



PERIODIC REVIEW

**Weyerhaeuser Everett Mill E
Facility Site ID#: 12**

**515 East Marine View Drive,
Everett, Washington**

Northwest Region Office

TOXICS CLEANUP PROGRAM

December 2009

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1.0 INTRODUCTION

This document is a review by the Washington State Department of Ecology (Ecology) of post-cleanup site conditions and monitoring data to ensure that human health and the environment are being protected at the Weyerhaeuser Everett Mill E, also known as (aka) Weyerhaeuser Mill E/Koppers (Site). Cleanup at this Site was implemented under the Model Toxics Control Act (MTCA) regulations, Chapter 173-340 Washington Administrative Code (WAC), and under a Consent Decree 982087186, Snohomish County Superior Court. The cleanup actions resulted in concentrations of wood preservative chemicals pentachlorophenol (PCP), creosote, chromated copper arsenate (CCA), polycyclic aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH) remaining at the Site which exceed MTCA cleanup levels. Ground water at the site contained dissolved and free phase wood preservative chemicals, metals including chromium and arsenic, and petroleum hydrocarbons. Arsenic was above area background. The MTCA cleanup levels for soil are established under WAC 173-340-740. The MTCA cleanup levels for groundwater are established under WAC 173-340-720. WAC 173-340-420 (2) requires that Ecology conduct a periodic review of a site every five years under the following conditions:

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

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

- (a) The effectiveness of ongoing or completed cleanup actions, including the effectiveness of engineered controls and institutional controls in limiting exposure to hazardous substances remaining at the site;
- (b) New scientific information for individual hazardous substances of mixtures present at the site;
- (c) New applicable state and federal laws for hazardous substances present at the Site;
- (d) Current and projected site use;
- (e) Availability and practicability of higher preference technologies; and
- (f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

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

2.0 SUMMARY OF SITE CONDITIONS

2.1 Site Description and History

The Weyerhaeuser Mill E/Koppers Site is located northeast of the City of Everett and along the western bank approximately two miles upstream from the mouth of Snohomish River. It is industrial property that is zoned M-2 heavy manufacturing, approximately 8.9 acres. The Site is bordered on the north by the Port of Everett Riverside Industrial Park, on the west and south by other Port of Everett property, and on the east by the Snohomish River. The Mill E/Koppers Site is one of seven designated Ecology MTCA Operable Units located on current or former Weyerhaeuser property in Everett. The Mill E site is surrounded by the Weyerhaeuser Everett East site, which is also subject to periodic ground water monitoring due to past site activities that resulted in contamination of ground water. Ground water contaminants on the surrounding Everett East site include arsenic, petroleum hydrocarbons, and pentachlorophenol. The Site was once part of a larger sawmill complex known as Mill B or the East Site owned by Weyerhaeuser that began operation in Everett in 1902, and was used for lumber storage from 1915 to 1948. Then the Site was used for treating lumber by American Lumber and Treating Corporation (Koppers Company aka Beazer East, Inc.) from 1948 to 1963. Weyerhaeuser converted the facility in 1963 into an engine maintenance shop which operated until 1984. A small-diameter log sawmill operated at the northeast end of the site from 1971 to 1984. Ecology was notified that Weyerhaeuser sold property that included Mill E in August 2005 to a subsidiary of Pacific Topsoils, Inc. The site was used to store pallets, but a January 22, 2002 letter scope of work letter from GeoEngineers documents a proposal for a Concrete Nor'West Batch Plant to be located above the asphalt cap that was installed as part of a remedial action in 1999. Records show that Ecology requested information on load bearing capacity and possible effects on the integrity and performance of the cap from building or work activities.

The site is located in the flood plain of the Snohomish River approximately 2 miles upstream of Port Gardner Bay on Puget Sound. Four hydrostratigraphic units were identified at the site. They are from top to bottom: grade and mixed fill, the upper sand aquifer, the upper silt aquitard, and the lower sand aquifer (1994 draft RI/FS). The grade and mixed fill is unsaturated, ranging from 1 to 4 feet thick, and composed of sandy gravel, asphalt, crushed rock, wood debris and bark. The grade fill apparently was placed after 1974. The upper sand is fine to medium sand, averaging 5 to 6 feet in thickness and ranging from 1 to 10 feet thick. Much of the sand apparently was dredge fill sand emplaced upon estuarine tidal flats of the Snohomish River. The upper silt unit is stiff, low plasticity to non-plastic silt with abundant organic matter and lenses of fine sand, sandy silt, and silty sand 0.1 to 0.2 feet thick throughout the unit. The average thickness is 8 feet and it ranges from 1 foot (near the shoreline) to 17 feet. The lower sand is found below the silt unit. It is composed of medium to coarse sand with trace gravel and wood debris. In one borehole, the thickness of the lower sand was 63 feet. It was interpreted to be fluvial sediment from the Snohomish River.

The average water table depth is 4 feet below ground surface. The upper sand unit is partially saturated below the site, and is recharged by precipitation and discharges to the underlying units and Snohomish River. The silt unit is a leaky aquitard between the upper and lower sand units. The lower sand unit is fully saturated. It is recharged from intermediate and local sources below and lateral to it, and by downward flow from the upper sand aquifer. Piezometric head in the lower sand aquifer is influenced by the tidal fluctuations in the Snohomish River

2.2 Site Investigations and Sample Results

Ground water monitoring has been performed at least annually since 2003 to provide a 10-year record of monitoring measurements at the site. Ground water monitoring consists of collecting water level measurements from all the wells and sampling well PZ-3A.

Generally, the water levels outside of the containment (B wells) have been higher than the water levels inside of the containment (A wells). Exceptions to this occurred in well PZ-3B in April and June 1999 (during completion of the remedial action) and in March and June 2000, and in well PZ-1A in September 2007. The September 2007 event in well PZ-1A was the result of surface water getting into the well monument and submerging the well head. The normal trend was re-established in well PZ-1A in 2008 after the well monument was repaired and resealed.

Ground water samples have been collected from well PZ-3A every 2 years from 1999 to 2005 and annually from 2006 to 2008. Samples collected from well PZ-3A, which is located inside of the containment area, are analyzed for total petroleum hydrocarbons (TPH) as gasoline (G), diesel (D) and motor oil (O), pentachlorophenol (PCP) and total arsenic. Since June 1999, the contaminants detected in ground water from well PZ-3A have exhibited the following trends:

- Pentachlorophenol (PCP) concentrations peaked at 1,200 micrograms per liter (ug/L) in November 1999 and have steadily decreased since that time. The latest PCP concentration measured in well PZ-3A in September 2008 was 0.47 ug/L. PCP concentrations have been below the MTCA Method C cleanup level of 7.3 ug/L for carcinogenic PCP since June 2003. The September 2008 PCP concentration is also below the MTCA Method B cleanup level for carcinogenic PCP of 0.72 ug/L.
- Gasoline concentrations rose from June 1999 until June 2003 when they peaked at 6,300 ug/L. Gasoline concentrations decreased to 2,300 ug/L in September 2005 and remained in the 2,300 to 3,170 ug/L range until September 2008 when they decreased to 25 ug/L. The gasoline concentrations in ground water from well PZ-3A have never exceeded the MTCA Method C cleanup level of 10,000 ug/L. The September 2008 gasoline concentration is also below the MTCA Method A cleanup level of 800 ug/L.
- Diesel concentrations increased from June 1999 to November 1999 to 2,300 ug/L then decreased to between 1,500 to 1,700 ug/L until September 2006 when they rose to 3,170 ug/L. After September 2006, diesel concentrations decreased to an all time low in September 2008 of 384 ug/L. The diesel concentrations in ground water from well PZ-3A have never exceeded the MTCA Method C cleanup level of 10,000 ug/L. The September 2008 diesel concentration is also below the MTCA Method A cleanup level of 500 ug/L.

- Motor oil concentrations increased from June 1999 to June 2001 to 1,000 ug/L then decreased to between 250 to 619 ug/L until September 2007 when they rose to 1,190 ug/L. In September 2008, motor oil concentrations decreased to an all time low of 384 ug/L. The motor oil concentrations in ground water from well PZ-3A have never exceeded the MTCA Method C cleanup level of 10,000 ug/L. The September 2008 motor oil concentration is also below the MTCA Method A cleanup level of 500 ug/L.
- Total arsenic concentrations increased from June 1999 to November 1999 to 1,410 ug/L then decreased to 484 ug/L between November 1999 and September 2006. In September 2006 and September 2007, arsenic concentrations rose to 814 and 810 ug/L then decreased in September 2008 to 160 ug/L. The arsenic concentrations have never been below the MTCA Method A cleanup level of 5 ug/L.

Summarizing the investigations and sampling occurring since the remedial action was implemented:

- Water table elevations within the barrier wall decreased from March 1999 to November 1999, then increased slightly in March 2000 and June 2000. In March 2001, water levels in the barrier decreased to lower than that of March 2000 and stabilized through June 2003.
- Water quality monitoring samples from PZ-3A, the lone well sampled for contaminants following the remedial action, yielded increasing TPH-G but at levels below the site cleanup standard of 10,000 ug/L. TPH-D increased from June 1999 to November 1999, and then decreased over June 2001 and June 2003. PCP was detected above the cleanup standard of 7.29 ug/L in June 1999 and November 1999. It decreased to below the cleanup standard in June 2001 and below the laboratory reporting limit in June 2003. The total arsenic has been above the cleanup standard of 5 ug/L throughout the 4 monitoring periods, but gradually decreased since November 1999 from 1410 ug/L to 567 ug/L.
- The Site was used to store pallets. Ecology requested information on load bearing capacity and possible effects on the integrity and performance of the cap from building or work activities. This was in response to a proposed batch plant to be constructed on the site.
- The integrity of asphalt cap and adjoining cap around barrier wall continues to be maintained, although some small problems have been noted with scotch broom growth, minor cracks and asphalt heave, and soil fill integrity in small marginal spots outside the barrier wall boundary.

Figures 1 – 3 below depict the water table and contaminant concentration trends in well PZ-3A. Figure 1 shows concentration vs. elevation. Figure 2 shows the change in concentration with time since barrier wall and cap installation, and Figure 3 shows elevation vs. time. Except for PCP, there does not appear to be large variations in contaminant concentration with water table elevation (Figure 1). Figure 2 shows that there was a significant reduction in PCP with time. However, the time series plot of the hydrocarbon contaminant concentrations seem to show increases but with a leveling off with time since the cap installation. This can imply a constant

petroleum hydrocarbon source term loading and thus vertical contaminant loading to the lower sand aquifer continues to occur. Although it has been characterized as below the cleanup standard, it is unknown if this is a standard which is protective of water quality and aquatic organism in the river receptor. Arsenic remains above cleanup levels. Finally, the water table beneath the cap still shows fluctuation, although as expected it is much lower than the water table in the upper sand outside of the wall. Note that the other piezometer information is not plotted in this graph, but the total results may be found in the monitoring reports. Parts per billion (ppb) are equivalent to ug/L.

Figure 1 (from Ecology 2006)

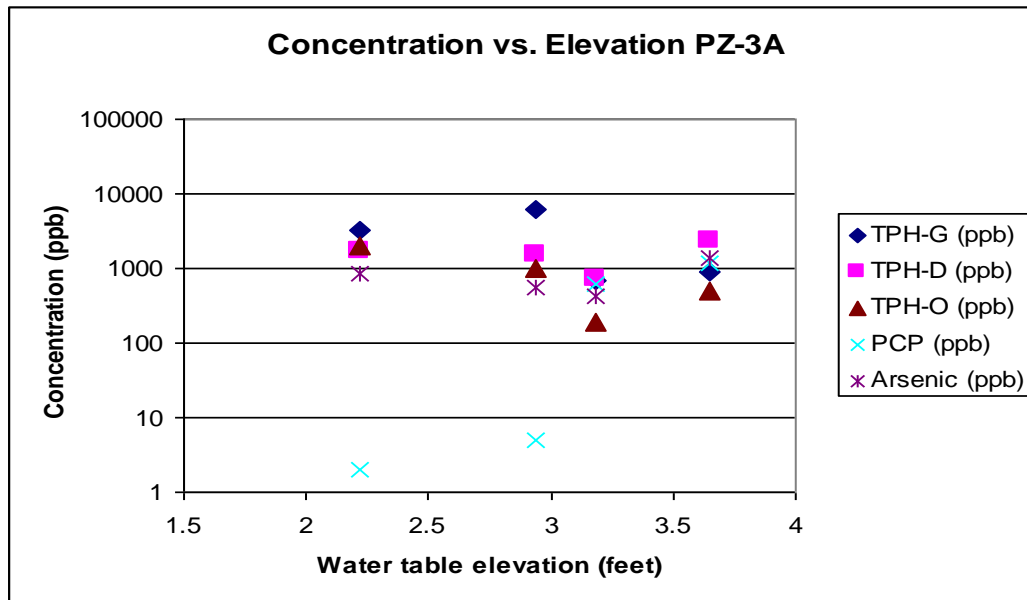


Figure 2 (from Ecology 2006)

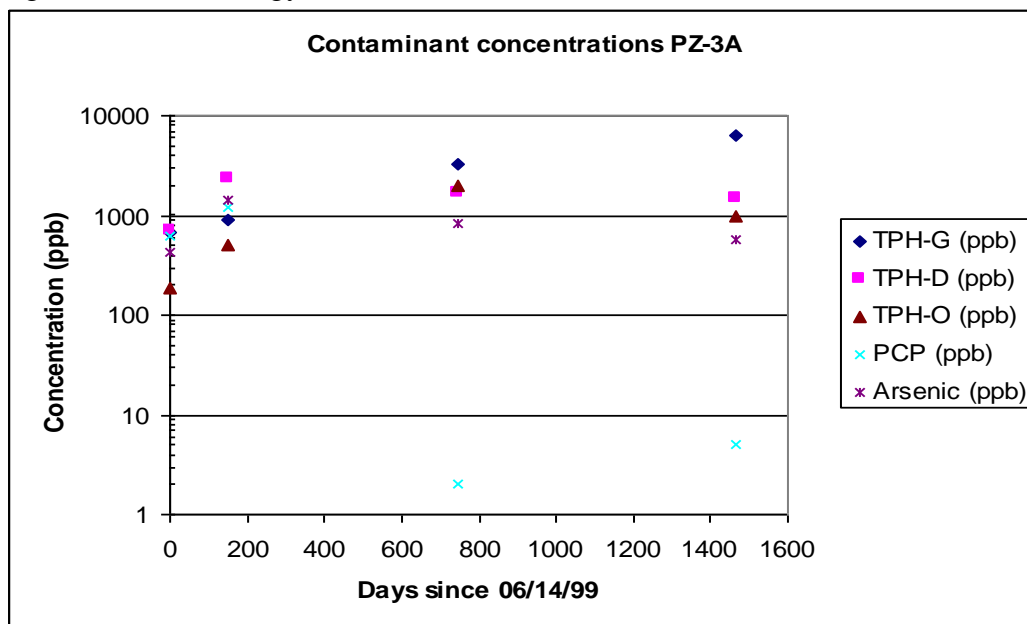
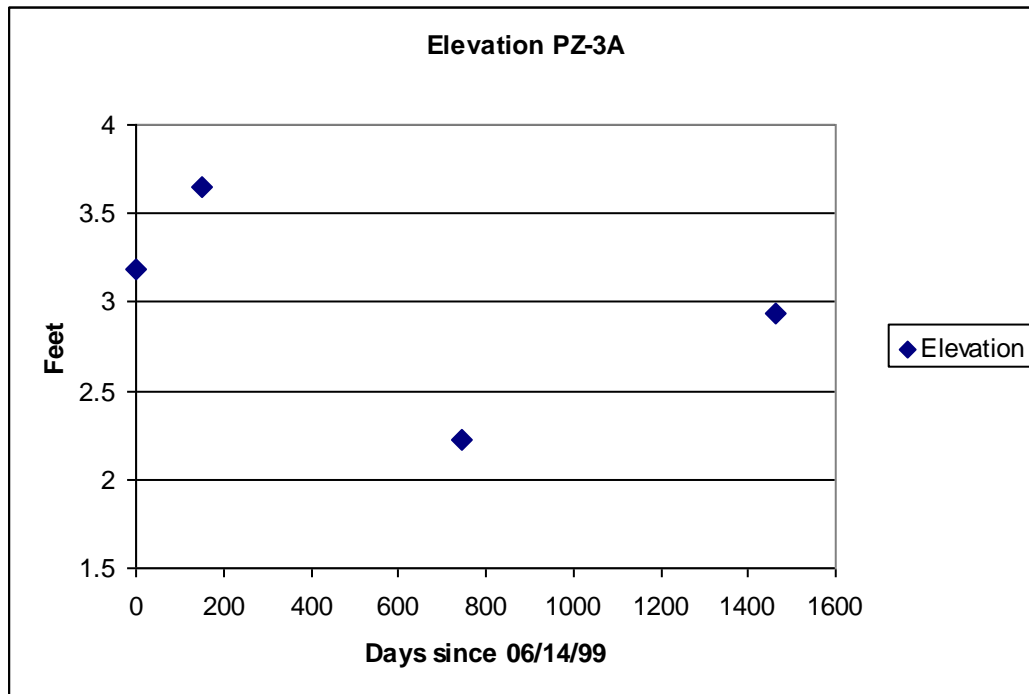


Figure 3 (from Ecology 2006)



2.3 Cleanup Actions

Weyerhaeuser conducted an independent RI/FS in 1995. The indicator soil contaminants identified at the site were wood preservative chemicals pentachlorophenol (PCP), creosote, chromated copper arsenate (CCA), polycyclic aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH). Ground water at the site contained dissolved and free phase wood preservative chemicals, metals including chromium and arsenic, and petroleum hydrocarbons. Arsenic was above area background.

A Consent Decree which included a Cleanup Action Plan was finalized in November 1998. The Final Cleanup Action consisted of several activities:

- 1) Installation of an approximately 1,600 foot long vertical barrier wall (made of high density polyethylene) around the most contaminated portion of the site;
- 2) Excavation down to approximately 4 feet bgs and off-site disposal of up to 1,200 cubic yards of hot spot soil in the former blow pit area, and backfill excavations with clean, imported fill;
- 3) Installation of a low permeability asphalt cap over the vertical barrier containment area to minimize precipitation recharge and prevent direct contact with contaminated soils;
- 4) Installation of a soil cap over portions of the site outside of the barrier wall to prevent direct contact with impacted soil;
- 5) Institutional controls such as deed restrictions to control exposure of future site workers to contaminants and to maintain the integrity of the barrier wall and cap;
- 6) Long term monitoring and maintenance of these remediation structures.

A Performance and Compliance Monitoring Plan was prepared in August 1998. Asphalt cap and soil cover inspection was to be accomplished semi-annually for the first two years, including for storm events, and annually from years 3 through 5. Water level monitoring was carried out in 3 perimeter wells inside the barrier wall and 3 perimeter wells outside the barrier wall. All wells are screened in the upper sand aquifer. The monitoring frequency was quarterly for the first year, semi-annually for the second year, and annually for years 3 through 5. Monitoring well PZ-3A, located on the shoreward portion of the barrier wall, was sampled for arsenic, PCP, and TPH semiannually for the first year, and annually in years 3 and 5. The comprehensive five-year review was submitted on November 10, 2003.

2.4 Cleanup Levels

MTCA Method C Industrial cleanup levels were selected to be met at a conditional point of compliance for soil and groundwater, but the arsenic level in groundwater is not being met at that point. It is also suspected that there are problems with the contaminant levels in groundwater for other contaminants as well in a lower aquifer.

2.5 Restrictive Covenant

Based on industrial site use, surface cover and calculated cleanup levels, it was determined that the Site was eligible for eventual closure if a Consent Decree was filed with the court and Restrictive Covenant was recorded for the property. A Restrictive Covenant was recorded for the Site in 1999 which imposed the following limitations:

Section 1. No groundwater may be taken for domestic purposes from any well at the Mill E/Koppers Site.

Section 2. No residential development may take place on the Site.

Section 3. Any activity on the Mill E/Koppers Site that may interfere with the viability of the containment systems or containment of the hazardous substances on the Site is prohibited. Any activity on the Mill E/Koppers Site that may result in the release of a hazardous substance that was contained as part of the Cleanup or Interim Cleanup Action(s) is prohibited.

Section 4. Any development of the Mill E/Koppers Site shall ensure the containment of the hazardous substances that are exposed or ensure proper management and disposal. Ecology will receive notice of any development that may impact the contained hazardous substances at least 30 days prior to such development.

Section 5. The owner of the Mill E/Koppers Site must give written notice to the Department of Ecology, or to a successor agency, of the owner's intent to convey any interest in the Mill E/Koppers Site. No conveyance of title, easement, lease or other interest in the Mill E/Koppers Site shall be consummated by the owner without adequate and complete provision for the continued operation, maintenance and monitoring of the Cleanup Action.

Section 6. The owner of the Mill E/Koppers Site must notify and obtain approval from the Department of Ecology, or from a successor agency, prior to any use of the Mill E/Koppers Site that is inconsistent with the terms of this Restrictive Covenant. The Department of Ecology or its successor agency may approve such a use only after public notice and comment.

Section 7. The owner shall allow authorized representatives of the Department of Ecology, or of a successor agency, the right to enter the Mill E/Koppers Site at reasonable times for the purpose of evaluating compliance with the Cleanup Action Plan and the Consent Decree, to take samples, to inspect Cleanup Actions conducted at the Mill E/Koppers Site, and to inspect records that are related to the Cleanup Action.

Section 8. The owner of the Mill E/Koppers Site and the owner's assigns and successors in interest reserve the right under WAC 173-340-740 and WAC 173-340-440 (1991 ed.) to record an instrument which provides that this Restrictive Covenant shall no longer limit the use of the Mill E/Koppers Site or be of any further force or effect. However, such an instrument may be recorded only with the consent of the Department of Ecology, or successor agency. The Department of Ecology, or a successor agency may consent to the recording of such an instrument only after public notice and comment.

The Restrictive Covenant is available as Appendix 6.4.

3.0 PERIODIC REVIEW

3.1 Effectiveness of completed cleanup actions

The Restrictive Covenant for the Site was recorded and is in place. This Restrictive Covenant prohibits activities that will result in the release of contaminants at the Site without Ecology's approval, and prohibits any use of the property that is inconsistent with the Covenant. This Restrictive Covenant serves to ensure the long term integrity of the remedy.

Based upon the site visit conducted on December 15, 2009, the asphalt cover part of the remedy at the Site continues to eliminate exposure to contaminated soils by ingestion and contact. The asphalt appears in satisfactory condition and no repair, maintenance, or contingency actions have been required. The Site is operating as a Pacific Topsoil facility. A photo log is available as Appendix 6.5.

Soils with concentrations of wood preservative chemicals pentachlorophenol (PCP), creosote, chromated copper arsenate (CCA), polycyclic aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH) concentrations higher than MTCA cleanup levels are still present at the Site. However, the remedy prevents human exposure to this contamination by ingestion and direct contact with soils. The Restrictive Covenant for the property will ensure that the contamination remaining is contained and controlled for ingestion and direct contact.

The potential for vertical leakage from the contaminated upper sand unit within the barrier wall through the underlying silt and into the lower sand unit does not appear to have been addressed yet. Consequently, contaminant loading from the upper sand to the lower sand and thus to Snohomish River does not appear to have been addressed as part of compliance and performance monitoring.

The design of compliance monitoring well network does not address downward flux and contaminant loading from the contaminated soil source in the upper sand unit within the containment wall. There should be wells screened in the lower sand aquifer to determine vertical gradients between upper sand and lower sand and through the silt unit through time. Note that a previous report identified such downward fluxes along with contamination in the lower sand unit (March 26, 1991 Hart Crowser Report Phase Ic Site Characterization Report). The 1998 Performance and Compliance Monitoring Plan (EMCON, March 11, 1998) implied that this risk pathway was recognized and was part of the performance objectives:

- (Page 2-2) "The water elevations within the contained portion of the upper sand aquifer are expected to decrease to a new elevation in equilibrium with the average hydraulic head in the lower sand aquifer. This will significantly decrease the contaminant flux from the upper sand aquifer down into the lower sand aquifer."
- (Page 2-2) "... the primary measure of performance will be water levels inside and outside the barrier wall. If water levels inside the wall decline and reach a new

equilibrium at approximately the average elevation of the hydraulic head in the lower aquifer, it can be presumed that the containment system (barrier and asphalt cap) are functioning as designed.”

- (Page 2-4) “The groundwater elevation data will also be used to assess the water balance within the containment system and hydraulic gradients across the containment. If the data indicates significant water flow into or out of the containment, Weyerhaeuser will notify Ecology and appropriate measures will be discussed.”

Furthermore, the 2003 Annual Groundwater Compliance Monitoring and Five year Data Review Report (Shaw Environmental, Inc., November 10, 2003) provides on page 5-1 performance monitoring objectives that include “Long-term reductions in flux of IHSs in deep groundwater migrating to the river demonstrated by reduced hydraulic gradients between shallow and deep aquifers.” However, the three monitoring wells within the wall and the three outside were screened only within the upper aquifer. Following this performance and compliance monitoring plan, no measurements were made on hydraulic head in the lower sand aquifer that would have provided vertical hydraulic gradient measurements that address leakage underneath the containment area. Therefore, this aspect of the performance objective was apparently not accomplished.

Comparative piezometer measurements using the present network allow for hydraulic gradient across the barrier wall within the upper sand unit only. The risk pathway from the upper sand through the silt and to the lower sand and Snohomish River remains unknown. One possible solution to monitoring vertical leakage through the silt unit is to have some performance monitoring wells screened in the lower sand aquifer. Nested piezometers are ideal, possibly in the same location as the present well network within the containment wall. This will allow vertical hydraulic gradients to be calculated and thus determine direction of vertical flow or leakage. An alternative is to install wells at the same locations as the performance monitoring wells located outside the containment area; however, they would be screened in the lower sand aquifer. Thus, the network would consist of the pre-existing three wells within the containment wall (screened in the upper aquifer,) and just outside of the wall, the other three compliance wells in the same locations as the other pre-existing outer wells but screened in the lower sand aquifer. This would allow for comparisons of head elevations between the saturated shallow zone in the wall (in the upper sand aquifer), and compare to the heads in the lower aquifer unit. The wells will be close enough to derive both horizontal and vertical hydraulic gradients between the two units.

The lower sand unit is in close hydraulic communication with the Snohomish River. Therefore, periodic changes in piezometric head are expected as dictated by tidal fluctuations in the river. If head in the lower sand is much lower than head in the upper sand in the containment wall, vertical downward gradients and thus downward vertical flow or leakage of contaminated water from the interior of the containment wall will occur. The degree to which such a process occurs, its attendant contaminant loading, and duration do not appear to be known.

Table 1 provides an idea of contaminant loading using hydraulic parameters and measurements predating containment by the barrier wall and asphalt cap. This provides an idea of pre-remedial

action contaminant loading vertically through the basal silt aquitard and not simply horizontal flow through the contaminated upper sand aquifer. Following installation of the barrier wall and low permeability asphalt cap, two parameters may be expected to change and consequently affect these estimates of vertical contaminant loading: vertical hydraulic gradient, and contaminant concentrations. The reduced recharge caused by the asphalt cap may be expected to reduce the hydraulic head in the upper sand aquifer; however, there appears to be little information that provides vertical gradient through the silt layer, both averaged and through tidal cycles.

New post-remediation estimates of vertical contaminant loading could be compared to the estimates in Table 1 to better assess the effectiveness of the remediation and its protectiveness.

Table 1 (from Ecology 2006)

Contaminant Loading vertically through silt - Weyerhaeuser Mill E							
Contaminant	Average Concentration (mg/L)	Q _{low tide} (ft ³ /day)	Q _{net} (ft ³ /day)	Daily contaminant loading		Yearly contaminant loading	
				Low tide (lbs/day)	Net (lbs/day)	Low tide (lbs/year)	Net (lbs/year)
Gasoline	5.18	5.98	23.92	0.0019	0.0077	0.71	2.82
Diesel	9.09	5.98	23.92	0.0034	0.0136	1.24	4.95
Heavy Oil	2.81	5.98	23.92	0.0010	0.0042	0.38	1.53
TPH	15.8	5.98	23.92	0.0059	0.0236	2.15	8.61
Arsenic	2.17	5.98	23.92	0.0008	0.0032	0.30	1.18
PCP	1.622	5.98	23.92	0.0006	0.0024	0.22	0.88

Assumptions: one-way flow through lower silt confining unit, contaminant concentrations from upper sand aquifer without cap from RI/FS, 4.4 acre contained area, vertical K values from RI/FS, assume contaminants eventually go to river after entering lower sand aquifer. Low tide is 3 hours daily. Contaminants are assumed to behave conservatively (no attenuation during transport).

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

There is no new scientific information for the contaminants related to the Site.

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

The cleanup at the site was governed by Chapter 173-340 WAC (1996 ed.). WAC 173-340-702(12) (c) [2001 ed.] provides that,

“A release cleaned up under the cleanup levels determined in (a) or (b) of this subsection shall not be subject to further cleanup action due solely to subsequent amendments to the provision in this chapter on cleanup levels, unless the department determines, on a case-by-case basis, that the

previous cleanup action is no longer sufficiently protective of human health and the environment.”

Although cleanup levels changed for petroleum hydrocarbon compounds as a result of modifications to MTCA in 2001, contamination remains at the site above the new MTCA Method A and B cleanup levels. Even so, the cleanup action is still protective of human health and the environment. A table with examples comparing MTCA cleanup levels from 1991 to 2001 is available below.

Analyte	1991 MTCA Method A Soil Cleanup Level (ppm)	2001 MTCA Method A Soil Cleanup Level (ppm)	1991 MTCA Method A Groundwater Cleanup level (ppb)	2001 MTCA Method A Groundwater Cleanup Level (ppb)
Cadmium	2	2	5	5
Lead	250	250	5	15
TPH	NL	NL	1000	NL
TPH-Gas	100	100/30	NL	1000/800
TPH-Diesel	200	2000	NL	500
TPH-Oil	200	2000	NL	500
NL = None listed				

3.4 Current and projected site use

The site is currently used for industrial purposes. There have been no recent changes in current or projected future site or resource uses.

3.5 Availability and practicability of higher preference technologies

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

3.6 Availability of improved analytical techniques to evaluate compliance with cleanup levels

The analytical methods used at the time of the remedial action were capable of detection below selected site cleanup levels. The presence of improved analytical techniques would not affect decisions or recommendations made for the site.

4.0 CONCLUSIONS

The following conclusions have been made as a result of this periodic review:

- The cleanup actions completed at the Site appear to be protective of human health but not the environment.
- Soils cleanup levels have not been met at the standard point of compliance for the Site; however, the cleanup action has been determined to comply with cleanup standards since the long-term integrity of the containment system is ensured, and the requirements for containment technologies are being met for the soil contamination.
- The Restrictive Covenant for the property is in place and continues to be effective in protecting public health from exposure to hazardous substances and protecting the integrity of the cleanup action.
- Groundwater contamination does not appear to meet any point of compliance for arsenic, and this and other contaminants may be leaving containment into the lower aquifer.

Based on this periodic review, the Department of Ecology has determined that the requirements of the Restrictive Covenant continue to be met. Additional cleanup actions may be required of the property owner by Ecology's Site Manager due to, for example, continued dissolved arsenic concentrations above cleanup levels in groundwater at the site. It is the property owner's responsibility to continue to inspect the site to assure that the integrity of the remedy is maintained.

4.1 Next Review

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

This Periodic Review includes the following recommendations from the Ecology Site Manager:

- 1) The terms of the final approved Consent Decree have no specific language for reassessment of the remedial system for this site, nor is there language for corrective action if contaminants are out of compliance. Given present constraints and conditions, the institutional controls and monitoring should continue indefinitely.
- 2) The analyte concentrations in PZ-3A should continue to be monitored at least annually, and indefinitely, the same as the overall groundwater monitoring schedule should be. There remains a lack of consistently low concentrations as seen in time series plots of contaminants. Although the 10 year report cites a decreasing trend, this trend may change as seen in earlier rising patterns in concentration.

- 3) Sampling events should continue following a more consistent time of the year to make water level and analyte measurements comparable. Furthermore, reports should indicate the tidal stage in the adjacent Snohomish River at the time of sampling. The last four annual sampling events were done in September. It is not known if this time of the year represents an average representative concentration or more conservatively a maximum concentration in the containment wall.
- 4) The Site continues to have arsenic contamination above cleanup levels in groundwater. The Consent Decree does not detail a response or plan of action when contaminants are not in compliance. Note that because this Site is located at the Everett Smelter arsenic Site, this may be reflective of area background, although this has not been demonstrated. The report cites a 1997 Weyerhaeuser Feasibility Study (FS) as indicating that arsenic concentrations are below an upgradient concentration of 0.443 mg/L. The 0.443 mg/L value appears to have been cited as a proposed value for area background based on previous discussion on the arsenic exceedances at the site. The FS states that an investigation by EMCON showed that "groundwater arsenic concentration in the upper sand aquifer upgradient of the Former Mill E/Koppers Facility Site was approximately 0.054 mg/L (Hydrometrics, 1994)." Immediately upgradient of the site in the upper sand aquifer (on Weyerhaeuser property), average arsenic was 0.443 mg/L. Therefore, the quoted value of 0.443 mg/L refers to groundwater that is still part of the site and does not constitute background. Much of the measured arsenic data within the containment is above the Method A value of 5 ug/L (as per consent decree) and above 54 ug/L, the aforementioned quoted average value upgradient of the Site. Likewise, it has not been adequately demonstrated what natural or area background is based on criteria stated in WAC 173-340-709. Groundwater monitoring should continue and after 5 years if there are the same or rising exceedances, a new corrective action should be implemented.
- 5) Cap monitoring and inspection should proceed as before. The PLPs have done a good job maintaining the integrity of the asphalt cap and fulfilling notification requirements of the institutional controls required in the Consent Decree.

5.0 REFERENCES

Ecology, 1999. Restrictive Covenant.

Ecology, 2009. Site Visit.

Ecology, 2006. "Technical and Administrative Review Comments on the Weyerhaeuser Mill E formal MTCA cleanup site, 515 East Marine View Drive, Everett, Washington." Memo from Jerome Cruz to Ching-Pi Wang, March 24, 2006. Department of Ecology Central Records, Northwest Regional Office, Bellevue.

Ecology, 2009. "Weyerhauser Mill E site, Everett." Memo from Jerome Cruz to Ching-Pi Wang, May 28, 2009. Department of Ecology Central Records, Northwest Regional Office, Bellevue.

Associated Earth Sciences, Inc., 2008. "Mill E 2208 Ground Water Monitoring Summary." Memo from Jon N. Sondergaard to Pacific Topsoils, Inc. October 24, 2008. Everett.

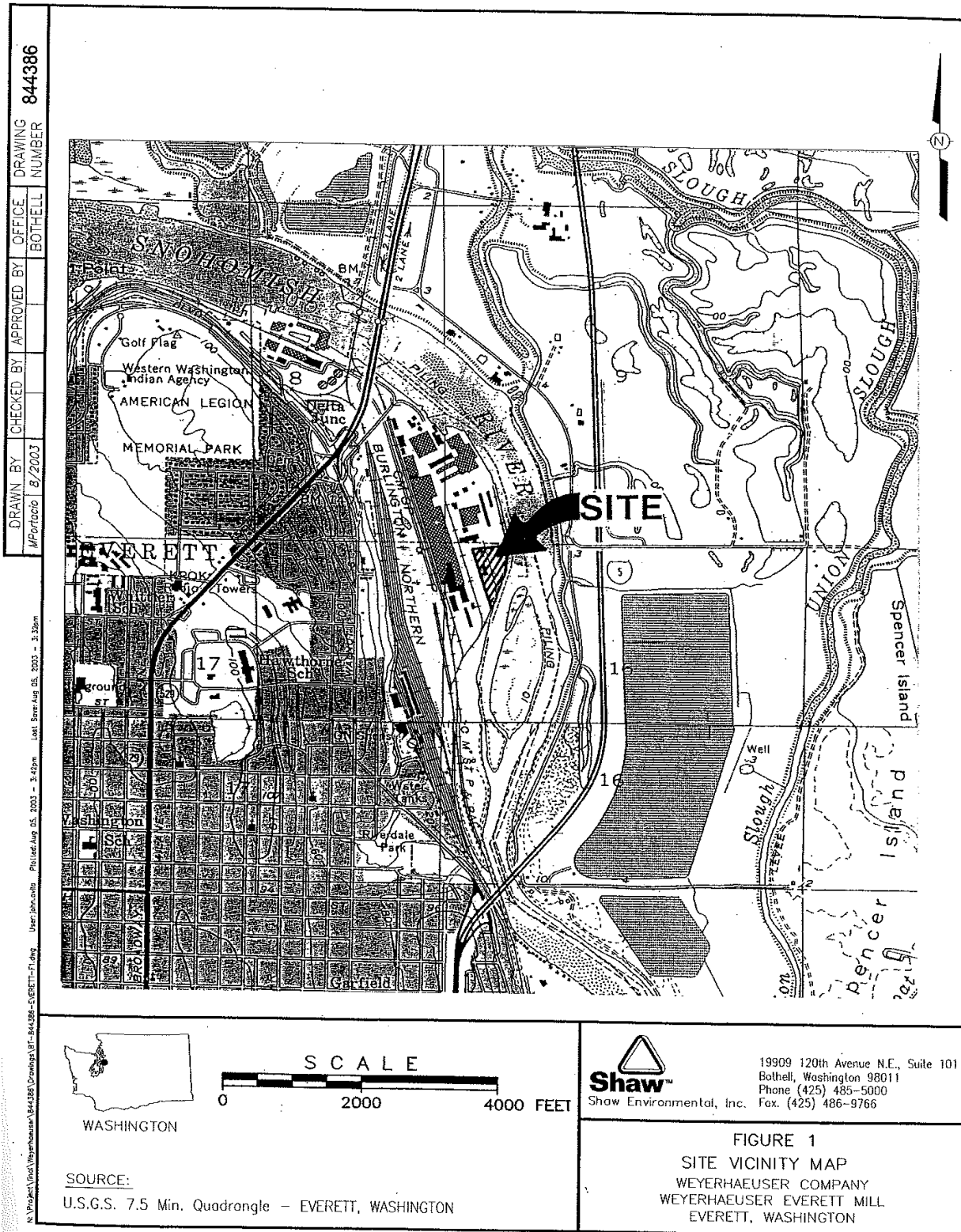
Hart Crowser, 1991. "Phase Ic Site Characterization Report." March 26, 1991.

Shaw Environmental, 2003. "2003 Annual Groundwater Compliance Monitoring and Five Year Data Review Report." November 10, 2003.

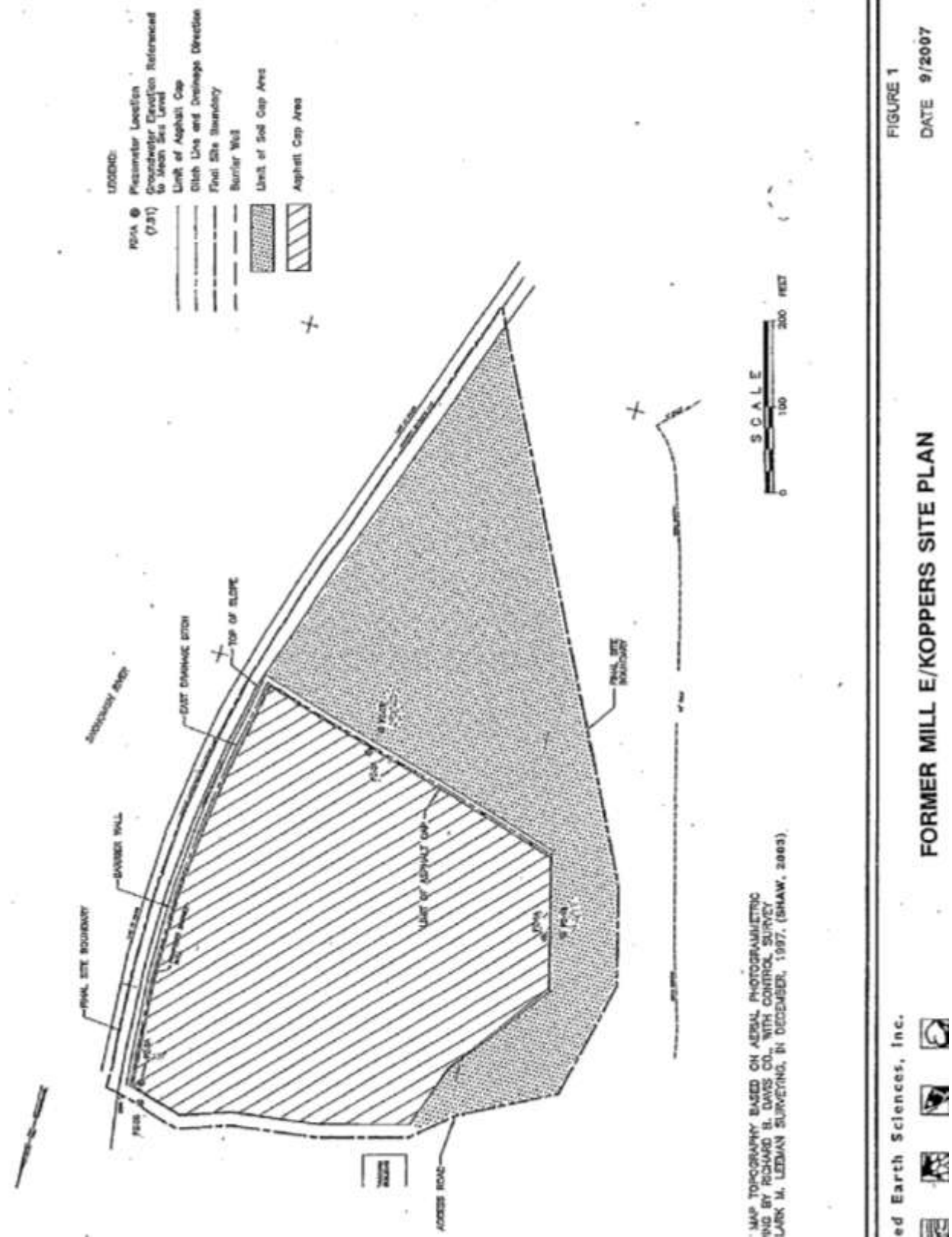
EMCON, 1998, "1998 Performance and Compliance Monitoring Plan." March 11, 1998.

6.0 APPENDICES

6.1 Vicinity Map



6.2 Site Plan



6.3 TPH-Dx Concentration Map

Not available

6.4 Environmental Covenant

COPY
ORIGINAL ON FILE IN THE
COUNTY AUDITOR'S OFFICE



199907260455
07/26/1999 11:33 AM Snohomish
P.0006 RECORDED County

RESTRICTIVE COVENANT

The property that is the subject of this Restrictive Covenant has been the subject of remedial action under Chapter 70.105D RCW. The work done to clean up the property (hereafter the "Cleanup Action") is described in the Consent Decree entered in State of Washington Department of Ecology v. Weyerhaeuser Company, Snohomish County Superior Court No. 98-2-08718-6 and in attachments to the Decree and in documents referenced in the Decree. This Restrictive Covenant is required by Ecology under Ecology's rule WAC 173-340-440 (1991 ed.) because the Cleanup Action on the Site resulted in residual soil concentrations of TPH above Ecology's Method A cleanup level, PCP, and CPAH which exceed Ecology's Method B cleanup levels for soils. The restrictive covenant is also required because the arsenic groundwater and soil contamination is addressed in the remedial action only within the containment area on Site.

The undersigned, Weyerhaeuser Company, is the fee owner of real property in the County of Snohomish, State of Washington (legal description attached), hereafter referred to as the "Mill E/Koppers Site". Weyerhaeuser Company makes the following declarations as to limitations, restrictions, and uses to which the Mill E/Koppers Site may be put, and specifies that such declarations shall constitute covenants to run with the land, as provided by law, and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Mill E/Koppers Site.

Section 1. No groundwater may be taken for domestic purposes from any well at the Mill E/Koppers Site.

Section 2. No residential development may take place on the Site.

Section 3. Any activity on the Mill E/Koppers Site that may interfere with the viability of the containment systems or containment of the hazardous substances on the Site is prohibited. Any activity on the Mill E/Koppers Site that may result in the release of a hazardous substance that was contained as part of the Cleanup or Interim Cleanup Action(s) is prohibited.

Section 4. Any development of the Mill E/Koppers Site shall ensure the containment of the hazardous substances that are exposed or ensure proper management and disposal. Ecology will receive notice of any development that may impact the contained hazardous substances at least 30 days prior to such development.

Section 5. The owner of the Mill E/Koppers Site must give written notice to the Department of Ecology, or to a successor agency, of the owner's intent to convey any interest in the Mill E/Koppers Site. No conveyance of title, easement, lease or other interest in the Mill E/Koppers Site shall be consummated by the owner without adequate and complete provision for the continued operation, maintenance and monitoring of the Cleanup Action.

Section 6. The owner of the Mill E/Koppers Site must notify and obtain approval from the Department of Ecology, or from a successor agency, prior to any use of the Mill E/Koppers

AFN 199907260455

Site that is inconsistent with the terms of this Restrictive Covenant. The Department of Ecology or its successor agency may approve such a use only after public notice and comment.

Section 7. The owner shall allow authorized representatives of the Department of Ecology, or of a successor agency, the right to enter the Mill E/Koppers Site at reasonable times for the purpose of evaluating compliance with the Cleanup Action Plan and the Consent Decree, to take samples, to inspect Cleanup Actions conducted at the Mill E/Koppers Site, and to inspect records that are related to the Cleanup Action.

Section 8. The owner of the Mill E/Koppers Site and the owner's assigns and successors in interest reserve the right under WAC 173-340-740 and WAC 173-340-440 (1991 ed.) to record an instrument which provides that this Restrictive Covenant shall no longer limit the use of the Mill E/Koppers Site or be of any further force or effect. However, such an instrument may be recorded only with the consent of the Department of Ecology, or successor agency. The Department of Ecology, or a successor agency may consent to the recording of such an instrument only after public notice and comment.

Executed as of the 15th day of July, 1999
Property Order: Weyerhaeuser
By Carl W. Geist
Its Vice President Pulp Business

Attachments:

Exhibit A-Legal Description of Property

STATE OF WASHINGTON

COUNTY OF KING

On this 15th day of JULY, 1999, before me, a Notary Public in and for the State of Washington, personally appeared CARL W. GEIST ~~or~~ I personally known to me (or proved to me on the basis of satisfactory evidence) to be the person who executed this instrument, on oath state that he was authorized to execute the instrument, and acknowledged it as the VICE PRESIDENT of Weyerhaeuser to be the free and voluntary act and deed of said corporation for the uses and purposes mentioned in the instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.

Mariel M. Olsson
NOTARY PUBLIC in and for the
State of Washington, residing
at KENT
My appointment expires 6-13-02
Print Name MARIEL M. OLSON

g:\ack\toxi\restrictive covenant_2.doc
7/14/99

APN 199907260455

FILED

DEC 1 1998

PAM L. DANIELS
COUNTY CLERK
SPRINGFIELD, WA

EXHIBIT A 98 2 08718 6

LEGAL DESCRIPTION

Weyerhaeuser Mill E/Koppers Site
Everett, Washington

WHEN RECORDED PLEASE
RETURN TO
WEYERHAEUSER COMPANY
LAND TITLE DEPT
PO BOX 2999
TACOMA, WA 98477-2999

APN 199907260455

70 TRACT 11-4 LEGAL DESCRIPTION AFTER BOUNDARY LINE ADJUSTMENT

ALL THAT PORTION OF GOVERNMENT LOT 9, IN SECTION 9, TOWNSHIP 29 NORTH, RANGE 5 EAST OF THE WILLAMETTE MERIDIAN, DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF SAID GOVERNMENT LOT 9; THENCE NORTH 89° 13' 51" EAST, ALONG THE SOUTH LINE OF SAID SECTION 9, A DISTANCE OF 432.39 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH 57° 55' 37" EAST A DISTANCE OF 134.97 FEET; THENCE NORTH 74° 24' 33" EAST A DISTANCE OF 114.14 FEET; THENCE NORTH 81° 31' 30" EAST A DISTANCE OF 104.50 FEET; THENCE NORTH 71° 02' 33" EAST A DISTANCE OF 64.27 FEET; THENCE SOUTH 75° 03' 41" EAST A DISTANCE OF 105.54 FEET TO A POINT ON THE LINE OF MEAN HIGH TIDE OF THE LEFT BANK OF THE SNOHOMISH RIVER, WHICH POINT IS ON THE FACE OF A TIMBER BULKHEAD; THENCE SOUTH 3° 44' 09" EAST, ALONG SAID LINE OF MEAN HIGH TIDE AND SAID TIMBER BULKHEAD A DISTANCE OF 104.83 FEET TO A POINT ON THE SOUTH LINE OF SAID SECTION 9; THENCE SOUTH 89° 12' 51" WEST, ALONG SAID SOUTH LINE OF BEGINNING, A DISTANCE OF 497.30 FEET TO THE TRUE POINT OF BEGINNING. TOGETHER WITH THAT PORTION OF GOVERNMENT LOT 2 OF SECTION 16 IN TOWNSHIP 29 NORTH, RANGE 5 EAST OF THE WILLAMETTE MERIDIAN, BEING A PORTION OF LOTS "A", "B", "C" AND "D" OF THE PLAT OF SUBDIVISION OF LOT 2 REC.16 7.19 N.E. 5 2.E.M.N., ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 5 OF PLATS, PAGE 16, RECORDS OF SNOHOMISH COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTHWEST CORNER OF SAID GOVERNMENT LOT 2; THENCE NORTH 89° 12' 51" EAST, ALONG THE NORTH LINE OF SAID SECTION 16, A DISTANCE OF 431.39 FEET TO THE TRUE POINT OF BEGINNING; THENCE SOUTH 57° 55' 37" WEST A DISTANCE OF 142.05 FEET; THENCE SOUTH 13° 11' 56" EAST A DISTANCE OF 117.99 FEET; THENCE SOUTH 27° 48' 21" EAST A DISTANCE OF 715.71 FEET TO A POINT ON THE LINE OF MEAN HIGH TIDE OF THE LEFT BANK OF THE SNOHOMISH RIVER, WHICH POINT IS ON THE FACE OF A TIMBER BULKHEAD; THENCE IN A NORTHEASTLY DIRECTION, ALONG SAID LINE OF MEAN HIGH TIDE AND SAID TIMBER BULKHEAD ON THE FOLLOWING COURSE: NORTH 18° 40' 15" EAST 417.89 FEET; NORTH 16° 03' 42" EAST 84.09 FEET; NORTH 13° 24' 08" EAST 50.75 FEET; NORTH 8° 49' 41" EAST 62.97 FEET; NORTH 5° 57' 29" EAST 85.56 FEET; NORTH 3° 28' 47" EAST 85.16 FEET; NORTH 0° 17' 13" EAST 64.72 FEET; NORTH 3° 44' 09" WEST 50.18 FEET TO A POINT ON THE NORTH LINE OF SAID SECTION 16; THENCE SOUTH 89° 12' 51" WEST, ALONG SAID NORTH LINE OF SECTION 16, A DISTANCE OF 497.30 FEET TO THE TRUE POINT OF BEGINNING. CONTAINING 8.40 ACRES, MORE OR LESS.

Exhibit A

70 TRACT 11-3 LEGAL DESCRIPTION AFTER BOUNDARY LINE ADJUSTMENT

THAT PORTION OF GOVERNMENT LOT 7 AND THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 8, AND THAT PORTION OF GOVERNMENT LOT 9, SECTION 9, TOWNSHIP 29 NORTH, RANGE 5 EAST OF THE WILLAMETTE MERIDIAN, DESCRIBED AS FOLLOWS: COMMENCING AT THE POINT OF INTERSECTION OF THE SOUTH LINE OF SAID GOVERNMENT LOT 9, SECTION 9, WITH THE CENTER LINE OF THE ORIGINAL MAIN TRACK OF THE NORTHERN PACIFIC RAILWAY COMPANY, WHICH POINT BEARS NORTH 89° 13' 51" EAST A DISTANCE OF 87.76 FEET FROM THE SOUTHWEST CORNER OF SAID GOVERNMENT LOT 9, ALL AS SHOWN ON THAT CERTAIN SURVEY RECORDED IN VOLUME 37 OF SURVEYS, PAGES 196 THROUGH 206, INCLUSIVE, RECORDS OF SNOHOMISH COUNTY, WASHINGTON; THENCE NORTH 89° 12' 51" EAST, ALONG THE SOUTH LINE OF SAID GOVERNMENT LOT 9, A DISTANCE OF 21.17 FEET TO A POINT ON THE EAST LINE OF THE NORTHERN PACIFIC RAILWAY COMPANY 100 FOOT WIDE FORMER RIGHT OF WAY SURVEY; THENCE NORTH 13° 57' 15" WEST, ALONG THE EAST LINE OF SAID RIGHT OF WAY, A DISTANCE OF 2364.81 FEET; THENCE ON A CURVE HAVING A RADIUS OF 784.49 FEET, THROUGH A CENTRAL ANGLE OF 3° 41' 30", AN ARC DISTANCE OF 50.55 FEET TO A POINT ON THE SOUTH LINE OF THAT CERTAIN TRACT DESIGNATED AS PARCEL NO. 2 IN THAT DEED DATED DECEMBER 1, 1892, FROM EVERETT LAND COMPANY, TO THE FOURTH SOUND REDUCTION COMPANY OF CLEVELAND, OHIO, AND RECORDED IN VOLUME 30 OF DEEDS AT PAGE 113 IN THE OFFICE OF THE AUDITOR OF SAID SNOHOMISH COUNTY; THENCE NORTH 58° 25' 52" EAST, ALONG SAID SOUTH LINE OF PARCEL 2, TO THE LEFT BANK OF THE SNOHOMISH RIVER; THENCE IN A SOUTHERLY DIRECTION, ALONG THE LEFT BANK OF THE SNOHOMISH RIVER TO A POINT ON THE SOUTH LINE OF SAID GOVERNMENT LOT 9; THENCE SOUTH 89° 12' 51" WEST, ALONG THE SOUTH LINE OF SAID GOVERNMENT LOT 9, A DISTANCE OF 840.76 FEET TO THE TRUE POINT OF BEGINNING. EXCEPT ALL THAT PORTION OF SAID GOVERNMENT LOT 9, SECTION 9, DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF SAID SECTION 9; THENCE NORTH 89° 12' 51" EAST, ALONG THE SOUTH LINE OF SAID SECTION 9, A DISTANCE OF 432.39 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH 57° 55' 37" EAST A DISTANCE OF 134.97 FEET; THENCE NORTH 74° 24' 33" EAST A DISTANCE OF 114.14 FEET; THENCE NORTH 81° 31' 30" EAST A DISTANCE OF 104.50 FEET; THENCE NORTH 71° 02' 33" EAST A DISTANCE OF 64.27 FEET; THENCE SOUTH 75° 03' 41" EAST A DISTANCE OF 105.54 FEET TO A POINT ON THE LINE OF MEAN HIGH TIDE OF THE LEFT BANK OF THE SNOHOMISH RIVER, WHICH POINT IS ON THE FACE OF A TIMBER BULKHEAD; THENCE SOUTH 3° 44' 09" EAST, ALONG SAID LINE OF MEAN HIGH TIDE AND SAID TIMBER BULKHEAD A DISTANCE OF 104.83 FEET TO A POINT ON THE SOUTH LINE OF SAID SECTION 9; THENCE SOUTH 89° 12' 51" WEST, ALONG SAID SOUTH LINE OF SECTION 9, A DISTANCE OF 497.30 FEET TO THE TRUE POINT OF BEGINNING. CONTAINING 54.71 ACRES, MORE OR LESS.

6.5 Photo log

Photo 1: Paved containment area - from the west



Photo 2: Paved containment area - from the east



Photo 3: Monitoring location – northeast corner of containment area



Photo 4: Surface water collection trench – east side of containment area

