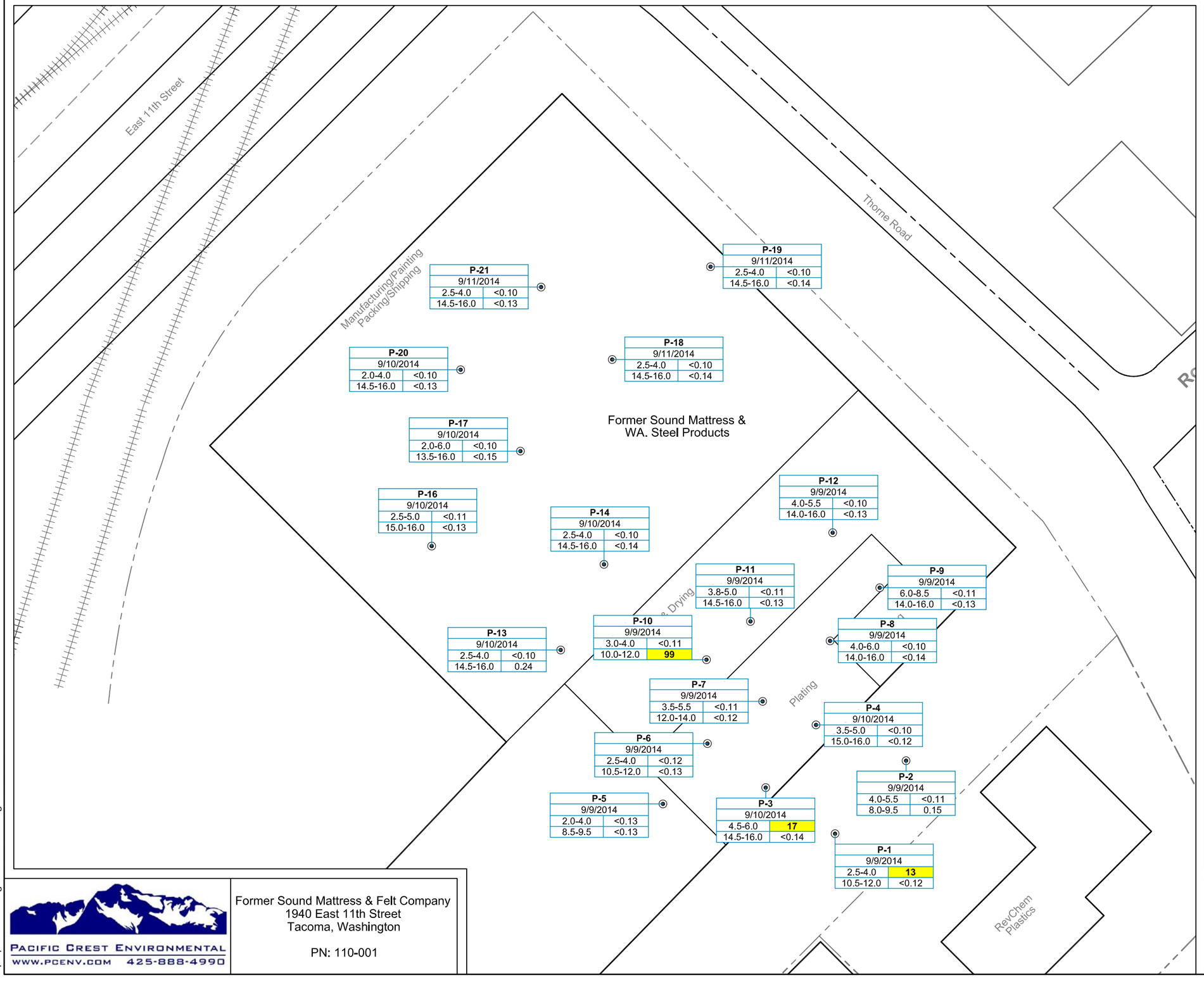
Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure G-4

Soil Analytical Results - Arsenic

1/28/2015 Drafting 110-001-035.dwg FIG G-4 Soil As



Legend

P-1◉ Soil Boring (approximately 12 feet bgs)

Well/Boring ID	
Date	
Depth (bgs)	mg/kg

Preliminary Screening Level and Cleanup Level
Cadmium - 1.28 mg/kg

BOLD Concentration exceeds applicable Preliminary Screening Level and Cleanup Level

mg/kg milligrams per kilogram

bgs below ground surface

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 50

Approximate Scale in Feet

DRAFT

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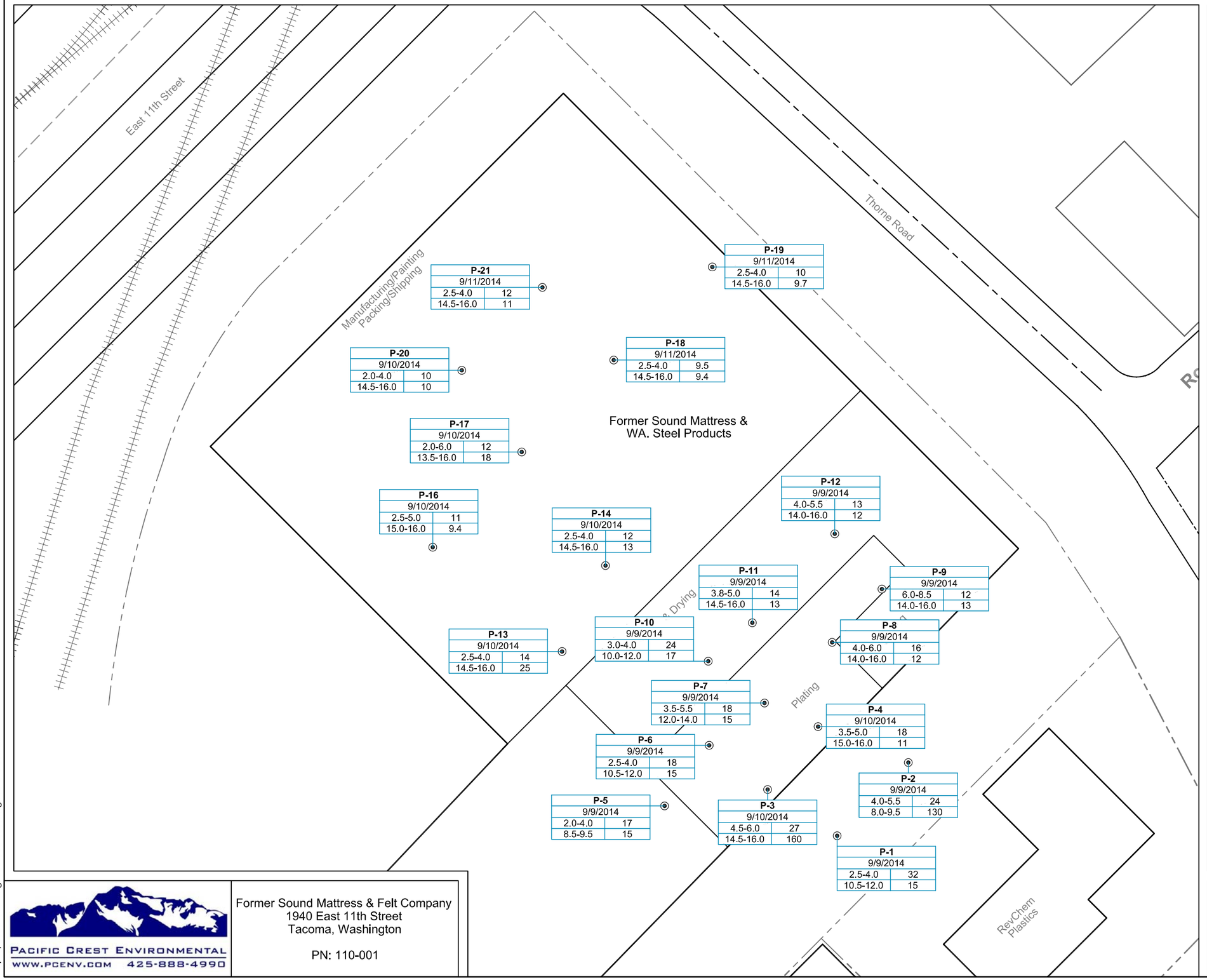
Tacoma, Washington

PN: 110-001

Figure G-5

Soil Analytical Results - Cadmium

1/15/2015 Drafting 110-001-035.dwg FIG G-5 Soil Cd



Legend

P-1◉ Soil Boring (approximately 12 feet bgs)

Well/Boring ID	
Date	
Depth (bgs)	mg/kg

Preliminary Screening Level
Chromium - 260 mg/kg

mg/kg milligrams per kilogram

bgs below ground surface

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 50

Approximate Scale in Feet

DRAFT

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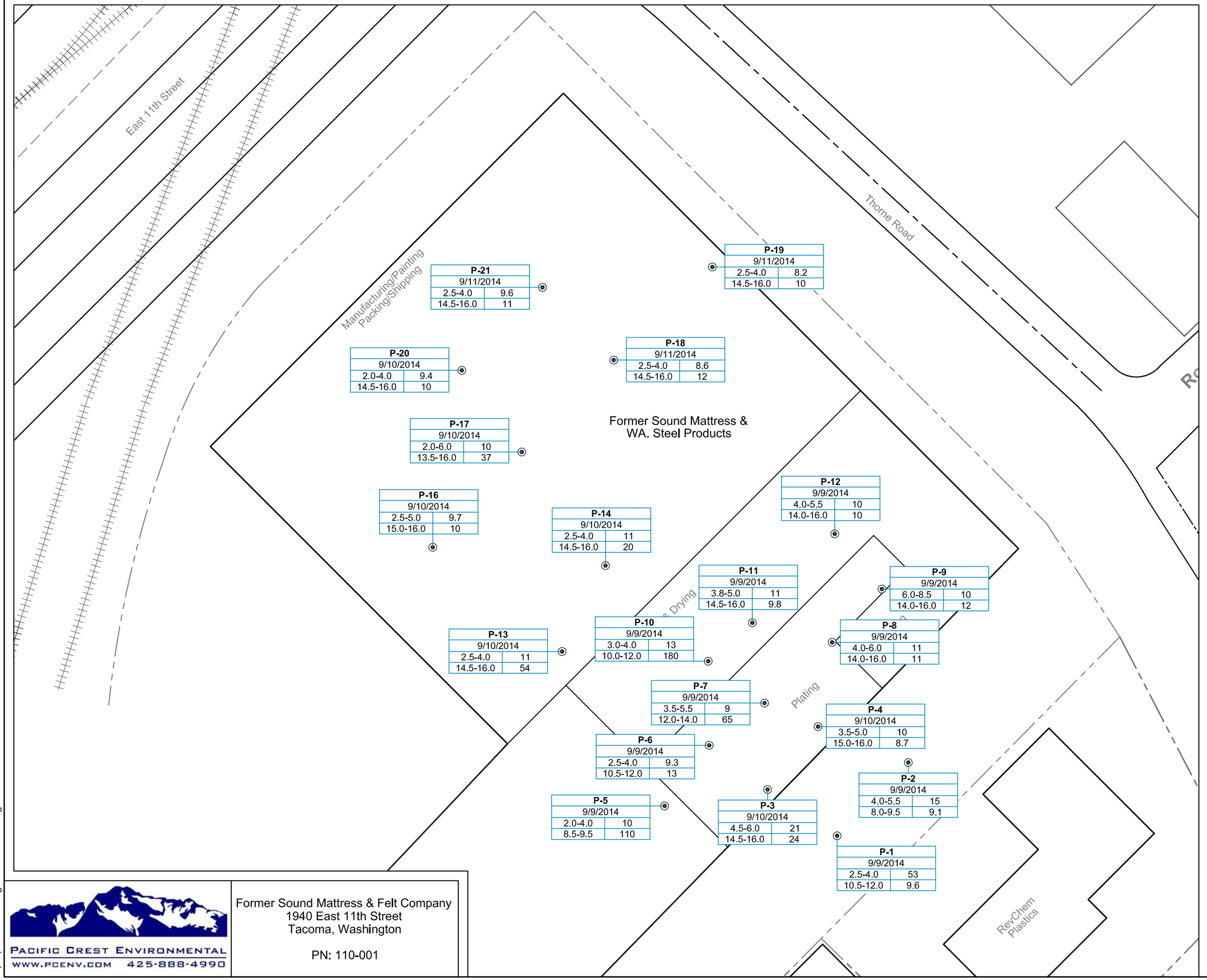
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure G-6

Soil Analytical Results - Chromium

1/28/2015 Drafting 110-001-035.dwg FIG G-6 Soil Cr



Legend

P-1◉ Soil Boring (approximately 12 feet bgs)

Well/Boring ID	
Date	
Depth (bgs)	mg/kg

Preliminary Screening Level
Copper - 390 mg/kg

mg/kg milligrams per kilogram

bgs below ground surface

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 50

Approximate Scale in Feet

DRAFT

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure G-7

Soil Analytical Results - Copper

1/28/2015 Drafting 110-001-035.dwg FIG G-7 Soil Cu

East 11th Street

Thorne Road

Manufacturing/Painting
Packing/Shipping

Former Sound Mattress &
WA. Steel Products

Drying

Plating

RevChem
Plastics

P-21	
9/11/2014	
2.5-4.0	<5.2
14.5-16.0	<6.5

P-19	
9/11/2014	
2.5-4.0	<5.2
14.5-16.0	<6.9

P-20	
9/10/2014	
2.0-4.0	<5.1
14.5-16.0	<6.4

P-18	
9/11/2014	
2.5-4.0	<5.2
14.5-16.0	<6.9

P-17	
9/10/2014	
2.0-6.0	<5.2
13.5-16.0	14

P-16	
9/10/2014	
2.5-5.0	<5.3
15.0-16.0	<6.4

P-14	
9/10/2014	
2.5-4.0	<5.2
14.5-16.0	<6.9

P-12	
9/9/2014	
4.0-5.5	<5.2
14.0-16.0	<6.4

P-11	
9/9/2014	
3.8-5.0	<5.5
14.5-16.0	<6.3

P-9	
9/9/2014	
6.0-8.5	<5.7
14.0-16.0	<6.4

P-13	
9/10/2014	
2.5-4.0	<5.2
14.5-16.0	19

P-10	
9/9/2014	
3.0-4.0	<5.5
10.0-12.0	<6.1

P-8	
9/9/2014	
4.0-6.0	<5.2
14.0-16.0	<6.9

P-7	
9/9/2014	
3.5-5.5	<5.3
12.0-14.0	<6.2

P-4	
9/10/2014	
3.5-5.0	<5.2
15.0-16.0	<6.0

P-6	
9/9/2014	
2.5-4.0	<5.9
10.5-12.0	<6.5

P-2	
9/9/2014	
4.0-5.5	<5.5
8.0-9.5	<6.0

P-5	
9/9/2014	
2.0-4.0	<6.5
8.5-9.5	<6.7

P-3	
9/10/2014	
4.5-6.0	<5.7
14.5-16.0	<7.0

P-1	
9/9/2014	
2.5-4.0	16
10.5-12.0	<6.2

Legend

P-1 ◉ Soil Boring
(approximately 12 feet bgs)

Well/Boring ID	
Date	
Depth (bgs)	mg/kg

Preliminary Screening Level
Lead - 1,000 mg/kg

mg/kg milligrams per kilogram

bgs below ground surface

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 50

Approximate Scale in Feet

DRAFT

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure G-8

Soil Analytical Results - Lead

1/28/2015 Drafting 110-001-035.dwg FIG G-8 Soil Pb

East 11th Street

Thorne Road

Manufacturing/Painting
Packing/Shipping

Former Sound Mattress &
WA. Steel Products

Drying

Plating

RevChem
Plastics

P-21	
9/11/2014	
2.5-4.0	7.2
14.5-16.0	7.0

P-19	
9/11/2014	
2.5-4.0	6.3
14.5-16.0	6.9

P-20	
9/10/2014	
2.0-4.0	7.0
14.5-16.0	7.0

P-18	
9/11/2014	
2.5-4.0	6
14.5-16.0	6.5

P-17	
9/10/2014	
2.0-6.0	7.4
13.5-16.0	13

P-16	
9/10/2014	
2.5-5.0	6.6
15.0-16.0	7

P-14	
9/10/2014	
2.5-4.0	7.8
14.5-16.0	9.2

P-12	
9/9/2014	
4.0-5.5	7.1
14.0-16.0	7.8

P-11	
9/9/2014	
3.8-5.0	8.6
14.5-16.0	9

P-9	
9/9/2014	
6.0-8.5	6.8
14.0-16.0	19

P-13	
9/10/2014	
2.5-4.0	7.7
14.5-16.0	20

P-10	
9/9/2014	
3.0-4.0	33
10.0-12.0	**92**

P-8	
9/9/2014	
4.0-6.0	8.4
14.0-16.0	8.1

P-7	
9/9/2014	
3.5-5.5	8.8
12.0-14.0	10

P-4	
9/10/2014	
3.5-5.0	10
15.0-16.0	10

P-6	
9/9/2014	
2.5-4.0	9.1
10.5-12.0	9.2

P-2	
9/9/2014	
4.0-5.5	8
8.0-9.5	12

P-5	
9/9/2014	
2.0-4.0	8.2
8.5-9.5	9.3

P-3	
9/10/2014	
4.5-6.0	10
14.5-16.0	11

P-1	
9/9/2014	
2.5-4.0	**160**
10.5-12.0	8.6

Legend

P-1 ◉ Soil Boring (approximately 12 feet bgs)

Well/Boring ID	
Date	
Depth (bgs)	mg/kg

Preliminary Screening Level and Cleanup Level
Nickel - 48 mg/kg

BOLD Concentration exceeds applicable Preliminary Screening Level and Cleanup Level

mg/kg milligrams per kilogram

bgs below ground surface

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 50

Approximate Scale in Feet

DRAFT

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure G-9

Soil Analytical Results - Nickel

1/28/2015 Drafting 110-001-035.dwg FIG G-9 Soil Ni

East 11th Street

Thorne Road

Manufacturing/Painting
Packing/Shipping

Former Sound Mattress &
WA. Steel Products

Drying

Plating

RevChem
Plastics

P-21	
9/11/2014	
2.5-4.0	<5.2
14.5-16.0	<6.5

P-19	
9/11/2014	
2.5-4.0	<5.2
14.5-16.0	<6.9

P-20	
9/10/2014	
2.0-4.0	<5.1
14.5-16.0	<6.4

P-18	
9/11/2014	
2.5-4.0	<5.2
14.5-16.0	<6.9

P-17	
9/10/2014	
2.0-6.0	<5.2
13.5-16.0	<7.4

P-16	
9/10/2014	
2.5-5.0	<5.3
15.0-16.0	<6.4

P-14	
9/10/2014	
2.5-4.0	<5.2
14.5-16.0	<6.9

P-12	
9/9/2014	
4.0-5.5	<5.2
14.0-16.0	<6.4

P-11	
9/9/2014	
3.8-5.0	<5.5
14.5-16.0	<6.3

P-9	
9/9/2014	
6.0-8.5	<5.7
14.0-16.0	<6.4

P-13	
9/10/2014	
2.5-4.0	<5.2
14.5-16.0	<8.4

P-10	
9/9/2014	
3.0-4.0	<5.5
10.0-12.0	<6.1

P-8	
9/9/2014	
4.0-6.0	<5.2
14.0-16.0	<6.9

P-7		
9/9/2014		
3.5-5.5	5.4	
12.0-14.0	18	

P-4	
9/10/2014	
3.5-5.0	<5.2
15.0-16.0	<6.0

P-6		
9/9/2014		
2.5-4.0	6.5	
10.5-12.0	9.8	

P-2	
9/9/2014	
4.0-5.5	<5.5
8.0-9.5	<6.0

P-5	
9/9/2014	
2.0-4.0	<6.5
8.5-9.5	<6.7

P-3	
9/10/2014	
4.5-6.0	<5.7
14.5-16.0	<7.0

P-1	
9/9/2014	
2.5-4.0	<5.4
10.5-12.0	<6.2

Legend

P-1 ◉ Soil Boring
(approximately 12 feet bgs)

Well/Boring ID	
Date	
Depth (bgs)	mg/kg

Preliminary Screening Level
Tin - 48,000 mg/kg

mg/kg milligrams per kilogram

bgs below ground surface

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 50

Approximate Scale in Feet

DRAFT

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure G-10

Soil Analytical Results - Tin

1/28/2015 Drafting 110-001-035.dwg FIG G-10 Soil Sn

East 11th Street

Thorne Road

Manufacturing/Painting
Packing/Shipping

Former Sound Mattress &
WA. Steel Products

Drying

Plating

RevChem
Plastics

P-21	
9/11/2014	
2.5-4.0	20
14.5-16.0	21

P-19	
9/11/2014	
2.5-4.0	19
14.5-16.0	19

P-20	
9/10/2014	
2.0-4.0	20
14.5-16.0	19

P-18	
9/11/2014	
2.5-4.0	17
14.5-16.0	18

P-17	
9/10/2014	
2.0-6.0	20
13.5-16.0	49

P-12	
9/9/2014	
4.0-5.5	20
14.0-16.0	19

P-16	
9/10/2014	
2.5-5.0	21
15.0-16.0	18

P-14	
9/10/2014	
2.5-4.0	23
14.5-16.0	25

P-11	
9/9/2014	
3.8-5.0	22
14.5-16.0	19

P-9	
9/9/2014	
6.0-8.5	20
14.0-16.0	22

P-13	
9/10/2014	
2.5-4.0	33
14.5-16.0	67

P-10	
9/9/2014	
3.0-4.0	28
10.0-12.0	25

P-8	
9/9/2014	
4.0-6.0	23
14.0-16.0	21

P-7	
9/9/2014	
3.5-5.5	25
12.0-14.0	25

P-4	
9/10/2014	
3.5-5.0	25
15.0-16.0	21

P-6	
9/9/2014	
2.5-4.0	29
10.5-12.0	26

P-2	
9/9/2014	
4.0-5.5	17
8.0-9.5	21

P-5	
9/9/2014	
2.0-4.0	22
8.5-9.5	24

P-3	
9/10/2014	
4.5-6.0	19
14.5-16.0	29

P-1	
9/9/2014	
2.5-4.0	120
10.5-12.0	22

Legend

P-1◉ Soil Boring
(approximately 12 feet bgs)

Well/Boring ID	
Date	
Depth (bgs)	mg/kg

Preliminary Screening Level
Zinc - 410 mg/kg

mg/kg milligrams per kilogram

bgs below ground surface

Road

Building

Property Boundary

Pre-1965 Operations

Railroad Tracks

N

0 50

Approximate Scale in Feet

DRAFT

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Former Sound Mattress & Felt Company
1940 East 11th Street
Tacoma, Washington

PN: 110-001

Figure G-11

Soil Analytical Results - Zinc

1/28/2015 Drafting 110-001-035.dwg FIG G-11 Soil Zn

APPENDIX H
PRELIMINARY SCREENING LEVELS

FURTHER INVESTIGATION REPORT

Former Sound Mattress and Felt Property
1940 East 11th Street
Tacoma, Washington

Pacific Crest PN: 110-001

Appendix H - Table H-1
Preliminary Screening and Cleanup Levels - Groundwater
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Regulation	Screening Levels - Groundwater (µg/L)														
	Metals								HVOCs						
	Arsenic	Cadmium[1]	Chromium	Copper	Lead	Nickel	Tin	Zinc	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1-Trichloroethane	1,1-Dichloroethane
Ecology Approved Cleanup Levels - November 2010 Opinion Letter	--	--	**--**	--	--	--	--	--	**3.3**	30	**10,000**	**10,000**	**2.4**	--	--
MTCA Method A	**5**	**5**[2]	**50**	NE	15	NE	NE	NE	5	5	NE	NE	0.2	**200**	NE
MTCA Method B - Non-Carcinogen - Ingestion	4.8	8[2]	NE	320	NE	320	**9,600**	4,800	48	4	**16**	**160**	24	16,000	1,600
MTCA Method B - Carcinogen - Ingestion	0.0583	NE	NE	NE	NE	NE	NE	NE	20.8	0.54	NE	NE	0.029	NE	**7.68**
MTCA Method C - Non-Carcinogen - Ingestion	10.5	17.5[2]	NE	700	NE	700	21,000	10,500	105	8.75	35	350	52.5	35,000	3,500
MTCA Method C - Carcinogen - Ingestion	0.0583	NE	NE	NE	NE	NE	NE	NE	208	9.51	NE	NE	0.29	NE	76.8
MTCA Method C - Protection of Indoor Air	NV	NV	NV	NV	NV	NV	NV	NV	**101.5**	**8.4**	--	--	**3.5**	--	--
Natural Background	5	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Surface Water - Method B - Non-Carcinogen	17.7	40.5	NE	2,880	NE	1,100	NW	16,500	502	118	NE	32,400	6,480	926,000	NE
Surface Water - Method B - Carcinogen	0.0982	NE	NE	NE	NE	NE	NE	NE	99.6	12.8	NE	NE	3.7	NE	NE
Surface Water - Method C - Non-Carcinogen	44.2	101	NE	7,230	NE	2,760	NE	41,400	1,250	295	NE	81,000	16,200	2,310,000	NE
Surface Water - Method C - Carcinogen	2.46	NE	NE	NE	NE	NE	NE	NE	2,490	320	NE	NE	**92.3**	NE	NE
Surface Water - Aquatic Life Marine/Chronic 173-201A WAC	36	9.3	NE	3.1	8.1	8.2	NE	81	NE	NE	NE	NE	NE	NE	NE
Surface Water - Aquatic Life Marine/Chronic NTR 40 CFR 131	**36**	**9.3**	NE	**2.4**	**8.1**	**8.2**	NE	**81**	NE	NE	NE	NE	NE	NE	NE
Surface Water - Human Health Marine Waters NTR 40 CFR 131	0.14	NE	NE	NE	NE	4,600	NE	NE	**8.85**	**81**	NE	NE	525	NE	NE

NOTES:
[1] Soil and non-potable surface water, unless otherwise indicated
[2] Potable groundwater and surface water
Bold = Preliminary Screening Level
Bold with yellow highlight= Selected Preliminary Cleanup Level
µg/L = micrograms per liter
NE = not established
NV = non-volatile
HVOCs = halogenated volatile organic compounds

Appendix H - Table H-2
Preliminary Screening Levels - Soil
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Regulation	Screening Levels - Soil (mg/kg)													
	Metals								HVOCs					
	Arsenic	Cadmium[1]	Chromium	Copper	Lead	Nickel	Tin	Zinc	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1-Dichloroethane
Ecology Approved Cleanup Levels - November 2010 Opinion Letter	NE	NE	NE	NE	NE	NE	NE	NE	0.334	0.296	**65**	NE	0.057	NE
MTCA Method A - Industrial	**20**	2	2000	NE	1000	NE	NE	NE	**0.05**	**0.03**	NE	NE	NE	NE
MTCA Method B - Non-Carcinogen - Dermal Exposure	24	80	NE	3,200	NE	1,600	**48,000**	24,000	480	40	**160**	**1,600**	240	**16,000**
MTCA Method B - Carcinogen - Dermal Exposure	0.667	NE	NE	NE	NE	NE	NE	NE	476	12	NE	NE	0.67	175
MTCA Method B - Soil Leaching to Groundwater	2.92	**1.28**	1,000	1.1	1,620	11	--	101	**1.01**	**0.053**	--	--	**0.02**	--
MTCA Method C - Non-Carcinogen - Dermal Exposure	1,050	3,500	NE	140,000	NE	70,000	2,100,000	1,050,000	21,000	1,750	7,000	70,000	10,500	700,000
MTCA Method C - Carcinogen - Dermal Exposure	87.5	NE	NE	NE	NE	NE	NE	NE	62,500	2,850	NE	NE	87.5	23,000
Sediment Management Standards - Marine 173-204 WAC	57	5.1	**260**	**390**	**450**	140	NE	**410**	--	--	--	--	--	--
Natural Background - Puget Sound	7	1	48	36	24	**48**	NE	85	--	--	--	--	--	--
TCLP Limit (mg/L)	5	1	5	NE	5	NE	NE	NE	0.7	0.5	NE	NE	0.2	NE
20 X TCLP Limit (mg/kg)	100	20	100	--	100	--	--	--	14	10	--	--	4	--

NOTES:
[1] Soil and non-potable surface water
Bold = Preliminary Screening Level
Bold with yellow highlight = Selected Preliminary Cleanup Level
mg/kg = milligrams per kilogram
NE = not established
-- = not calculated
HVOCs = halogenated volatile organic compounds
TCLP: toxicity characteristic leaching procedure

Appendix H - Table H-3
Preliminary Screening Levels - Air
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

Regulation	Screening Levels - Air (µg/m³)						
	HVOCs						
	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1-Trichloroethane	1,1-Dichloroethane
Ecology Approved Cleanup Levels - November 2010 Opinion Letter	6.57	1.55	122.72	NE	0.99	NE	NE
MTCA Method B - Non-Carcinogen - Inhalation	18.3	0.914	NE	**27.4**	45.7	**2,290**	NE
MTCA Method B - Carcinogen - Inhalation	9.62	0.37	NE	NE	0.28	NE	**1.56**
MTCA Method C - Non-Carcinogen - Inhalation	**40**	**2**	NE	60	100	5,000	NE
MTCA Method C - Carcinogen - Inhalation	96.2	6.3	NE	NE	**2.8**	NE	15.6

NOTES:
Bold = Preliminary Screening Level
Bold with yellow highlight = Selected Preliminary Cleanup Level
µg/m³ = micrograms per cubic meter
NE = not established
HVOCs = halogenated volatile organic compounds

Appendix H - Table H-4
MTCA Method B and C Screening Levels - Indoor Air
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

COC	Exposure	Cleanup Standard	Hazard Quotient (unitless)	Hcc. Adjusted to 13 C	alpha	AT (yr)	ED Hours per day	ED Days Per Year	BR (m3/day)	ABW (kg)	ABS (unitless)	ED (yr)	EF (unitless)	Rfd (mg/kg-day)	CUL.air (ug/m3)	Screening Level Water (ug/L)
PCE	Residential - Indoor Air	Standard Method B Cleanup Level - NC	1	3.93E-01	1.00E-03	6	24	365	10	16	1	6	1	1.14E-02	18.2	46.4
	Adult Only Residential - Indoor Air	Standard Method C - NC	1	3.93E-01	1.00E-03	6	24	365	20	70	1	6	1	1.14E-02	**40**	101.5
TCE	Residential - Indoor Air	Current Method B Cleanup Level - NC	1	2.38E-01	1.00E-03	6	24	365	10	16	1	6	1	5.70E-04	0.9	3.8
	Adult Only Residential - Indoor Air	Standard Method C - NC	1	2.38E-01	1.00E-03	6	24	365	20	70	1	6	1	5.70E-04	**2.0**	8.4
Vinyl Chloride	Residential - Indoor Air	Current Method B Cleanup Level - NC	1	8.16E-01	1.00E-03	6	24	365	10	16	1	6	1	2.90E-02	55.2	67.61
	Adult Only Residential - Indoor Air	Standard Method C - Default	1	8.16E-01	1.00E-03	6	24	365	20	70	1	6	1	2.90E-02	121	147.9

Notes:
COC - Contaminant of concern
PCE - Tetrachloroethene
TCE - Trichloroethene
Residential exposure is based on standard MTCA parameters (WAC 173-340-750 Eq. 750-2)
Non-residential exposure is based on revised parameters that are consistent with commercial worker (10 hrs per day, 250 days per yr for 30 yrs)
Cancer Risk - WAC 173-340-750 Eq. 750-2
Hcc - Henry's Law Constant - CLARC Database
Alpha - diffusion coefficient soil vapor to indoor air
AT - Averaging Time - WAC 173-340-750 Eq. 750-2
IUR - Inhalation Unit Risk - EPA or CAL EPA - see comments
ADF - Age-dependent adjustment factor - EPA IRIS and Ecology guidance
NHL - non-Hodgkin lymphoma
ED - Exposure Duration - WAC 173-340-750 Eq. 750-2
ED values for commercial/industrial from EPA Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment) 2009
BR - Breathing Rate
ABW - Average Body Weight - WAC 173-340-750 Eq. 750-2
ABS - Inhalation Absorption fraction - WAC 173-340-750 Eq. 750-2
EF - Exposure Frequency - WAC 173-340-750 Eq. 750-2
CPFi- Carcinogenic Potency Factor - Calculated based on CLARC glossary
CUL.air - MTCA Method B Air CUL - WAC 173-340-750 Eq 750-2

Appendix H - Table H-5
MTCA Method B Cleanup Levels - Indoor Air
Sound Mattress and Felt Company
1940 E. 11th Street
Tacoma, Washington
Pacific Crest No: 110-001

COC	Exposure	Cleanup Standard	Cancer Risk (unitless)	Hcc. Adjusted to 13 C	alpha	AT (yr)	IUR (m3/ug)	Adjusted Inhalation Factor for ADAF for Early Life Exposure	ED Hours per day	ED Days Per Year	ED Years	BR (m3/day)	ABW (kg)	ABS (unitless)	ED (yr)	EF (unitless)	UCF	CPFi (kg-day/ug)	CUL.air (ug/m3)	Screening Level Water (ug/L)
PCE	Adult Only Residential - Indoor Air	Current Method B Cleanup Level	1.00E-06	3.93E-01	1.00E-03	75	2.60E-07	--	24	365	30	20	70	1	30	1	1000	9.10E-04	9.6	24.5
	Adult Only Residential - Indoor Air	Current Method C Cleanup Level	1.00E-05	3.93E-01	1.00E-03	75	2.60E-07	--	24	365	30	20	70	1	30	1	1000	9.10E-04	96.2	244.7
TCE	Residential - Indoor Air	Current Method B Cleanup Level - (Kidney)	1.00E-06	--	--	75	1.00E-06	3.26E+01	24	365	30	20	70	1	30	1	1000	3.50E-03	0.66	--
		Current Method B Cleanup Level - (Liver)	1.00E-06	--	--	75	2.00E-06	--	24	365	30	20	70	1	30	1	1000	7.00E-03	1.3	--
		Current Method B Cleanup Level - (NHL)	1.00E-06	--	--	75	1.00E-06	--	24	365	30	20	70	1	30	1	1000	3.50E-03	2.5	--
		Method B Cleanup Level - (Kidney(ADAF)+Liver +NHL)	--	2.38E-01	1.00E-03	--	Combined	--	--	--	--	--	--	--	--	--	1000	--	0.37	1.5
	Adult Only Residential - Indoor Air	Standard C Method CUL	1.00E-05	2.38E-01	1.00E-03	75	4.00E-06	--	24	365	30	20	70	1	30	1	1000	1.40E-02	6.3	26.3
Vinyl Chloride	Adult Only Residential - Indoor Air	Standard Method B Cleanup Level	1.00E-06	8.16E-01	1.00E-03	75	8.80E-06	--	24	365	30	20	70	1	30	1	1000	3.08E-02	0.28	0.35
	Adult Only Non-Residential - Indoor Air	Standard Method C CUL	1.00E-05	8.16E-01	1.00E-03	75	8.80E-06	--	24	365	30	20	70	1	30.0	1	1000	3.08E-02	**2.8**	3.5

Notes:
COC - Contaminant of concern
PCE - Tetrachloroethene
TCE - Trichloroethene
Residential exposure is based on standard MTCA parameters (WAC 173-340-750 Eq. 750-2)
Non-residential exposure is based on revised parameters that are consistent with commercial worker (8 hrs per day, 250 days per yr for 25 yrs)
Cancer Risk - WAC 173-340-750 Eq. 750-2
Hcc - Henry's Law Constant - CLARC Database
Alpha - diffusion coefficient soil vapor to indoor air
AT - Averaging Time - WAC 173-340-750 Eq. 750-2
IUR - Inhalation Unit Risk - EPA or CAL EPA - see comments
ADF - Age-dependent adjustment factor - EPA IRIS and Ecology guidance
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CUL.air - MTCA Method B Air CUL - WAC 173-340-750 Eq 750-2