



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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December 8, 2010

Mr. Ken Van Buskirk
61 NE Davis Farm Road
Belfair, WA 98528

Dear Mr. Van Buskirk:

Subject: Olympic View Sanitary Landfill Comments

Ecology received your questions regarding the Olympic View Sanitary Landfill (OVSL) on November 30, 2010 by email. This letter provides some general information about the OVSL Site and then addresses the questions you asked.

Additional information can be found in the OVSL Site documents. A set of these documents will remain at the North Mason Timberland Library in Belfair. The document set includes:

- Remedial Investigation Report (September 21, 2007)
- Feasibility Study (June 2010)
- Environmental Monitoring Plan (December 2009)
- Draft Cleanup Action Plan (October 2010)
- Public Participation Plan (October 2010)
- SEPA checklist and Determination of Non Significance (October 2010)

The OVSL Site operated as a municipal solid waste landfill from 1963 to 2002. It operated under various names and owners and expanded over time. The original disposal area was unlined, but as new state regulations were enacted, new disposal areas were built with bottom liners, leachate and gas collection systems, and impermeable covers, in compliance with the more stringent requirements. Groundwater at the site has been monitored since 1975 and will continue being monitored until cleanup standards are met and the 30-year post-closure period is over. (The length of the post-closure care period can be decreased by the health district if the owner demonstrates that human health and the environment will be protected, or increased by the health district if they determine that a longer post-closure care period is needed to protect human health and the environment.)



In addition to the ongoing quarterly groundwater monitoring, several investigations have been conducted to evaluate the landfill's impact on surface water, sediments, and groundwater in the area downgradient of the landfill. These investigations are summarized in the Remedial Investigation Report.

Ecology developed cleanup levels for the constituents of concern at the OVSL Site. These are listed and discussed in the Draft Cleanup Action Plan. The following table will give you an idea of the level of groundwater contamination at the site compared to the cleanup standards and to drinking water standards.

September 2010 Ground Water Results at OVSL That Exceed Cleanup Standards

Well Category	Well ID	Ammonia (mg/L)	Arsenic (mg/L)	Iron (mg/L)	Manganese (mg/L)	Vinyl Chloride (µg/L)	Trichloroethene (µg/L)
Compliance Wells	MW-43				0.11		
	MW-42	4.7	0.0017	23	4.3		
	MW-39	0.39	0.0015	33	0.49		
	MW-34C		0.0013	1.2	0.85	0.26	
	MW-34A		0.00052				
Performance Wells	MW-19C	0.5	0.00415		1.1		1.9
	MW-4		0.00099		1.1		
	MW-23A		0.00078	1.4	2.4		
	MW-24		0.00056		1.9		
	MW-2B1	1.4		2.5			
Downgradient Wells	MW-29A		0.00186	3.7	1.2		
	MW-32		0.0101	0.89	2.9	0.31	
	MW-33C		0.0027		0.14		
	MW-36A		0.00102				
Cleanup Std		0.19	0.00046	0.3	0.05	0.2	1
Drinking Water Std		None	0.01	0.3 *	0.05 *	2	5

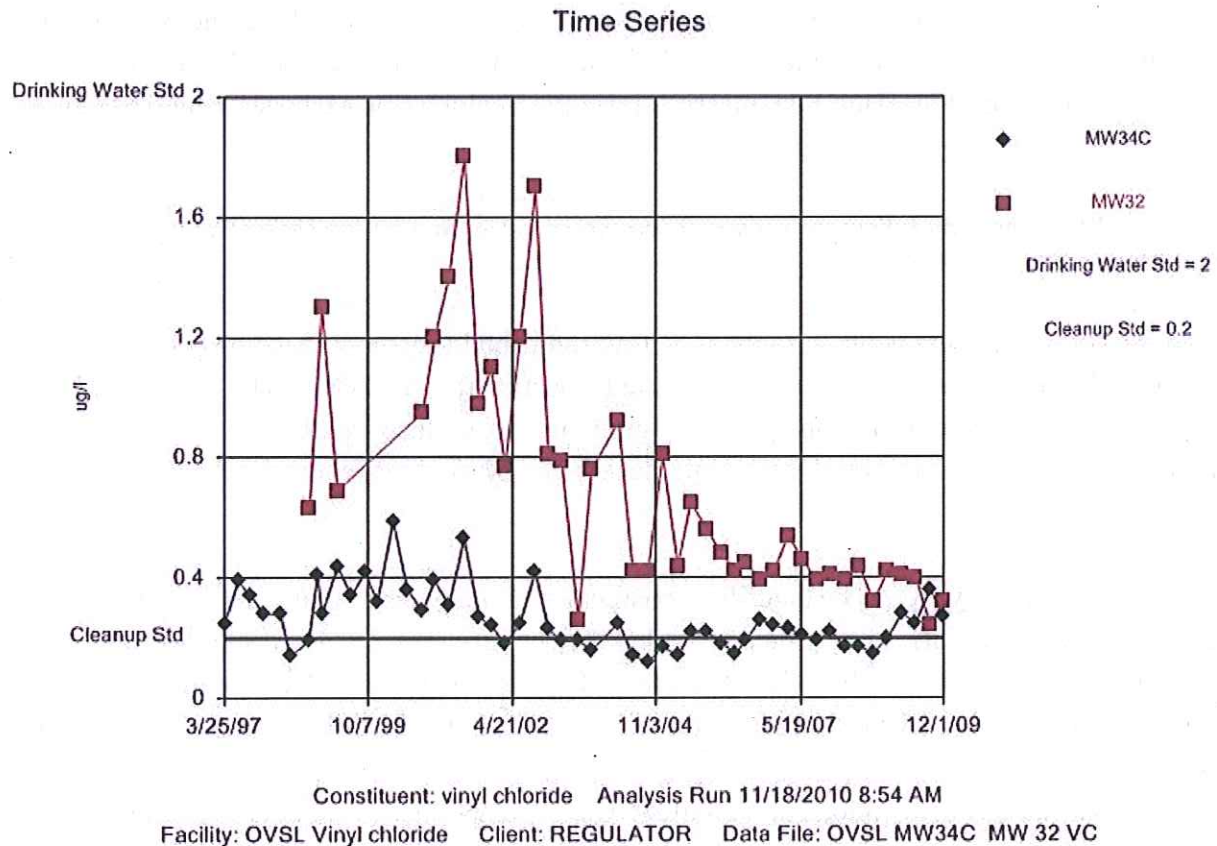
* Standards for iron and manganese are "secondary", meaning they are based on aesthetic qualities and not health effects.
 mg/L = milligrams per liter or parts per million
 µg/L = micrograms per liter or parts per billion

The Table shows the most recent ground water results from samples collected in September 2010. The Table lists the wells and the constituents above the cleanup standard. The Table also

shows the cleanup standard and the drinking water standard. As you can see, many of the cleanup standards are below the drinking water standards to be protective of the water resource.

The following graph shows vinyl chloride concentrations over time at MW-34C and MW-32 compared to the cleanup standard and the drinking water standard (shown at top of graph). It shows a decreasing trend.

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The following paragraphs address your specific questions.

Question: Both the OVSL and Norseland mobile home park were listed by the EPA in 1993, yet I see no reference to Norseland in any of the background information. Since both drain into the Union River Valley I wonder if Norseland was cleaned up and what are followup measures for it? Why isn't it included in the overall site plan?

Response: The Norseland Site was not discussed in the OVSL documents because no effects from the Norseland Site or other nearby properties have been identified at the OVSL site. Data

from groundwater monitoring wells at OVSL's upgradient (eastern) property boundary show no indication of offsite contaminant sources. The source of impacts to groundwater beneath the OVSL property is the landfilled waste.

A remedial investigation/feasibility study was completed for the Norseland Site in the late 1990s. Under a consent decree, the responsible parties constructed a compacted soil cover, monitored groundwater, and maintained the cover and monitoring systems. To protect the cover, restrictions were placed on the type of activities that can take place on the property. In 2008, Ecology conducted a periodic review of the Norseland Site and determined it could be delisted. The delisting process is scheduled to occur when staff resources are available. For more information about the Norseland Site, please contact the Ecology Site Manager, David South, at 425-649-7200 or dsou461@ecy.wa.gov.

Question: Was there any follow-up sediment/groundwater studies on the Union River that were conducted in the late 1990's?

Response: In 1997, under contract to the U.S. Environmental Protection Agency (EPA), Ecology & Environment (E&E) conducted a Site Inspection (SI) at OVSL. The SI included reviewing existing site information, collecting groundwater, surface water, and sediment samples, and preparing a report. I've summarized the report findings in the following paragraphs.

Sediment and surface water. The landfill's consultants, Ecology, and local agencies collected sediment and surface water quality data in the landfill vicinity from 1984 to 1996. In 1997 during the SI, E&E reviewed the existing data and then collected and analyzed additional samples from the Union River, its tributaries, and wetlands in the landfill vicinity. The findings were:

- No elevated concentrations of Volatile Organic Compounds (VOCs) or Semi-Volatile Organic Compounds (SVOCs) were detected in sediment or surface water samples.
- One sediment sample on the Union River had an elevated level of Aroclor 1260 (a PCB); however, the result was considered an anomaly because samples at upgradient locations on the river, that were still downgradient of the landfill, did not have detected concentrations of this PCB.
- No inorganic elements were detected at elevated concentrations in sediment or surface water samples from the Union River, the East Fork Union River, or Tributary 512.
- Several inorganic elements were detected at elevated concentrations in sediment and surface water samples from the wetlands adjacent to the landfill.

The Health District and Ecology required further investigation of the wetlands adjacent to the landfill and a study was conducted by Entrix for OVSL in 2000. The Remedial Investigation Report summarizes the EPA Site Investigation and the wetlands investigation conducted by Entrix.

Groundwater. E&E collected 13 samples from residential wells. Two were upgradient background locations and 11 were downgradient and east of Old Belfair Highway. The report concluded, "The impact to the residential well groundwater is not conclusive, but it does appear that manganese may have migrated to these wells." Manganese was detected in three of the 11 downgradient wells at concentrations exceeding the secondary maximum contaminant level (MCL) for drinking water. Secondary MCLs are based on potential taste and odor impacts, not on health effects.

Residential wells were also sampled before and after the 1997 SI as discussed below.

Question: At what depth has the ground water been impacted? Have all the streams been identified? Are the aquifers mapped?

Response:

Aquifer mapped. The aquifers have been mapped. The aquifer beneath the OVSL property boundary is within a glacial outwash sands and gravel unit that is 300 feet thick in the eastern portion of the site and pinches out to the west. Within this glacial outwash unit the aquifer (the water bearing zone) is approximately between 50 feet to the west to 250 feet thick to the east. This information has been collected from 59 wells and borings drilled since the mid 1980s at the site.

Because of the thickness of the aquifer, water quality samples have been collected at multiple depths within the aquifer since the early 1990s. There are 10 well clusters at the OVSL site. Well clusters are more than one well at one location that are screened at different depths in the aquifer. Some of these well clusters monitor intervals from the top of the aquifer to approximately 100 to 200 feet below ground surface.

Depth of impacts. Generally, the chemical concentrations decrease with depth. Parameters that exceed the cleanup standards have been found in deeper zones of the aquifer in a couple of wells screened approximately 90-100 feet below ground surface downgradient of the landfill. In the Table above, the deeper wells are MW-19C and MW-34C. The parameters are vinyl chloride, trichloroethene, arsenic, iron, manganese and ammonia.

The monitoring program during this cleanup effort will continue to monitor those wells that show contamination to assess the effectiveness of the cleanup action plan. Until the cleanup

standards have been met, the landfill is required to monitor the ground water wells listed in the Environmental Monitoring Plan. Under this cleanup effort, the cleanup standards must be met for three years to be considered clean. Once considered clean, the Kitsap County Health District will oversee the landfill as post closure care and monitoring continue.

Streams identified. The streams in the vicinity of the landfill have been mapped and are shown on the figure from the Remedial Investigation Report on the following page.

Question: How often are the onsite wells and neighbors wells monitored? I would hope quite often given OVSL's and Norseland's proximity to the Critical Aquifer Recharge Area in the Union River Valley.

Response: OVSL, Inc. samples the onsite groundwater monitoring wells quarterly in accordance with the Environmental Monitoring Plan. Ecology and the Kitsap County Health District review the quarterly and annual monitoring reports submitted by OVSL, Inc.

Offsite residential well sampling has occurred as follows:

- Late December 2005/early January 2006, nine residential wells were sampled by Parametrix for OVSL, Inc. as part of the Remedial Investigation.
- 1997, thirteen residential wells were sampled by Ecology & Environment for EPA.
- June 1995, three residential wells were sampled by Boateng and Associates, Inc.
- Early 1990s, eleven residential wells were sampled in compliance with a Bremerton/Kitsap County Health District requirement for new wells.
- 1989, four residential wells were sampled by Parametrix for OVSL, Inc.

No volatile organic compounds or semi-volatile organic compounds were detected in residential wells during any of the sampling events. The only constituents detected above maximum contaminant levels are iron and manganese. As mentioned before, the MCLs for iron and manganese are secondary, meaning they are odor and taste based, not health based. Iron was also detected in upgradient wells above the MCL. Iron and manganese are naturally found in soil at varying concentrations and it is common to detect iron and manganese in groundwater.

Question: Is tributary 512 the same as the NE fork of the Union River?

Response: Tributary 512 is located near the southern property boundary extending from the southeast corner of the property about 4,000 feet towards the southwestern corner of the property. Near the southwest corner of the property it trends southwest towards the Union River. It is also shown on the figure on the following page.

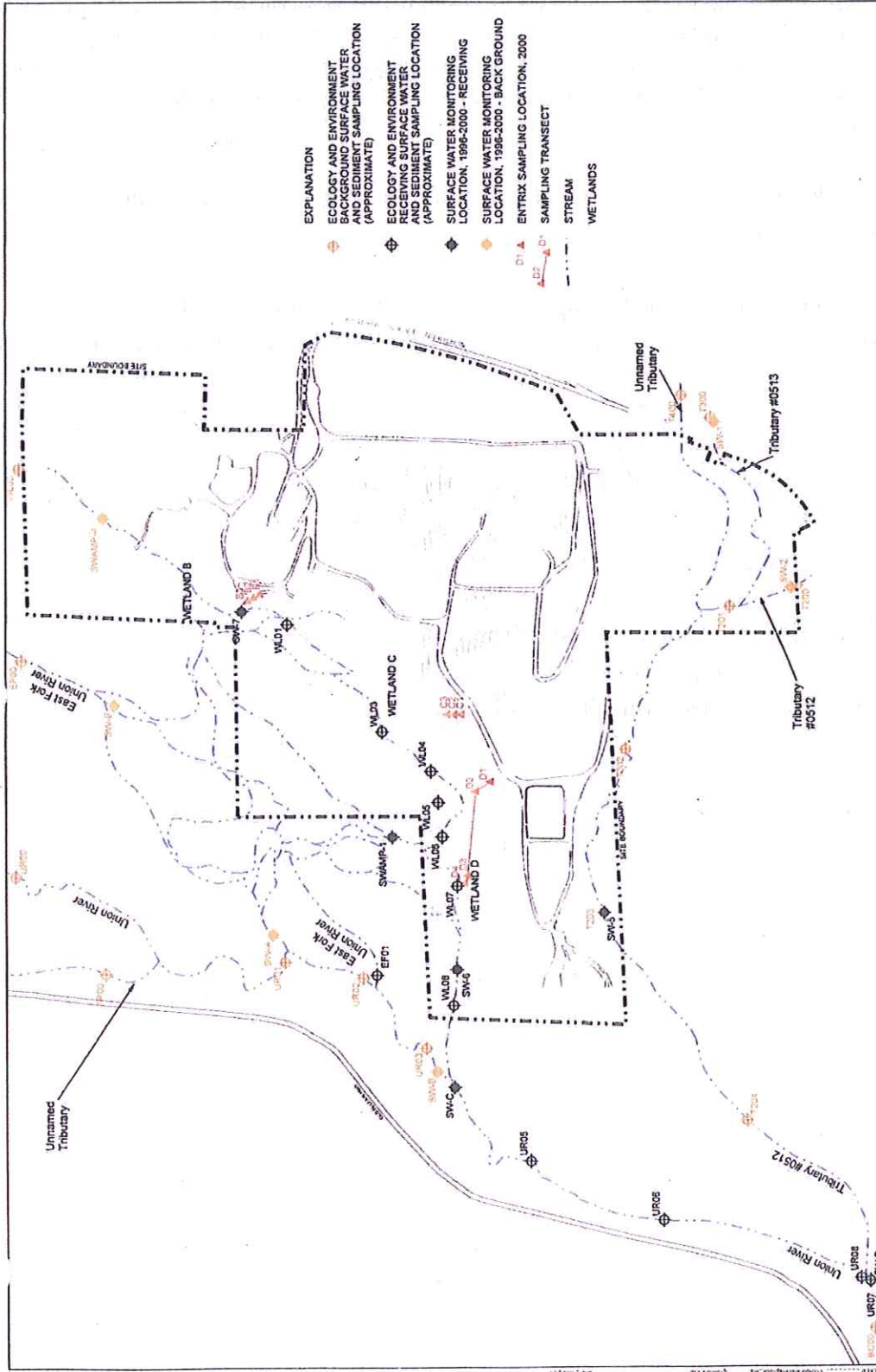
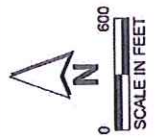


Figure 6-1
 Surface Water
 Sampling Locations
 Olympic View
 Sanitary Landfill



Parametrix OVS.L 255-2982-003/06(02) 2/07 (B)

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**Comment: I would also like to offer some information that should be included in the process. Background information that I think should be included in any planning documents are:
Kitsap Sun <http://web.kitsapsun.com/packages/toxic/lostsite.html#hood>
Mason County comprehensive plan map of critical aquifer recharge area in the Union River Valley and in the Belfair UGA.**

Response: Thank you for providing this information. The 1997 Kitsap Sun article provides good historical context.

Thank you for your interest in the Olympic View Sanitary Landfill Site. Please contact me if you have further questions. I can be reached at 425-649-7015 or madeline.wall@ecy.wa.gov.

Sincerely,



Madeline Wall, P.E.
Waste 2 Resources Program

cc: Jan Brower, Kitsap County Health District
Steve Richtel, Olympic View Sanitary Landfill
Peter Christiansen, Department of Ecology