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2013 Annual Report
Groundwater Monitoring and Interim Action Performance Monitoring

Pasco Landfill Site
Pasco, Washington

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1.0 INTRODUCTION

Environmental Partners, Inc. (EPI) has prepared this 2013 Annual Report for Groundwater Monitoring and Interim Action Performance Monitoring (2013 Annual Report) on behalf of the Industrial Waste Area Generators Group lll (IWAG) for the Pasco Sanitary Landfill (PSL) site (Site) in Pasco, Washington.

This report is being submitted to the Washington State Department of Ecology (Ecology) in support of the ongoing obligations of the IWAG under Agreed Order No. DE 9240 (Agreed Order). This 2013 Annual Report summarizes the results of the groundwater monitoring and interim action performance monitoring activities conducted in 2013 and discusses the effectiveness of the various interim actions implemented at the Site.

This 2013 Annual Report contains the following enclosures:

- Attachment A contains the *Data Validation Report Pasco Sanitary Landfill Groundwater Monitoring October 2013 Sampling,* by Pyron Environmental, Inc., dated February 14, 2014.
- Attachment B contains borelogs for groundwater monitoring wells MW-25SR and MW-26SR, which were installed during May 2013.
- Attachment C contains the *2013 East Pasco Plume Area Well Location Survey* prepared by the City of Pasco and the *2013 Annual Institutional Controls Report* for the Site prepared by the Franklin County Planning and Building Department.
- Attachment D contains laboratory data for waste characterization sampling, hazardous waste manifests for condensate generated, treated, and disposed of during 2013, and non-hazardous waste disposal documentation.
- Attachment E contains maps illustrating differential settlement analysis for the Zone A cover prepared by Triad Associates.
- Attachment F contains tables and graphics illustrating settlement on the Zone A cap.
- Attachment G contains documents satisfying the annual reporting requirements for the maintenance and inspection of Industrial Waste Area landfill covers, detention/evaporation basins, and perimeter fencing for Zones A, C/D, and E.
- Attachment H contains an electronic data deliverable, on compact disk, with Site data generated during the fourth quarter 2013 sampling event. The file PLF-Report-4Q13.xlsx contains multiple worksheets, containing forth quarter 2013 water level data, well stabilization parameters, and laboratory results from volatile organic compound (VOCs), semi-volatile organic compound (SVOCs) including 1,4-dioxane, herbicide, chromium, natural attenuation, and landfill parameters analysis.

1.1 Site Location

The general location of the PSL Site is depicted on Figure 1. The PSL is located approximately 1.5 miles northeast of the City of Pasco, in the southwest quarter of Section 15, the northeast quarter of Section 21, and the northwest quarter of Section 22, Township 9 North, Range 30 East, Willamette Meridian, located in Franklin County, Washington.

The PSL property occupies an area of more than 250 acres consisting of rolling hills surrounded by irrigated cropland. The former municipal solid waste landfill (MSW Landfill), Balefill/Inert Waste Area, Industrial Waste Area (IWA), and the New Waste, Inc. (NWI) landfill are located within the PSL property. Figure 2 shows the locations of each waste area on the PSL property. Reporting requirements detailed in the Agreed Order for the MSW Landfill and Balefill/Inert Waste Areas are addressed in a separate report by the Landfill Group (LFG). The NWI landfill is a modern and fully lined solid waste landfill located to the north of the MSW Landfill that opened on May 31, 1993 and closed in 2002. The NWI landfill is not included in the Agreed Order and is not considered further in this report.

The formal definition of the PSL Site is presented in the Agreed Order. The Site boundaries, as defined by the Agreed Order, encompass the following areas: the NWI landfill, former MSW Landfill, Balefill/Inert Waste Area, IWA, and the Groundwater Protection Area (GPA). In support of the Zone B cap construction in 2013 by Bayer CropScience (BCS), a portion of the property immediately east of Zone B was acquired by the current property owner. The PSL property boundary on Figure 2 and subsequent figures has been updated to include the newly acquired property, which is now a part of the PSL Site.

1.2 Background

The operational history and cleanup history of the PSL have been documented extensively in numerous prior reports including the revised *Focused Feasibility Study Work Plan* dated September 25, 2013.

The following documents were submitted to Ecology during 2013 as required by the Agreed Order:

- Task 1, Subtask A: *As-Built and Testing Reports with Operations and Maintenance Manual* (Volumes 1, 2, and 3), dated February 25, 2013. Volumes 1 and 2 were approved by Ecology September 23, 2013;
    - *Volume 1 – As-Built Report for SVE System Upgrades*;
    - *Volume 2 – Soil Vapor Extraction System Testing*; and
    - *Volume 3 – Operations and Maintenance Manual.*
- Task 1, Subtask C: *Operations and Maintenance Manual for Industrial Waste Area Caps – Zones A, C/D, and E – Pasco Landfill Site – Pasco, Washington*, dated January 29, 2013 and revised on November 21, 2013.
- Task 1, Subtask F:
    - *Second Amendment to Institutional Control Agreement*, dated September 4, 2013; and
    - *Pasco Landfill Site Updated Institutional Control Plan – Revision 1*, dated October 7, 2013.
- Task 2: *Focused Feasibility Study Work Plan – Pasco Landfill NPL Site*, dated September 25, 2013 and approved by Ecology November 26, 2013.

2.0 OBJECTIVES

The objective of groundwater monitoring and interim action performance monitoring at the Site is to evaluate ongoing trends in groundwater quality and to document the operation and performance of the ongoing interim actions. This 2013 Annual Report presents the data collected during 2013 and reports operations and maintenance activities completed on the Zone A soil vapor extraction (SVE) system and landfill cover. The specific objectives of the groundwater monitoring and interim action performance monitoring conducted in 2013 include:

- Assessment of groundwater quality relative to the May 14, 2013 draft cleanup levels (dCULs);
- Evaluation of trends in groundwater quality over time;
- Evaluation of the performance and effectiveness of the SVE system; and
- Evaluation of cap subsidence.

2.1 Contaminants of Potential Concern

Contaminants of Potential Concern (COPCs) were defined in the Site *Risk Assessment/Cleanup Level Analysis* Report (PSC 1998) based upon the occurrence and quantification of compounds detected in groundwater during the Site investigation. The COPCs were defined as follows:

- Soil – acetone.
- Groundwater – acetone, benzene, hexavalent chromium, 1,2-dichloroethane (1,2-DCA), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), tetrachloroethene (PCE), toluene, 1,1,1-trichloroethane (1,1,1-TCA), 1,1,2-trichloroethane (1,1,2-TCA), trichloroethene (TCE), and vinyl chloride (VC).

2.2 Draft Cleanup Levels

Between April and October 2007, draft cleanup levels (dCULs) for the Site were discussed between IWAG Group II and Ecology. In a letter dated October 1, 2007, Ecology agreed to the proposed changes. Ecology also stated that the dCULs were provided in part to aid in evaluating interim system performance capabilities and remedy effectiveness, including both carcinogenic and non-carcinogenic indicators for groundwater and soil, and are applicable to the entire Site.

In March 2013, Ecology met with the IWAG and presented a revised list of draft groundwater cleanup levels. Upon additional internal review by Ecology those draft cleanup levels were further revised and on May 14, 2013, Ecology presented updated draft CULs for the Site.

During the April 11, 2014 monthly meeting with the IWAG, Ecology agreed to allow the use of these updated dCULs for evaluation of all 2013 groundwater monitoring results. The table below summarizes the 2007 dCULs and 2013 dCULs used herein for comparison purposes.

Until further revision the 2013 dCULs will be used in all discussions and comparison of detected concentrations relative to cleanup levels and will be referred to as the “dCULs” in this and future reports.

Draft Cleanup Levels for Groundwater
In micrograms/Liter (µg/L)
Pasco Landfill Site

Compound	2007 dCUL	2013 dCUL
Acetone	80	--
Benzene *	0.02	0.5
1,2-Dichloroethane *	0.228	0.38
1,1-Dichloroethene **	0.05	0.057
cis-1,2-Dichloroethene	70	16
Methylene Chloride *	1.0	5.0
Tetrachloroethene *	0.4	0.69
Toluene	570	615
1,1,1-Trichloroethane	200	200
Trichloroethene *	0.3	2.5
Vinyl Chloride *	0.025	0.090
Chromium VI *	40	--
Total Chromium	--	100

* = Known or suspected carcinogenic compound
** = No longer contributes additional cancer risk for the calculation of groundwater CULs at the Site
-- = No Site-specific dCUL

2.3 Methodology

The following sections discuss the groundwater and Interim Action performance monitoring methodologies implemented at the Site.

2.3.1 Groundwater Monitoring

Groundwater monitoring was conducted in accordance with schedules and field sampling methods presented in:

- The *Operations and Maintenance Manual – SVE, NoVOCs, and Ground Water Monitoring* (O&M Manual), prepared by EPI, dated January 31, 2007, and revised February 23, 2007 and May 25, 2007;
- *Addendum No. 1 – Operations and Maintenance Manual – SVE, NoVOCs, and Ground Water Monitoring* (O&M Addendum No. 1), prepared by EPI, dated January 8, 2008 and revised May 22, 2008;
- *Technical Memorandum – Pasco Landfill: Proposed Modifications to the Existing Interim Actions Quarterly Ground Water Monitoring Program,* prepared by the Pasco IWAG III Technical Committee, and dated April 23, 2012;

- *Memorandum – Pasco Landfill: Enhanced Groundwater Monitoring Modification*, prepared by the Pasco IWAG Technical Committee, dated August 11, 2011 and revised February 1, 2012;
- *Pasco Landfill - Method Detection Limits and Reporting Limits - Revised February 1, 2012*;
- *Pasco Landfill*: *Recommendations on Sampling and Analysis Frequency at Selected Monitoring Wells,* prepared by the Pasco IWAG III Technical Committee, dated April 11, 2013;
- *Technical Memorandum – Proposal to Discontinue Enhanced Ground Water Monitoring for Zone A of the Industrial Waste Area*, dated June 4, 2013 and approved by Ecology June 20, 2013; and
- *Technical Memorandum – Proposal to Decommission Monitoring Well MW-33S*, dated June 19, 2013 and approved by Ecology June 27, 2013.

As part of the quarterly groundwater monitoring activities, groundwater levels were measured to the nearest 0.01 foot in 71 wells during the first quarter, 74 wells during the second quarter, 70 during the third quarter, and 73 wells during the fourth quarter. Groundwater levels were not measured in the residential wells because those wells were not constructed in a manner that allows such measurements.

Quarterly and semi-annual groundwater samples were collected from a total of 39 wells in the first quarter, 58 during the second quarter, 39 during the third quarter, and 58 during the fourth quarter. Table 1 summarizes the wells sampled and the specific chemical analyses requested for each monthly, quarterly and semi-annual sampling event. Attachment A contains the data validation report for the fourth quarter sample analysis.

Selective ion measurement (SIM) has been used during VOC and SVOC laboratory analysis of quarterly groundwater samples in order to attain detection limits less than the dCULs for each compound analyzed.

Well MW-33S was decommissioned on July 23, 2013 in accordance with the June 19, 2013 Technical Memorandum *Proposal to Decommission Monitoring Well MW-33S*. Redevelopment of the property on which MW-33S was located precluded its future use as a Site monitoring well. As illustrated on Figures 3 and 4, MW-33S was located on the east side of the groundwater plume and Dietrich Road between the southern PSL property boundary and Commercial Avenue. Well MW-33S was replaced in the monitoring well network by well MW-46S. This well is located on Washington Department of Transportation property and access agreements were not in place to allow sampling and analysis from that well in 2013. Access has since been gained and future reports will include data for that location.

As part of Zone B cover maintenance activities, wells MW-25S and MW-26S were decommissioned by BCS during the second quarter of 2013. BCS then installed replacement wells MW-25SR and MW-26SR on May 1 and 2, 2013. The location of the new wells is indicated on the third and forth quarter figures including Figure 5. Borelogs for replacement wells MW-25SR and MW-26SR are included in Attachment B. The well installation was performed, and the borelogs were produced, by AMEC Environment and Infrastructure, Inc. on behalf of BCS and with the approval of Ecology.

The 2013 groundwater monitoring program included monthly sampling of six wells within or immediately downgradient of Zone A (MW-52S, MW-53S, MW-50S, MW-47S, NVM-01, and MW-12S) through June 2013. Monthly groundwater monitoring was discontinued after the July 2013 third quarter monitoring event in accordance with the Ecology-approved *Proposal to Discontinue Enhanced Ground Water Monitoring for Zone A of the Industrial Waste Area, Pasco Sanitary Landfill Site, Pasco, Washington*, dated June 4, 2013.

Monthly enhanced groundwater samples were collected in the months between quarterly sampling (i.e., February, March, May, June). Samples collected during the monthly enhanced groundwater monitoring were analyzed for VOCs by only EPA Method 8260, did not incorporate SIM analyses, and were not submitted for third-party data validation. Table 1 summarizes the wells sampled and analyses performed during each monthly sampling event.

2.3.2 Residential Well Monitoring

The target residential well sampling frequency is presented in *O&M Addendum No. 1*. All functional and safely accessible residential wells are sampled on a semi-annual basis during the second and fourth quarters. Residential wells that have contained a concentration of VOCs exceeding a dCUL during the most recent four quarters are sampled on a quarterly schedule until such time as no COPCs are detected above dCULs for four consecutive quarters. At that time, the well is returned to a semi-annual sampling frequency.

The actual number of wells sampled during each quarterly event in 2013 was dependent upon a number of factors including previous analytical data, permission was granted by the property owner, the well was safely accessible, and the equipment or piping were functional. The IWAG does not control or maintain the residential wells and is not responsible for their upkeep or performance.

Groundwater samples were collected from three residential wells in the first quarter, 11 in the second quarter, three in the third quarter, and 10 in the fourth quarter. Samples collected from the residential wells were analyzed for VOCs by EPA Method 8260 and 8260-SIM. Table 1 summarizes the residential well sampling and analysis.

2.3.3 SVE System Performance Monitoring

As part of Interim Actions at the Site, a SVE system installed at Zone A of the IWA has operated since May 1997. Effluent from the SVE system is piped from the SVE equipment compound near Zone A through a conveyance line to the MSW Landfill flare immediately north of the MSW landfill.

Since early 2012, the SVE system has operated using six soil vapor extraction (SVE) wells (VEW-06S, VEW-06I, VEW-06D, VEW-07S, VEW-07I and VEW-07D) installed within the Zone A landfill. Operation and monitoring of the SVE system during 2013 was conducted in accordance with the system upgrades and testing work plans and the following Ecology approved documents:

- *Memorandum: Zone A Heating Evaluation, Pasco Sanitary Landfill Site*, dated September 14, 2012;

- *Updated Technical Memorandum – Proposed Flow Rates for Upgraded Zone A SVE System and Communications Protocols (SVE Protocols Memorandum)*, dated October 19, 2012 and updated December 4, 2012; and
- *As-Built and Testing Reports with Operations and Maintenance Manual,* dated February 25, 2013.

On February 26, 2013, with the approval of Ecology, the flow rate at VEW-06I was adjusted. The adjustment was made in order to increase the flow rate at VEW-06I while maintaining an effluent gas temperature below 140 °F. In response to the change in flow rate at VEW-06I and in accordance with protocols in the SVE Protocols Technical Memorandum, vapor sampling was performed on a weekly basis during March 2013.

On November 27, 2013 an area of emergent settlement and potential subsurface combustion was observed in the Balefill Area along the Zone A fence northeast of vapor monitoring well VMW-50S. On December 2, 2013, as a precautionary measure the IWAG preemptively and without Ecology direction ceased extraction from the shallow and intermediate depth vapor extraction wells (VEW-06S, VEW-06I, VEW-07S, and VEW-07I). Ecology was notified of the change in extraction rate that same day. The deep extraction wells, VEW-06D and VEW-07D remained in operation. During December 2013, in accordance with the SVE Protocols Memorandum, vapor sampling was performed on a weekly basis.

Site visits were conducted on December 3 and 9: the December 3 visit was attend by representatives of the IWAG and Ecology; the December 9 visit was attended by representatives of the IWAG, LFG, Ecology, Pasco Fire Department, Franklin County Fire District No. 3, Franklin County Emergency Management Agency and Franklin County Commission to evaluate conditions within the settlement area. On December 10 and 11, 2013, the LFG placed additional soil over the area of settlement and smoldering and over a portion of the Balefill Area and on the slope of the Zone A cap. Further documentation on this action was included in the 2013 Annual Report for the MSW Landfill as prepared by the LFG.

During 2013, routine SVE performance monitoring included both field observation and measurement and laboratory analysis of the SVE system and effluent air stream. SVE system operational parameters were measured and recorded on a weekly basis at each active wellhead, at the SVE equipment compound, and at the flare end of the SVE effluent conveyance line. Parameters recorded included wellhead and skid vacuum and airflow, wellhead temperature, carbon dioxide, oxygen, balance gas, total VOCs, and lower explosive limit. Field measurements were conducted using a photoionization detector (PID) to monitor total VOCs, and a GEM 2000 Landfill Gas Analyzer to monitor methane, carbon dioxide, oxygen, and the balance gases. A carbon filter is used with the GEM 2000 to prevent VOCs from affecting methane measurements.

Measurement of vacuums at vapor monitoring probes VMP-01 through VMP-10 was performed on a monthly basis from March 11 through December 9 and on a weekly basis thereafter in order to confirm that the SVE system continued to maintain a negative pressure beneath the geomembrane. Vacuum measurements were also collected at VMW-50S, VMW-51I, VMW-51D, VEW-04 and VEW-05 during the same periods to assess the vacuum radius of influence of the SVE system.

Vapor samples were collected on a weekly basis during March and December and a monthly basis during the remainder of the year from each active extraction well and at the flare end (SV-FS) of the conveyance line. Samples were submitted for laboratory analysis of VOCs using a modified EPA Method 8260. Those laboratory data, along with flow rates measured during performance monitoring, were used to calculate VOC removal rates.

2.4 Findings

2.4.1 Groundwater Elevation Data

2.4.1.1 Horizontal Hydraulic Gradients

Groundwater elevation contours were developed using the site-wide groundwater elevation measurements from January, April, July, and October 2013. A summary of the groundwater elevation data for each quarterly groundwater monitoring event is presented in Table 2. Site-wide groundwater elevation contours for shallow wells are presented in Figures 3 through 6.

The piezometric contours indicate that the groundwater flow direction beneath Zone A and across the PSL property is consistently southwesterly throughout 2013. As measured between wells MW-52S in Zone A and MW-11S approximately 1,109 feet south at the downgradient property boundary, the hydraulic gradient averaged approximately 0.002 feet/feet (ft/ft) during 2013.

The direction of groundwater flow downgradient of the property boundary shifts to a more southerly orientation and is best indicated by the historical orientation of the dissolved-phase contaminant plume. The orientation of the dissolved-phase plume is nearly due south while the orientation of the hydraulic gradient is about 30 degrees west of south. This difference between the axis of the dissolved-phase plume and the hydraulic gradient has been documented in prior quarterly and annual reports. The hydraulic gradient south of the property boundary is less steep than on the property. As measured between wells MW-11S at the property boundary and MW-43S, approximately 8,025 feet south of the property boundary along East A Street, the off-property hydraulic gradient averaged less than 0.001 ft/ft during 2013.

Groundwater elevation contours for the intermediate depth wells are presented in Figures 7 through 10. The direction of the groundwater gradient for the intermediate portion of the aquifer was consistent with the shallow portion of the aquifer throughout 2013. The hydraulic gradient for the intermediate portion of the aquifer on the PSL property, as measured between MW-47I and MW-11I, averaged less than 0.002 ft/ft during 2013. As with the shallow portion of the aquifer, the gradient of the intermediate portion of the aquifer is less steep downgradient of the property and, as measured between MW-11I and MW54I, averaged less than 0.001 ft/ft during 2013.

Groundwater elevation contours for the deep wells are presented in Figures 11 through 14. These contours are based on the six deep wells located immediately downgradient of Zone A. The direction of deep groundwater flow appears to be slightly more westerly than in the shallow and intermediate portions of the aquifer.

2.4.1.2 Vertical Hydraulic Gradients

The groupings of shallow, intermediate and deep wells allows for the calculation of vertical hydraulic gradients throughout the full thickness of the aquifer in six locations immediately downgradient of Zone A and for calculation of vertical hydraulic gradients between the shallow and intermediate portions of the aquifer in four locations downgradient of the property boundary. Tables 3 and 4 summarize the calculated vertical hydraulic gradients at the Site.

Vertical hydraulic gradients have been calculated for six three-well groupings screened at the shallow, intermediate, and deep portions of the aquifer near Zone A (#2R/I/D, MW-12S/I/D, MW-47S/I/D, MW-48S/I/D, MW-49S/I/D and NVM-01/I/D). Four off-property well pairs are screened at the shallow, and intermediate portions of the aquifer, and are located along the inferred longitudinal axis of the dissolved-phase plume (MW-11S/I, MW-29S/I, MW-38S/I, and MW-43S/I). The gradients are calculated using groundwater elevations and elevations of the centers of the intermediate and deep well screens. Due to the accuracy of the water level meter and survey instruments, the vertical gradients have been rounded to the nearest thousandth of a foot. Negative values reflect an upward vertical gradient.

In October 2013 the vertical hydraulic gradients for the six well groupings near Zone A ranged from -0.007 ft/ft to 0.003 ft/ft. The average vertical gradients in these well groupings since the date of installation (i.e., July 2008) through October 2013 ranged from -0.005 to 0.004 ft/ft. The data for 2013 are consistent with historical observations.

In October 2013 the vertical gradients for the downgradient off-property well pairs ranged from -0.007 ft/ft in to 0.005 ft/ft. The vertical gradients for the four well pairs since the date of installation (i.e., April 2011) through October 2013 ranged from -0.006 to 0.004 ft/ft. As with the on-property wells, the vertical gradient data for 2013 are consistent with historical gradients.

The vertical gradient data indicate that only very small vertical gradients exist at the Site and that these vertical gradients are unlikely to have a significant effect on the vertical migration of dissolved-phase compounds.

2.4.2 Groundwater Quality

Well stabilization parameters collected during well purging are summarized in Table 5. Laboratory analytical results from groundwater monitoring during 2013 are summarized in Tables 6 through 14. The data are evaluated by well groupings in Section 2.4.2.2 and by distribution of dissolved-phase contaminants, along with general concentration trends for 2013 in Section 2.4.2.3. The discussion is focused on compounds that were detected at concentrations exceeding a 2013 dCUL or conditions that are otherwise noteworthy.

2.4.2.1 Well Stabilization Parameters

Well stabilization parameters are collected to evaluate steady-state conditions in each well prior to sampling. pH, conductivity, dissolved oxygen (DO), and turbidity are the primary parameters used to evaluate steady-state conditions prior to sample collection. During well purging, temperature and oxidation-reduction potential (ORP) are also stabilized and recorded. Well stabilization data are presented in Table 5.

2.4.2.2 Evaluation by Well Grouping

This section presents a discussion of the analytical results for the following groups of wells:

- MSW Landfill Wells
- Performance Monitoring Wells
  - Zone A
  - Zone B
  - Zones C/D
  - Zone E
- Sentinel Wells
- Property Boundary Wells
- Downgradient Wells
- Upgradient Wells
- Residential Wells

These well groupings are as presented in the *Memorandum - Pasco Landfill: Proposed Modifications to Existing Interim Action Quarterly Ground Water Monitoring Program,* dated April 23, 2012. The following discussions are focused on the COPCs in each of those groupings for which a concentration exceeded a 2013 dCUL during 2013. Well locations are shown on Figure 5.

2.4.2.2.1 MSW Landfill Wells

The groundwater monitoring network for the MSW Landfill consists of wells 4R, MW-16S, and MW-17SR. Table 1 summarizes the wells sampled and analyses requested for each. Further evaluation of MSW Landfill well data is provided in the 2013 Annual Report for the MSW Landfill as prepared by the LFG. VOC data for the MSW landfill wells are summarized in Table 6.

At the request of Ecology, samples from two MSW landfill wells (4R and MW-16S) were analyzed for 1,4-dioxane during the second and third quarter of 2013. 1,4-dioxane was detected at concentrations below the MTCA Method B value in both MSW Landfill wells during the second quarter of 2013. 1,4-dioxane was not detected in samples from either MSW Landfill well during the third quarter. 1,4-dioxane was not detected in any of the other eleven 1,4-dioxane samples collected at the Site during 2013. 1,4-dioxane data are summarized in Table 9.

Landfill parameter samples were collected from wells 4R, MW-16S, and MW-17SR during the second and fourth quarters. The landfill parameters analyzed include nitrate, ammonia, sulfate, total dissolved solids, total alkalinity, bicarbonate, carbonate, hydroxide, chloride, total organic carbon, calcium, total iron, magnesium, manganese, potassium, and sodium. Landfill parameter data are discussed in the Natural Attenuation, and Landfill Parameters section below. Landfill parameter data for the MSW landfill wells are summarized in Table 13.

2.4.2.2.2 Performance Monitoring Wells

Performance monitoring wells most directly monitor the effectiveness of the interim remedial measures and track changes in contaminant concentrations and distribution over time. They are located either directly under a waste zone or on the downgradient boundary of a zone. The performance monitoring wells are grouped into wells monitoring groundwater quality at Zone A, Zone B, Zones C/D, and Zone E. The wells associated with each Zone of the IWA are discussed below. Performance monitoring wells were sampled for a combination of VOCs, SVOCs including 1,4-dioxane, herbicides, total and hexavalent chromium, and natural attenuation parameters.

Table 1 summarizes the wells sampled and analyses requested for each well during each sampling event. Groundwater monitoring did not include sampling of wells completed in the deep portion of the aquifer during 2013. Laboratory analytical results are summarized in Tables 6 through 13.

2.4.2.2.2.1 Zone A Wells

The groundwater monitoring network for Zone A during 2013 consisted of a total of nine wells. Wells EE-2, MW-13S, MW-47S, MW-50S, MW52S, MW-53S, and NVM-01 are completed in the shallow portion of the aquifer, and wells MW-47I and NVM-01I are completed in the intermediate portion of the aquifer. Both intermediate wells are paired with a well completed in the shallow zone of the aquifer. Table 1 summarizes the wells and analyses requested for each Zone A well.

VOC analyses were performed on samples from six wells (MW-13S, MW-47S, MW-50S, MW52S, MW-53S, and NVM-01) on a monthly basis during the first and second quarters and on a quarterly basis during the third and fourth. VOC analyses were also performed on samples from three wells (EE-2, MW-47I, and NVM-01I) on a semi-annual basis during the second and fourth quarters.

Six VOCs were detected in samples from shallow Zone A wells during 2013: PCE, TCE, 1,1-DCE, ethylbenzene, toluene and m,p-xylene. TCE was the only VOC detected in a Zone A well at a concentration exceeding a dCUL and this occurred only once in 2013. That TCE exceedance, 3.5 ug/L, occurred in the second quarter sample from well MW-53S. No compounds were detected in any samples from a Zone A well in the intermediate portion of the aquifer. Table 6 summarizes VOC data for the Zone A wells.

Groundwater monitoring wells MW-52S and MW-53S are considered source zone wells as they are completed immediately beneath the Zone A wastes. During the 2013, six different VOCs were detected in samples from MW-53S. Of the six VOCs detected in MW-53S, only the second quarter concentration

of TCE exceeded a dCUL. In 2013, no VOCs were detected in samples from MW-52S at a concentration exceeding a dCUL.

The analytical data indicate continued improvement in groundwater quality beneath Zone A, which may be attributed at least in part to SVE operation. During January and March 2012 samples collected from MW-53S contained 22 VOCs at detectable concentrations. Between May 2012 and March 2013, only two VOCs were detected in samples collected from MW-53S. Six VOCs were detected in April 2013 and one VOC was detected in May and June of 2013. No VOCs were detected in samples from MW-53S after June 2013.

The trend of improving groundwater quality at MW-52S was similar with 15 VOCs detected during February 2012, and no VOCs detected in samples from MW-52S after May 2012.

SVOC analyses were performed on samples from three Zone A wells (MW-47S, MW-50S, and NVM-01) during the first quarter and two Zone A wells (MW-52S and MW-53S) during the second and fourth quarters. Dibutylphthalate was detected in samples from MW-52S and MW-53S during the second quarter. Bis(2-ethylhexyl)phthalate, dibenz(a,h)anthracene, and indeno(1,2,3,-cd)pyrene were also detected samples from MW-53S in the third quarter sample. No other SVOCs were detected in the Zone A samples or any other samples collected during 2013. SVOC data are summarized in Table 8.

The concentrations of all detected SVOC were below Model Toxics Control Act (MTCA) Method B values as presented in the Cleanup Levels and Risk Calculations (CLARC) database maintained by Ecology.

At the request of Ecology, samples from three Zone A wells (MW-47S, MW-50S, and MW-53S) were analyzed for 1,4-dioxane during the second and third quarter of 2013. 1,4-dioxane was not detected in any of those samples. 1,4-dioxane data are summarized in Table 9.

Herbicide analyses was performed on samples from five Zone A wells (MW-47S, MW-50S, MW-52S, MW-53S, and NVM-01) during the first quarter and two (MW-52S and MW-53S) during the second and fourth quarters. 4-nitrophenol was detected in the first quarter sample from MW-47S at a concentration of 0.075 ug/L. There is no MTCA Method A or B cleanup value for this compound. 4-nitrophenol was not detected in any other sample. No other herbicides were detected in samples analyzed during 2013. Herbicide data are summarized in Table 10.

Total and hexavalent chromium analysis was performed on one Zone A well sample (MW-13S) during each quarter of 2013. No hexavalent chromium was detected. Total chromium was detected at concentrations below the dCUL. Chromium data are summarized in Table 11.

Natural attenuation data for the two Zone A well samples (MW-47S and MW-50S) are summarized in Table 13 and are discussed in the Natural Attenuation and Landfill Parameters section below.

2.4.2.2.2.2 Zone B Wells

The groundwater monitoring network for Zone B consisted of MW-26S during the first and second quarters of 2013 and the replacement well MW-26SR during the third and fourth quarters of 2013. Wells MW-26S/SR were sampled for VOCs, SVOCs and herbicides during all four quarters of 2013. Herbicide analysis was not performed on the fourth quarter sample due to bottle breakage during shipment. No VOCs, SVOCs, or herbicides were detected in samples from Zone B wells during 2013. VOC, SVOC, and herbicide data are summarized in Tables 6, 8, and 10 respectively.

2.4.2.2.2.3 Zone C/D Wells

The groundwater monitoring network for Zone C/D consists of well MW-55S. Samples from MW-55S were analyzed for VOCs, and total and hexavalent chromium during all four quarters. Samples from MW-55S were also analyzed for 1,4-dioxane during the second and third quarters. No VOCs were detected in samples from MW-55S during 2013. No hexavalent chromium was detected. Total chromium was detected in all four samples at concentrations that did not exceed the dCUL. 1,4-dioxane was not detected in either sample. VOC, 1,4-dioxane, and chromium data are summarized in Tables 6, 9 and 11 respectively.

2.4.2.2.2.4 Zone E Wells

The groundwater monitoring network for Zone E consists of well MW-27SR. MW-27SR was sampled for VOCs, and total and hexavalent chromium during all four quarters of 2013. TCE was detected in the fourth quarter sample from MW-27SR at a concentration below the 2013 dCUL. No other VOCs were detected in any sample from MW-27SR during 2013. No hexavalent chromium was detected. Total chromium was detected in all four samples at concentrations that did not exceed the dCUL. VOC, and total and hexavalent chromium data are summarized in Tables 6 and 11 respectively.

2.4.2.2.3 Sentinel Wells

Sentinel wells are located between a waste zone and the property boundary or a potential conditional point of compliance. In conjunction with the performance monitoring wells, the sentinel wells provide a means of tracking spatial and temporal changes in contaminant concentrations with distance from source areas and estimating concentration attenuation with distance from the source area.

The sentinel well monitoring network consists of seven shallow wells (2R, MW-12S, MW-15S, MW-18S, MW-19S, MW-23S, and MW-49S) and three intermediate wells (2I, MW-12ID and MW-49I). During 2013 the samples from the sentinel wells were analyzed for VOCs, SVOCs, 1,4-dioxane, herbicides, total and hexavalent chromium, and MNA parameters. The analyses performed on samples from these wells are summarized in Table 1.

Samples from the seven shallow wells were analyzed for VOCs on a quarterly basis. Samples from the three intermediate wells were analyzed for VOCs on a semi-annual basis in the second and fourth quarters of 2013. VOC data are summarized in Table 6.

Additional sampling was performed at selected wells for SVOC, herbicides, 1,4-doxane, and total and hexavalent chromium. The first quarter sample from MW-12S was analyzed for SVOCs and herbicides. In the second and third quarters samples from MW-12S, MW-15S, and MW-49S were analyzed for 1,4-dioxane. During all four quarters samples from MW-12S and MW-19S were analyzed for total and hexavalent chromium. Analytical results for SVOC, 1,4-dioxane, herbicides and total and hexavalent chromium are summarized in Tables 8, 9, 10, and 11, respectively.

Samples from 2R, MW-12S, and MW-49S were analyzed for natural attenuation parameters on a semi-annual basis during the second and fourth quarters of 2013. Natural attenuation data are summarized in Table 13 and are discussed in the Natural Attenuation and Landfill Parameters section below.

Shallow wells 2R, MW-12S, and MW-49S and intermediate depth wells 2I, MW-12ID, and MW-49I are sentinel wells for Zone A. Samples from the shallow wells were analyzed for VOCs during all four quarters of 2013. Samples from the intermediate wells were analyzed for VOCs on a semi-annual basis during the second and fourth quarters. Additionally, samples from MW-12S were analyzed for SVOCs and herbicides during the first quarter, and total and hexavalent chromium during all four quarters. Samples from MW-12S and MW-49S were also analyzed for 1,4-dioxane during the second and third quarters. Samples from 2R, MW-12S, and MW-49S were analyzed for natural attenuation parameters semi-annually during the second and fourth quarters.

PCE and TCE were the only compounds detected in the Zone A sentinel wells and the detected concentrations did not exceed the dCULs.

The shallow well MW-18S is a sentinel well for Zones C/D. Samples from MW-18S were analyzed for VOCs during all four quarters of 2013. No VOCs were detected in samples from MW-18S during 2013.

The shallow well MW-19S is a sentinel well for Zone E. Samples were analyzed for VOCs, and total and hexavalent chromium during all four quarters. No analytes were detected at concentrations above the dCULs.

The shallow wells MW-15S and MW-23S are considered sentinel wells for the MSW Landfill Area. No VOCs were detected at a concentration above a dCUL in 2013 in these wells. The data for these wells are discussed in the 2013 Annual Report for the MSW Landfill as prepared by the LFG.

2.4.2.2.4 Property Boundary Wells

The property boundary groundwater monitoring network consists of five shallow wells (MW-10S, MW-11S, MW-22S, MW-24S, and MW-51S) and one intermediate depth well (MW-11I). Samples from the shallow wells were analyzed for VOCs on a quarterly basis and the sample from the intermediate depth well was analyzed for VOCs on a semi-annual basis in the second and fourth quarters. Additionally, samples from MW-22S were analyzed for total and hexavalent chromium on a quarterly basis and for landfill parameters on a semi-annual basis during the second and fourth quarters. Samples from MW-11S were also analyzed for 1,4-dioxane during the second and third quarters.

Well MW-22S is located hydraulically downgradient of the MSW landfill. No VOCs were detected at a concentration above a dCUL in 2013. The monitoring data for that well will be discussed in the 2013 Annual Report for the MSW Landfill as prepared by the LFG.

PCE and TCE were the only compounds detected at a property boundary well and the detected concentrations did not exceed the dCULs. No other compounds were detected in any samples collected from any of the property boundary wells in 2013. Analytical results are summarized in Tables 6, 9 and 11.

2.4.2.2.5 Downgradient Wells

The downgradient monitoring off-property well network consists of 11 shallow wells (MW-29S, MW-31S, MW-34S, MW-37S, MW-38S, MW-40S, MW-41SR, MW-42S, MW-43S, MW-44S, and MW-45S) and four intermediate depth wells (MW-29I, MW-38I, MW-43I, and MW54I), which are all sampled for VOCs. The shallow depth wells are sampled on a quarterly basis, except for MW-44S and MW-45S, which are sampled on a semi-annual basis. Similarly, of the intermediate depth wells, MW29I and MW38I, are sampled on a semi-annual basis. With the exception of MW-54I, each intermediate depth well is paired with an adjacent shallow depth well.

No VOCs were detected at a concentration exceeding a dCUL in the downgradient wells. VOC data are summarized in Table 6.

Additionally, samples from downgradient wells MW-29S, MW-38S and MW-54I were analyzed for 1,4-dioxane during the second and third quarters of 2013. 1,4-dioxane was not detected in any of those samples. 1,4-dioxane data are summarized in Table 9.

2.4.2.2.6 Upgradient Wells

The upgradient monitoring well network consists of four shallow wells (NW-1, MW-20S, MW-25S, and MW-25SR). MW-25S was sampled during the first and second quarters and then decommissioned. MW-25SR was installed in May and sampled in the third and fourth quarters as a replacement for MW-25S.

NW-1 is upgradient of the MSW Landfill. Sampling of NW-1 is performed and reported as part of the new waste landfill monitoring program. The data from samples from these wells are discussed in the 2013 Annual Report for the MSW Landfill as prepared by the LFG.

Well MW-20S is upgradient of Zones A, C/D, and E and MW-25S is located upgradient of Zone B.

Well MW-20S was sampled for VOCs during the first quarter, total and hexavalent chromium during the first and third quarters, and natural attenuation and landfill parameters during the second and fourth. MW-25S and its replacement MW-25SR, were sampled for VOCs, natural attenuation and landfill parameters during the second and fourth quarter.

No VOCs or hexavalent chromium were detected in samples collected from MW-20S, MW-25S or MW-25SR during 2013. Total chromium concentrations did not exceed the dCULs.

Landfill parameter data from samples collected at upgradient wells MW-20S, MW-25S are summarized in Table 14 and are discussed in the Natural Attenuation and Landfill Parameters section below.

2.4.2.2.7 Residential Wells

As outlined O&M Manual Addendum No. 1, all residential wells in the Groundwater Protection Area (GPA) are scheduled for sampling and VOC analysis on a semi-annual basis during second and fourth quarter sampling events. Wells with VOC concentrations that have exceeded a dCUL are sampled on a quarterly basis until such time as detected concentrations are below the dCUL for four consecutive quarters, at which time the well is returned to semi-annual sampling.

In accordance with these guidelines, at the start of 2013, the Bradley, Rada, West, Yenney2, Yenney3 wells were scheduled for quarterly sampling. The Rada and Yenney3 wells were not functioning and therefore could not be sampled during the first quarter. Table 1 summarizes which residential wells were sampled each quarter. The residential wells are not always capable of being sampled according to schedule due to various issues including property access, safety considerations, lack of electrical power, or undetermined pump and/or piping issues. The IWAG is not responsible for the upkeep of these privately-owned wells. VOCs detected in samples collected from the residential wells are summarized in Table 14.

The City of Pasco *2013 – East Pasco Plume Area – Well Location Survey*, dated December 9, 2013, contains a listing of residential wells within the GPA. This report is presented in Attachment C. Also included in Attachment C is the *Annual Institutional Controls Report*, dated January 10, 2014, from the Franklin County Planning and Building Department, which indicates that no new land use approvals or building permits were issued within the GPA during 2013.

During 2013, only PCE and TCE were detected in samples, and from only the Salinas and West residential wells. None of the detected concentrations exceeded a dCUL. PCE was detected at concentrations ranging from 0.10 µg/L to 0.34 µg/L. TCE was detected at concentrations ranging from 0.059 µg/L to 0.16 µg/L.

Based on these 2013 VOC data and analytical results from 2012, all residential wells were moved to a semi-annual monitoring schedule starting with the first quarter 2014 sample. Residential well samples will only be collected during the first and third quarters of 2014 unless a VOC is detected at a concentration exceeding a dCUL.

2.4.2.3 Contaminant Distribution

This section discusses the dissolved-phase distribution of the compounds for which dCULs have been established for the Site and for which observed concentrations exceeded a dCUL during 2013. Those compounds include only PCE and TCE.

During 2013 only PCE and TCE were detected at concentrations exceeding a dCUL. PCE and TCE concentrations exceeded a dCUL only in samples from shallow wells. Shallow aquifer isoconcentration maps for PCE and TCE have been prepared for each quarter.

Figures 15 through 18 illustrate the distribution of dissolved-phase PCE in the shallow aquifer for the 2013 annual sampling relative to the dCUL of 0.69 µg/L. These figures illustrate that the extent of PCE concentrations exceeding the dCUL in the shallow portion of the aquifer is generally limited to within the property boundary.

Detected concentrations of PCE did not exceed the dCUL in any wells associated with Zones A, B, C/D, or E.

Detected concentrations of PCE exceeded the dCUL in well 4R, located immediately adjacent to the downgradient side of the MSW landfill. Concentrations of PCE were detected above the dCUL in well 4R during all four quarters of 2013. Well 4R is considered a performance monitoring well for the MSW Landfill Area. Further evaluation of MSW Landfill well data is provided in the 2013 Annual Report for the MSW Landfill as prepared by the LFG.

Figures 19 through 22 illustrate the distribution of dissolved-phase TCE in the shallow aquifer for the 2013 annual cycle relative to the dCUL of 2.5 µg/L. In 2013 TCE exceeded the dCUL in only one well (MW-53S) and only in the second quarter. In all other wells and for all other sampling events, detected TCE concentrations were below the dCUL.

No compounds, other than PCE or TCE, for which a dCUL has been established were detected at a concentration exceeding its respective dCUL in 2013.

2.4.3 Natural Attenuation and Landfill Parameters

Samples from seven wells were analyzed for natural attenuation parameters during the second and fourth quarters of 2013. Table 1 lists the specific wells that were monitored for natural attenuation. The analysis included alkalinity, ammonia, chloride, chemical oxygen demand (COD), nitrate, nitrite, sulfate, total dissolved solids (TDS), total organic carbon (TOC), ferrous iron, manganese, and methane, ethane and ethane (MEE). Analytical data for natural attenuation parameters are summarized in Table 13.

Analysis of groundwater samples for natural attenuation parameters provides limited information regarding biochemical degradation processes occurring on the Site due to the limited number of VOCs detected and the low concentrations of those compounds that were detected. The Zone A Heating Evaluation, dated September 14, 2014, provides a discussion of biological processes beneath Zone A.

Samples from six wells were analyzed for landfill parameters during the second and fourth quarters of 2013. Table 1 lists the specific wells that were monitored for landfill parameters. The analysis includes alkalinity, ammonia, chloride, nitrate, nitrite, sulfate, total dissolved solids (TDS), total organic carbon (TOC), calcium, total iron, magnesium, manganese, potassium, and sodium. Landfill parameter data

are summarized in Table 14. Landfill parameter data will be discussed in the 2013 Annual Report for the MSW Landfill prepared by the LFG.

2.4.4 SVE Performance Monitoring and Groundwater Quality Trends

2.4.4.1 SVE System Performance

During 2013 the SVE system operated using vapor extraction wells VEW-06S, VEW-06I, VEW-06D, VEW-07S, VEW-07I, and VEW-07D. Figure 23 illustrates the locations of active and inactive vapor extraction wells, vapor monitoring wells and vacuum monitoring points at Zone A.

As mentioned above, in response to emergent subsidence and possible subsurface combustion in the Balefill Area adjacent to Zone A, the shallow and intermediate depth vapor extraction wells were pre-emptively shut down as a precautionary measure on December 3, 2013. The deep extraction wells, VEW-06D and VEW-07D remained active throughout 2013.

During 2013, operational parameters were recorded at each of the six active extraction wells, VMW-51I, and VMW-50S. Parameters recorded included: wellhead vacuum; wellhead airflow; fresh-air dilution; vapor temperature; percent carbon dioxide (CO_2), oxygen (O_2), and balance gas; PID measurement; and lower explosive limit (LEL). Parameters recorded at the SVE system equipment skid included vacuum, airflow, and LEL. Airflow was also measured at the flare inlet. The parameters recorded for each operational vapor extraction wells are presented in Table 15.

Protocols established by the IWAG and Ecology following the 2012 *Zone A Heating Evaluation* included the option of downhole temperature monitoring if the extracted vapor temperature at a SVE well exceeded 140 degrees Fahrenheit. This threshold was crossed in early 2013 and downhole temperature measurements were performed on February 11 and 12, 2013. The results of that survey were presented in *Technical Memorandum: Pasco Landfill: Summary of Downhole Temperature Profiles: July 2012 and February 2013*, dated June 24, 2013. The memorandum also concluded that no further action was needed with respect to subsurface measurements at that time and that subsurface temperatures were well below the 170^{o}F threshold that may be one indicator of pyrolysis.

Vacuums at vapor monitoring probes VMP-01 through VMP-10, VMW-50S, VMW-51I, VMW-51D, VEW-04 and VEW-05 were measured on a monthly basis starting on March 11, 2013 and increased to a weekly basis starting on December 9, 2013. Vacuum measurements for these locations along with the vacuum measurements for the active SVE wells are presented in Table 16.

Vapor samples were collected monthly from the individual SVE lines throughout 2013. During March 2013, vapor samples were also collected on a weekly basis in response to changes in SVE flow rates and in accordance with the SVE Protocols Memorandum. On December 3, 2013, VEW-06S/I, and VEW-07S/I were shut off as a precautionary measure in response to the apparent subsurface combustion in the Balefill Area east of Zone A. Consequently, during December 2013, weekly vapor samples were collected from the remaining active extraction wells, VEW-06D and VEW-07D.

Vapor sampling at the flare end of the conveyance piping (SV-FS) was performed on a biweekly basis throughout 2013. During March and December of 2013, in accordance with the SVE Protocols Memorandum, vapor sampling at SV-FS was also performed on a weekly basis.

Vapor sampling from the SVE equipment end of the conveyance line (SV-BC) was performed on a monthly basis during January and February of 2013. In accordance with sampling protocols approved by Ecology, vapor sampling at SV-BC was suspended starting in March 2013.

Analytical data from vapor sampling during the fourth quarter of 2013 are presented in Table 17. Included in the table is the calculated contaminant mass removal rate. The contaminant mass removal rate is calculated for each sample using the total concentration of all VOCs detected in the sample and the measured flow rate at the sample location at the time of sample collection. Figure 24 illustrates the average daily contaminant mass removal rates from the six SVE wells, and for the combined flow at the SVE skid from March 14, 2012 through December 26, 2013. Gaps in the graphed data series represent periods when wells were not operated and/or samples could not be collected.

Between September 30, 2013 and December 26, 2013, the contaminant mass removal rates for individual wells ranged from 4 pounds per day (lbs/day) at VEW-06I on November 11, 2013 to 258 lbs/day at VEW-07I, also on November 11. During the fourth quarter, the contaminant mass removal rates for the combined line ranged from 81 lbs/day on December 9 to 382 lbs/day on November 25. The SVE system recovered an estimated 22,431 lbs of VOCs during the fourth quarter of 2013, with an average combined line SVE mass removal rate of 258 lbs/day. The ability of the SVE system to recover contaminant mass was limited throughout much of 2013 by limitations on flow from VEW-06I due to effluent gas temperatures in excess of 140^{o}F. As noted above, in early December the system extraction rates were further limited by the shut down of wells VEW-06S/I and VEW-07S/I in response to the apparent subsurface combustion in the Balefill Area.

Between December 26, 2012 and December 26, 2013, the SVE system recovered approximately 170,563 total pounds of VOCs with an average removal rate of about 467 pounds/day (lbs/day). It is estimated that the SVE system has recovered a total of approximately 831,097 pounds of VOCs between May 1997 and December 26, 2013.

An estimate of the cumulative mass removed by the SVE system from startup in 1997 through December 26, 2013 was calculated using data from vapor samples collected from the combined line. The cumulative mass removal is illustrated in Figure 25. The three dark blue circles on the figure represent the dates when significant changes were made to the active wells used for vapor extraction. The first circle represents the change from use of VEW-01, VMW-02D, VEW-04 and VEW-05 to use of only VEW-04 and VEW-05 in March 2010. The second dark blue circle represents the switch to use of the VEW-06 and VEW-07 clusters in March 2012. The third dark blue circle represents the first sample after the shallow and intermediate wells were shut down on December 2, 2013.

Table 18 summarizes the concentrations of each VOC that constitutes at least one percent of the total VOCs detected in 2013. In order of relative abundance, these compounds include, toluene, ethanol, methyl ethyl ketone (MEK), acetone, methyl isobutyl ketone (MIBK), m, p, and o- xylene, and TCE.

Table 19 summarizes the percentage of each of these compounds in each sample collected during the fourth quarter. The compounds constitute 82 to 98 percent of the total VOCs detected in each sample.

The SVE system, as currently configured, is limited in its ability to remove and treat VOCs from Zone A by a number of factors. The SVE system must dilute the extracted vapors to maintain a lower explosive limit (LEL) of less than 40 percent in order to comply with the electrical and building permits for the system. This affects flow rates at VEW-06I and VEW-07I, which extract vapors with an LEL greater than 100 percent. The total air flow of the SVE system is also limited by the MSW flare to 600 scfm and to a total daily mass loading of the sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX) of 510 lbs./day These restrictions place limitations on how the SVE system can be operated and its maximum effectiveness for mass removal. The IWAG is currently evaluating equipment upgrades that would allow the SVE system to operate at higher mass removal rates.

The SVE system was limited in its ability to extract vapors from VEW-06I during the majority of 2013 based on the temperature of extracted gases. For most of 2013, the flow rates from that well were modulated to maintain an effluent gas temperature of less than 140 ^{o}F. The IWAG continues to evaluate methods and procedures for addressing this operational limitation when vapor extraction from VEW-06I is resumed. The ongoing Balefill combustion may limit SVE system performance in 2014. The SVE operation will continue to be evaluated relative to its potential influence on the Balefill combustion and anticipated actions to evaluate any such actual influence.

2.4.4.2 Groundwater Quality Trends

As discussed above, groundwater quality at the Site continued to improve during 2013. This improvement in groundwater quality is demonstrated by a decrease in the numbers of wells where compounds are detected, a decrease in the numbers of compounds detected, and a decrease in the concentrations detected. This improvement in groundwater quality is most readily observed in wells MW-52S and MW-53S located within Zone A and wells immediately downgradient of Zone A.

As outlined in Section 2.3.1, groundwater samples were collected on a monthly basis from a subset of the monitoring wells downgradient from Zone A in order to assess changes in groundwater quality that may correlate to operation of the SVE system. Data from Phase I AIA studies in the 2008 and 2009 Annual Reports illustrate that soil gas conditions and groundwater quality appear to be linked at the Site, and vapor-phase transport through the vadose zone to the water table is likely the primary mechanism for contaminant migration from solvent wastes to groundwater.

The operation of the upgraded SVE system during 2013 with contaminant mass removal rates averaging approximately 467 lbs/day, and the apparent associated improvements in groundwater quality, demonstrate that an SVE system is capable of significantly interrupting the contaminant migration pathway between the Zone A wastes and groundwater.

The correlation between SVE performance and groundwater quality has previously been demonstrated by evaluating cis-1,2-DCE concentrations at MW-47S, which is immediately downgradient of Zone A. Cis-1,2-DCE was relatively abundant at the Site prior to optimization of the SVE system in 2008. In August 2008, prior to SVE optimization, cis-1,2-DCE was present in MW-47S at a concentration of

3,200 µg/L. In December 2008, after SVE optimization, the cis-1,2-DCE concentration decreased to 620 µg/L and continued to decrease to below 2.2 µg/L in 2011. During 2013 cis-1,2-DCE was not detected above the 2 µg/L reporting limit in any samples collected downgradient of Zone A. Similar trends have been observed with other VOCs.

Only two compounds, PCE and TCE, were detected anywhere on the Site in 2013 at a concentration exceeding a dCUL. Figures 15 through 22 illustrate the trends in PCE and TCE concentrations throughout the Site during 2013. These figures illustrate a substantial decreasing trend in VOC concentrations. Figures 26 through 31 illustrate concentration trends for the six Zone A wells (MW-52S, MW-53S, MW50S, MW-47S, NVM-01, and MW-12S), which are wells located within Zone A or are sentinel wells, and were monitored on a monthly basis at the beginning of 2013. Each figure charts the concentrations of the five most abundant chlorinated compounds with Site specific dCULs (PCE, TCE, cis-1,2-DCE, 1,2-DCA, and 1,1-DCE). Compounds that were not detected in a sample are charted as 0.0 ug/L (zero). The figures illustrate that groundwater quality during 2013 had improved to near non-detect levels throughout the majority of the Site.

2.5 Waste Handling

2.5.1 Routine Waste Storage, Characterization, and Management

SVE system condensate is generated at two locations during system operation: at the SVE equipment skid and in the conveyance line from the skid to the MSW Landfill flare. Condensate is collected at the SVE equipment skid and at the north end of the conveyance line at the MSW Landfill flare, immediately upstream of the flame arrestor. The condensate is stored in polyethylene tanks, sampled, and characterized prior to disposal off-site. Table 20 summarizes SVE condensate volumes disposed of or treated off-Site during 2013. Attachment D contains analytical data used for characterization and hazardous waste manifests for SVE system condensate disposed of or treated off-Site during 2013.

During 2013, a total of 70,407 gallons of SVE condensate was generated at the SVE equipment skid and in the conveyance line to the MSW Landfill flare. The IWAG managed SVE condensate and investigation-derived waste (IDW) for the Site during 2013. All SVE condensate generated at the Site during 2013 was designated as hazardous waste and transported to Burlington Environmental, LLC in Kent, Washington.

Purge and decontamination water generated during routine sampling was stored, sampled and characterized prior to disposal off-Site. Polyethylene tanks were used for storage of liquid wastes produced during routine monitoring. Each tank was sampled and characterized before off-site disposal or treatment.

During 2013, 1,120 gallons of IDW water was generated from purging of wells before sampling and decontamination. This water was determined to be non-hazardous and was transported to the City of Pasco Publicly-Owned Treatment Works for treatment and disposal. Table 20 summarizes the volume of IDW water disposed of off-Site during 2013. Attachment D contains analytical data for samples collected from wastewater generated during routine groundwater monitoring.

2.5.2 SVE System Condensate Storage Tank Maintenance

The condensate collection tank at the flare released approximately 100 gallons of condensate to the secondary containment between April 13 and April 15, 2013. Upon discovery, the liquid in the secondary containment was pumped into a separate holding tank for temporary storage. The release to containment was the result of a degraded gasket at the bottom outlet of the tank. The tank was replaced on April 30 with a new tank without a bottom outlet and associated gasket. The condensate release to containment was reported to Ecology via electronic mail on April 26, 2013.

On April 15, in response to the observed condition at the condensate holding tank noted above, the LNAPL holding tank at the SVE skid was inspected. It was noted that approximately 5 to 10 gallons of LNAPL were present in the LNAPL holding tank, which is located within the secondary containment at the SVE compound. The bottom gasket on the LNAPL holding tank was inspected and was observed to be degrading and minor drippage was observed. In response, the outlet valve from the phase separator to the LNAPL tank was closed and use of the LNAPL tank was temporarily discontinued. LNAPL was temporarily collected in the oil water separator, which has a LNAPL storage capacity of approximately 10 gallons. The high level float switches within the phase separator are programmed to shut down the SVE system if the LNAPL storage capacity is reached. This condition was reported to Ecology via electronic mail on April 26, 2013. A replacement LNAPL holding tank without a bottom outlet and gasket was installed in June 2013.

Approximately 15 gallons of LNAPL accumulated in the storage tank at the SVE skid during 2013. NAPL will continue to be accumulated with sampling and analysis prior to periodic disposal.

2.6 SVE System Repair Reporting

Intermittent shutdowns of the SVE system occurred during 2013. Those system shutdowns occur both as planned shutdowns for routine system maintenance and as unplanned shutdowns. During SVE system shutdowns the MSW flare generally remains on. MSW flare shutdowns result in automatic shutdown of the SVE system to prevent potential atmospheric discharges of untreated vapors.

During June 2013, in response to apparent odors on the Zone A cap, the vapor extraction well wellheads and piping, and cracks in the Zone A cap soil cover were screened for the presence of volatile compounds using a photoionization detector (PID). No measured instrument response (i.e., <0.0 ppmV) was observed. In response to persistent odors a plan for further assessment of the source of odors was developed. The *Revised Proposal for Odor Assessment and Air Sampling on Zone A Cap*, dated October 4, 2013 was approved by Ecology on October 14, 2013. Task 1 of that plan, which was focused on qualitatively assessing the source of the odors was performed in October and November 2013. The likely source of odors was determined to be the flexible vacuum hose used on the SVE system piping between each aboveground wellhead piping and the belowground sections. The flexible hose was replaced on January 6, 2014 with new hose material with a higher compatibility rating for compounds detected in the SVE vapor effluent. Specifications for the new hose material were included in an addendum to the upgraded SVE system As-Built report. That addendum was provided to and accepted by Ecology in 2014.

A summary of SVE system shutdowns and restarts, including SVE system operation and maintenance items for the fourth quarter of 2013, are summarized in Table 21.

2.7 Zone A Landfill Cap

Settlement of the Zone A landfill cap has been monitored since May 2008. During 2008, in response to areas of measured subsidence on the Zone A cap, field activities were initiated including installation of eight survey benchmarks to be used to quantify settlement. During 2010, in preparation for Phase II AIA activities on the Zone A landfill, two additional settlement benchmarks were installed in areas where disturbance of the benchmarks was unlikely. During 2011, also as part of the Phase II AIA activities, maintenance was performed on the Zone A cap to improve surface drainage and assess potential accumulation of precipitation in the subsidence areas. During the cap maintenance, six settlement benchmarks were necessarily destroyed leaving four settlement benchmarks SB-6, SB-7, SB-9 and SB-10. Settlement plates SP-1, SP-2, SP-3 and SP-4 were installed as replacement for the destroyed benchmarks.

On January 10, 2013 twelve additional settlement plates (SP-5 through SP-16) were installed creating a network of 20 survey locations for monitoring subsidence on the Zone A cover. Elevations of the 20 markers were surveyed on January 10, April 4, and June 4, 2013. A review of Zone A settlement survey activities and a table of elevations for each of the remaining 20 settlement markers were presented in the *Second Quarter 2013 Ground Water Monitoring and Interim Action Report*, dated September 13, 2013.

An aerial survey of the Site was flown on January 11, 2013 for the purpose of establishing a current and cohesive topographic survey for the entire Site. That topographic survey has been used in all current graphics that present Site topography.

New areas of differential settlement were noted on the Zone A cap during the first quarter of 2013. Areas of settlement on the Zone A cap were inspected on March 6, 2013 by Mr. John Richards, P.E. of SCS Engineers. Discussions with SCS Engineers indicates that the settlement rates observed are within the range of expected rates for landfill caps and that uniform settlement does not place an unacceptable strain on the landfill membrane or geotextile materials. Ecology also visited the Site on April 2 to observe the settlement of Zone A cap.

In response to the development of the newer areas of differential settlement, the IWAG implemented the performance of a “point cloud” ground based Light Detection and Ranging (LIDAR) survey of the full surface of the Zone A cap. A similar survey had been performed in December 2011 in support of as-built documentation for the Zone A cap maintenance and SVE system upgrades. A typical LIDAR survey of this surface area includes over 150 million data points and provides a high-density three-dimensional surface representation of the Zone A cap. When performed periodically the LIDAR surveys are capable of identifying elevation changes over the entire surface of the cap, which allows monitoring of emergent settlement rather than only settlement in the immediate area of survey markers, which are typically not optimally located to track monitor areas of new settlement.

Triad Associates (Triad) of Kirkland, Washington was retained to provide LIDAR surveying services. An initial LIDAR survey was performed on April 4, 2013 in combination with a standard level survey of the existing settlement markers. A follow-up LIDAR survey performed on June 4 also included a standard level survey of the settlement markers. In consultation with Ecology the LIDAR surveys were implemented on a bi-monthly frequency and the standard level surveys were discontinued.

As part of the third and fourth quarter 2013 monitoring, LIDAR surveys of the Zone A landfill cap were performed on August 20 and October 9, 2013. A differential analysis of the 2011 baseline and subsequent surveys is performed to assess changes in the Zone A cap surface and to identify areas of potential emergent settlement. Attachment E contains the differential surface maps showing elevation changes between the October 2013 and August 2013 surveys, the October 2013 and April 2013 surveys, and between the October 2013 survey and December 2011 baseline survey.

Each differential surface map shows the surface of Zone A color coded to indicate areas of positive or negative changes in elevation between the dates of comparison. Portions of the October/August and October/April maps that are colored blue or green indicate areas of increasing elevation. Areas of increasing elevation include portions of the landfill where additional soil cover or gravel has been added, vegetative growth has occurred, or adjustments in piping or equipment related to the SVE system.

Elevation changes for six points where the greatest settlement has occurred since December 2011 are indicated on the graphics in Attachment E.

The Zone A cap contains two areas with the most significant degree of settlement. These are termed the Northern Settlement Area and the Southern Settlement Area. The Northern Settlement Area is located just east of the VEW-06 well grouping and the Southern Settlement Area is located just east of well MW-53S. The graphics in Attachment F in indicate the change in the rate of settlement over time and the cumulative settlement in each of these areas. The time period is from January 1, 2013 to January 21, 2014. As noted in the graphics the rate of settlement is slowing in each area. This is the expected condition.

The IWAG will continue to perform bi-monthly subsidence monitoring of the Zone A cap. The IWAG will continue to assess the potential for differential settlement and, if observed, will assess the total strain on membrane and geotextiles relative to the allowable strain.

Maintenance of the Zone A cover during 2013 included the installation of sumps to assess moisture accumulation in areas of depressions and the placement of additional cover materials.

On May 1, 2013 the HDPE liner was exposed in the deepest portion of the depression in the southeast corner of the Zone A cover to assess the presence of moisture on the surface of the liner material. No moisture or free water was observed. A 6-inch diameter slotted PVC sump was installed from the surface of the liner to the surface of the cap to allow for periodic inspection. During November, a similar monitoring sump (S-2) was installed in the depression in the northeastern portion of Zone A. If water is observed within either sump it will be pumped to the adjacent evaporation basin. To date, no free water has been observed in either sump.

On May 6, 2013, granular ballast material was placed in the northwestern portion of Zone A on the western edge of the umbrella geomembrane liner to prevent additional wind erosion.

The IWAG will also continue to perform visual inspection of Zone A cap settlement during monthly cap inspections, which are performed in accordance with the Operations and Maintenance (O&M) Manual for the IWA caps.

The Zone A Landfill Cover, Detention/Evaporation Basin and Fence Inspection Checklists for 2013 are presented in Attachment G along with similar checklists for Zone C/D and Zone E. The condition of the Zone B cover, including maintenance and construction activities performed during May and June 2013, is reported to Ecology by Bayer Crop Science (BCS). No conditions requiring maintenance or repair were observed on the Zone C/D or E caps in 2013.

3.0 SUMMARY

The following summarizes the primary findings of the groundwater monitoring and the interim action operations and maintenance in 2013:

- Groundwater quality at the Site continued to improve in 2013. In 2013 only three VOCs were detected anywhere on the Site during the fourth quarter of 2013. During all of 2013 only two VOCs were detected at concentrations exceeding a dCUL. Relative to Zone A, TCE was the only compound detected above a dCUL and then only in one well in the second quarter of 2013. Improvements in groundwater quality at Zone A appear associated with operation of the upgraded SVE system.

- Groundwater quality improved at the property boundary downgradient of Zone A with no VOCs being detected during the second, third, and fourth quarters.

- Groundwater quality beyond the southern property boundary fully complied with the dCULs for all compounds at the end of 2013.

- The current monitoring network is adequate to assess and evaluate ongoing groundwater quality at the Site.

- The upgraded SVE system continued to extract significant quantities of contaminants from soil at the Site. Mass removal rates from the SVE system averaged around 467 lbs/day in 2013 with an estimated total of over 170,000 lbs of VOCs removed from Zone A during 2013.

- The shallow and intermediate SVE wells were turned off in early December 2013 as a preemptive and precautionary measure in response to apparent subsurface combustion in the Balefill Area adjacent to Zone A. Further evaluation of combustion in the Balefill Area is ongoing and will be reported to Ecology under separate cover.

- The SVE system is currently limited in its capacity to remove contaminant mass. These limitations are related to the destruction removal efficiency of the MSW flare, the total allowable air volume that can be sent to the flare, the requirement to dilute the extracted gasses from the intermediate depth wells so as to not exceed LEL limits, the limitation that extracted vapors shall not exceed 140^{o}F, and precautionary restrictions relative to the Balefill Area. The IWAG is currently evaluating alternatives to the MSW Flare for treating the SVE off-gas, with the objective of eliminating some of these limitations on SVE performance.

- Settlement of the Zone A cover continued during 2013 but at generally decreasing rates. Three-dimensional measurements of apparent settlement across the entire surface of the Zone A landfill cover were performed during 2013 and will be continued on a quarterly basis in 2014. These measurements have been expanded to document settlement in the portion of the Balefill Area adjacent to Zone A.

4.0 REFERENCES

FINAL DRAFT Phase I Remedial Investigation Report - Pasco Landfill - Pasco, Washington, Volumes I to IV, dated December 1993, by Burlington Environmental Inc. (Prepared for Pasco Landfill PLP Group)

Ecological Assessment - Pasco Landfill - Pasco, Washington, dated September 1997 by Phillip Services Corp. (Prepared for Pasco Landfill PLP Group)

Interim Measures Completion Report - Pasco Landfill - Pasco Washington, dated February 4, 1998, by Phillip Environmental Services Corporation. (Prepared for Pasco Landfill PLP Group)

Risk Assessment/Cleanup Level Analysis - Pasco Landfill - Pasco, Washington, dated September 1998, by Phillip Services Corp. (Prepared for Pasco Landfill PLP Group)

Feasibility Study Report - Pasco Landfill - Pasco, Washington, dated April 28, 1999, by Phillip Environmental Services Corporation. (Prepared for Pasco Landfill PLP Group)

Operations and Maintenance Manual - Landfill Gas Collection Control and Flare - Pasco Sanitary Landfill – Pasco, Washington, dated July 15, 2002, by Phillip Services Corporation. (Prepared for Pasco Landfill PLP Group)

Operations and Maintenance Manual - Landfill Caps Volumes I and II - Pasco Sanitary Landfill – Pasco, Washington, dated July 15, 2002, by Phillip Services Corporation. (Prepared for Pasco Landfill PLP Group)

Operations and Maintenance Manual - SVE, NoVOCs, and Ground Water Monitoring - Pasco Sanitary Landfill - Pasco, Washington, dated July 15, 2002, by Phillip Services Corporation. (Prepared for Pasco Landfill PLP Group)

Interim Action Performance Monitoring Report - Pasco Landfill Site - Pasco Washington, dated January 31, 2007, by Environmental Partners, Inc. (Prepared for IWAG Group II)

Operations and Maintenance Manual - SVE, NoVOCs, and Ground Water Monitoring - Pasco Landfill Site - Pasco Washington, dated January 31, 2007 and revised February 23, 2007 and May 25, 2007, by Environmental Partners, Inc. (Prepared for IWAG Group II)
The REVISED FINAL Work Plan for Additional Interim Actions - Phase I, dated May 5, 2008 by Environmental Partners, Inc. (Prepared for IWAG Group II)

Addendum No. 1 – Operations and Maintenance Manual – SVE, NoVOCs and Ground Water Monitoring, dated January 8, 2008 and revised May 22, 2008 by Environmental Partners, Inc. (Prepared for IWAG Group II)

Pasco Landfill Zone A Cover Evaluation, dated March 10, 2009 by SCS Engineers. (Prepared for Environmental Partners, Inc.)

2008 Annual Report - Ground Water Monitoring and Phase I Additional Interim Actions- Volumes 1 to 3, dated May 20, 2009, by Environmental Partners, Inc. (Prepared for IWAG Group II)

Draft Final Phase II Additional Interim Actions Work Plan Volume 1 – Soil Vapor Extraction System Upgrades and Start-up Testing with Monitoring Well Installation, dated May 14, 2010 by Environmental Partners, Inc. (Prepared for IWAG Group II)

Revised 100% Submittal Engineering Design Report for SVE System Upgrades – Phase II Additional Interim Actions, dated July 2, 2010 by Environmental Partners, Inc. (Prepared for IWAG Group II)

Technical Methodology for NoVOCs Well Decommissioning, dated October 22, 2010 by the IWAG Group III, Environmental Partners, Inc., and Anchor QEA, LLC. (Prepared for Ecology)

Revised Final Phase II Additional Interim Actions Work Plan Volume 2 – Sub-Zone A Investigation, Downgradient Well Installation and Cap Maintenance, dated January 28, 2011 by Environmental Partners, Inc. (Prepared for IWAG Group III)

Revised Addendum No. 1 – 100% Engineering Design Report for SVE System Upgrades – Phase II Additional Interim Actions, dated March 31, 2011 by Environmental Partners, Inc. (Prepared for IWAG Group III)

Technical Memorandum – Summary of NoVOCs Well Decommissioning, dated August 31, 2011.

Cover Maintenance Documentation Report – Pasco Landfill Zone A, dated September 2011 by SCS Engineers. (Prepared for Environmental Partners, Inc.)

Pasco Landfill Site: Ecology Recommendations for Groundwater Sampling Pump Intake Zone Positioning and Possible Well Replacement, dated November 28, 2011 by Ecology

Revised Phase II Additional Interim Actions - Sub-Zone A Investigation and Downgradient Well Installation Report, Volumes I and II, dated September 30, 2011 and revised May 21, 2012 by Environmental Partners, Inc. (Prepared for IWAG Group III)

Addendum No. 2 – 100% Engineering Design Report for SVE System Upgrades – Revisions to SVE Startup Testing, dated January 6, 2012 by Environmental Partners, Inc. (Prepared for IWAG Group III)
Revised Phase II Additional Interim Actions - Sub-Zone A Investigation and Downgradient Well Installation Report, Volumes I and II, dated May 21, 2012 by Environmental Partners, Inc. (Prepared for IWAG Group III)

Revised Technical Memorandum – Replacement Wells and Well Decommissioning, dated June 7, 2012 by Environmental Partners, Inc. (Prepared for IWAG Group III)

Technical Memorandum – Results of Replacement Well Installation and Well Decommissioning, dated June 15, 2012 by Environmental Partners, Inc. (Prepared for IWAG Group III)

Technical Memorandum – Vapor Sampling at Groundwater Monitoring Wells MW-18S and MW-55S, dated August 1, 2012 by IWAG Group III

Zone A Heating Evaluation, Pasco Sanitary Landfill Site, dated September 14, 2012 by Anchor QEA (Prepared for IWAG Group III)

October 31, 2012 a new Agreed Order (No. DE 9240)

Updated Technical Memorandum – Proposed Flow Rates for Upgraded Zone A SVE System and Communications Protocols, dated December 4, 2012 Environmental Partners, Inc. (Prepared for IWAG Group III)

Site-Wide Ground Water Performance and Protection Monitoring Operations and Maintenance Manual – Pasco Landfill Site – Pasco, Washington, dated December 31, 2012 by Environmental Partners, Inc. (Prepared for IWAG Group III)

Focused Feasibility Study Work Plan – Pasco Landfill, dated December 31, 2012 by Anchor QEA, LLC, Aspect Consulting, LLC, Environmental Partners, Inc., and AMEC Environment & Infrastructure, Inc. (Prepared for IWAG Group III)

Pasco Landfill Site Updated Institutional Control Plan, dated December 31, 2012 by Anchor QEA, LLC. (Prepared for IWAG Group III)

Operations and Maintenance Manual for Industrial Waste Area Caps – Zones A, C/D, and E – Pasco Landfill Site – Pasco, Washington, dated January 29, 2013 by Environmental Partners, Inc. (Prepared for IWAG Group III)

As-Built and Testing Reports with Operations and Maintenance Manual, dated February 25, 2013 by Environmental Partners, Inc. (Prepared for IWAG Group III)

Volume 1 – As-Built Report for SVE System Upgrades;
Volume 2 – Soil Vapor Extraction System Testing; and
Volume 3 – Operations and Maintenance Manual, which includes:
Attachment A – Sampling and Analysis Plan

Addendum No. 1 – Volume 1 – As-Built Report for SVE System Upgrades, dated February 20, 2014 by Environmental Partners, Inc.

Tables

ENVIRONMENTAL PARTNERS INC

TABLE 1
Wells Sampled and Analyses Performed
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1/2013 - 12/31/2013

WELL GROUPING	WELL	January 2013				Feb	Mar	April 2013						May	Jun	July 2013				October 2013				
		VOC	SVOC	Herbicides	Chromium	VOC	VOC	VOC	SVOC/Herb	Chromium	MNA	Landfill	1,4-Dioxane	VOC	VOC	VOC	SVOC/Herb	Chromium	1,4-Dioxane	VOC	SVOC/Herb	Chromium	MNA	Landfill
MSW Landfill	4R	X						X				L	D			X			D	X				L
	MW-16S	X						X				L	D			X			D	X				L
	MW-17SR	X						X				L				X				X				L
Zone A	EE-2							X												X				
	MW-13S	X			Cr			X		Cr						X		Cr		X		Cr		
	MW-47S	X	X	X		X	X	X			N		D	X	X	X			D	X			N	
	MW-47I							X												X				
	MW-47D*																							
	MW-50S	X	X	X		X	X	X			N		D	X	X	X			D	X			N	
	MW-52S	X		X		X	X	X	X					X	X	X				X	X			
	MW-53S	X		X		X	X	X	X				D	X	X	X			D	X	X			
	NVM-01	X	X	X		X	X	X						X	X	X				X				
	NVM-01I							X												X				
	NVM-01D*																							
Zone B	MW-26S	X	X	X				X	X							Decommissioned								
	MW-26SR							Installed May 2013								X	X			X	X***			
Zones C/D	MW-55S	X			Cr			X		Cr			D			X		Cr	D	X		Cr		
Zone E	MW-27SR	X			Cr			X		Cr						X		Cr		X		Cr		
Sentinel	MW-23S	X						X								X				X				
	MW-15S	X						X					D			X			D	X				
	MW-18S	X						X								X				X				
	MW-19S	X			Cr			X		Cr						X		Cr		X		Cr		
	2R	X						X			N					X				X			N	
	2I							X												X				
	2D*																							
	MW-12S	X	X	X	Cr	X	X	X		Cr	N		D	X	X	X		Cr	D	X		Cr	N	
	MW-12ID							X												X				
	MW-12D*																							
	MW-48S*																							
	MW-48I*																							
	MW-48D*																							
	MW-49S	X						X			N		D			X			D	X			N	
	MW-49I							X												X				
	MW-49D*																							
	NVM-02*																							
	NVM-03*																							
	NVM-04*																							
Property Boundary	MW-22S	X			Cr			X		Cr		L				X		Cr		X		Cr		L
	MW-24S	X						X								X				X				
	1R*																							
	MW-10S	X						X								X				X				
	MW-11S	X						X					D			X			D	X				
	MW-11I							X												X				
	MW-51S	X						X								X				X				
Downgradient	MW-29S	X						X					D			X			D	X				
	MW-29I							X												X				
	MW-30S*																							
	MW-31S	X						X								X				X				
	MW-33S*															Decommissioned								
	MW-34S	X						X								X				X				
	MW-37S	X						X								X				X				
	MW-38S	X						X					D			X			D	X				
	MW-38I							X												X				
	MW-40S	X						X								X				X				
	MW-41SR	X						X								X				X				
	MW-42S	X						X								X				X				
	MW-43S	X						X								X				X				
	MW-43I	X						X								X				X				
	MW-44S							X												X				
	MW-45S							X												X				
	MW-46S*	No access permitted																						
	MW-54I	X						X					D			X			D	X				
Background	MW-20S	X			Cr						N	L						Cr					N	L
	MW-25S							X			N	L				Decommissioned								
	MW-25SR							Installed May 2013												X			N	L
Monitoring Well Total	Monitoring Well Total	36	5	7	7	6	6	47	3	6	7	6	13	6	6	36	1	7	13	48	3	7	7	6
Residential	BONNIE1**																							
	BRADLEY	X						X												X				
	HAND							X												X				
	HOMMES**																							
	LOPEZ							X												X				
	MONTALVO							X												X				
	NORVELL							X												X				
	NORVELL2							X												X				
	RADA							X								X				X				
	REISINGER2*																							
	RINDT**																							
	SALINAS							X												X				
	WEST	X						X								X				X				
	YENNEY1**																							
	YENNEY2	X						X												X				
	YENNEY3							X								X								
Residential Well Total	Residential Well Total	3	0	0	0	0	0	11	0	0	0	0	0	0	0	3	0	0	0	10	0	0	0	0

Notes:
* = Sampling suspended
** = Non functional residential well
*** = No herbicide data since both sample bottles collected for herbicide analysis broke during shipment.
VOC = Volatile Organic Compounds
SVOC = Semi-Volatile Organic Compounds
Herb = Chlorophenoxy and nitrophenol herbicides
Chromium = Total and hexavalent chromium
MNA = Monitored Natural Attenuation Parameters (Nitrate/Nitrite, Ammonia, Sulfate, Iron, Manganese, Chemical Oxygen Demand, Total Dissolved Solids, Total Alkalinity / Bicarbonate, Chloride and Total Organic Carbon)
Landfill = Nitrate, Ammonia, Sulfate, Total Dissolved Solids, Total Alkalinity / Bicarbonate, Chloride, Total Organic Carbon, Calcium, Total Iron, Magnesium, Manganese, Potassium, Sodium

ENVIRONMENTAL PARTNERS INC

TABLE 2
Groundwater Elevation Data
(in feet)

PERIOD: 1/1/2013 - 12/31/2013 | 2013 Annual Report | Page: 1 of 2

Pasco Landfill, Pasco, WA

WELL ID	WATER ELEVATION 1/29/13	WATER ELEVATION 4/15/13	WATER ELEVATION 7/22/13	WATER ELEVATION 10/21/13	RANGE
#9	359.52	360.05	358.21	357.32	2.73
1R	353.00	353.30	352.06	351.59	1.71
2D	353.20	353.48	352.26	351.82	1.66
2I	353.27	353.57	352.34	351.91	1.66
2R	353.16	353.45	352.22	351.78	1.67
4R	358.64	359.10	357.31	356.69	2.41
8R	357.56	358.00	356.38	355.60	2.40
EE-2	353.76	354.09	352.83	352.29	1.80
EE-6R	357.99	358.44	356.78	355.97	2.47
MW-10S	352.40	352.70	351.52	351.10	1.60
MW-11I	352.22	353.02	351.33	350.93	2.09
MW-11S	352.19	352.00	351.34	349.93	2.26
MW-12D	353.32	353.62	352.37	351.91	1.71
MW-12ID	353.33	353.63	352.39	351.91	1.72
MW-12S	353.32	353.61	352.35	351.89	1.72
MW-13S	353.62	353.92	352.67	352.19	1.73
MW-14S	355.11	355.46	354.08	353.49	1.97
MW-15S	354.04	354.36	353.06	352.56	1.80
MW-16S	360.34	360.82	358.88	358.08	2.74
MW-17SR	355.88	356.25	354.77	354.18	2.07
MW-18S	356.28	356.66	355.20	354.49	2.17
MW-19S	358.54	358.98	357.24	356.42	2.56
MW-20S	361.24	361.82	359.76	358.82	3.00
MW-22S	354.14	354.43	353.10	352.63	1.80
MW-23S	357.71	358.08	356.35	355.78	2.30
MW-24S	353.07	353.34	352.13	351.70	1.64
MW-25S	358.89	359.27	Decommissioned		0.38
MW-25SR	Installed May 2, 2013		337.70	336.86	0.84
MW-26S	358.50	358.89	Decommissioned		0.39
MW-26SR	Installed May 1, 2013		354.38	353.63	0.75
MW-27SR	359.25	359.74	357.93	357.06	2.68
MW-28S	364.60	365.26	362.83	361.81	3.45
MW-29I	350.94	351.24	350.22	349.78	1.46
MW-29S	350.82	351.15	350.12	349.67	1.48
MW-30S	350.19	350.51	349.51	349.15	1.36
MW-31S	350.55	350.85	349.94	349.49	1.36
MW-32S	350.45	350.76	349.61	349.36	1.40
MW-33S	351.21	351.50	350.38	Decommissioned	1.12

Vertical Datum is based on NAVD 1988

ENVIRONMENTAL PARTNERS INC

TABLE 2
Groundwater Elevation Data
(in feet)

PERIOD: 1/1/2013 - 12/31/2013 | 2013 Annual Report | Page: 2 of 2

Pasco Landfill, Pasco, WA

WELL ID	WATER ELEVATION 1/29/13	WATER ELEVATION 4/15/13	WATER ELEVATION 7/22/13	WATER ELEVATION 10/21/13	RANGE
MW-34S	349.51	349.80	348.97	348.52	1.28
MW-36S	348.78	349.09	348.37	347.90	1.19
MW-37S	348.78	349.03	348.33	347.81	1.22
MW-38I	348.52	348.81	348.09	347.63	1.18
MW-38S	348.55	348.82	348.10	347.65	1.17
MW-40S	348.14	348.43	347.78	347.31	1.12
MW-41SR	348.29	348.58	347.91	347.47	1.11
MW-42S	347.74	348.03	347.45	346.99	1.04
MW-43I	347.84	348.11	347.46	347.04	1.07
MW-43S	347.92	348.18	347.56	347.13	1.05
MW-44S	347.85	348.11	347.48	347.06	1.05
MW-45S	348.28	348.58	347.89	347.44	1.14
MW-47D	353.57	353.89	352.64	352.15	1.74
MW-47I	353.57	353.86	352.63	352.13	1.73
MW-47S	353.56	353.87	352.60	352.11	1.76
MW-48D	353.82	354.12	352.85	352.33	1.79
MW-48I	353.60	353.90	352.65	352.14	1.76
MW-48S	353.61	353.92	352.67	352.16	1.76
MW-49D	353.09	353.37	352.18	351.72	1.65
MW-49I	352.87	353.13	351.92	351.52	1.61
MW-49S	352.89	353.21	351.98	351.53	1.68
MW-50S	353.80	354.15	352.72	352.35	1.80
MW-51S	352.47	352.76	351.58	351.15	1.61
MW-52S	354.32	354.64	353.35	352.79	1.85
MW-53S	353.79	354.11	352.89	352.35	1.76
MW-54I	346.67	346.93	346.48	346.10	0.83
MW-55S	358.07	358.54	356.85	356.06	2.48
NVM-01	353.51	353.82	352.57	352.08	1.74
NVM-01D	353.51	353.83	352.57	352.06	1.77
NVM-01I	353.50	353.82	352.57	352.07	1.75
NVM-02	353.49	353.78	352.53	352.04	1.74
NVM-03	353.43	353.73	352.51	352.03	1.70
NVM-04	353.21	353.50	352.29	351.83	1.67
NW-1	NM	372.66	NM	368.15	4.51
NW-2	NM	368.39	NM	364.56	3.83
NW-3	NM	366.01	NM	362.52	3.49
NW-4	NM	368.24	NM	364.42	3.82
NW-5	368.58	369.36	366.45	365.36	4.00

NM = Water level not measured.

Vertical Datum is based on NAVD 1988

ENVIRONMENTAL PARTNERS INC

TABLE 3
Evaluation of Vertical Gradients
Zone A Well Clusters
2013 Annual Report
Pasco Landfill, Pasco, WA

Shallow Well	Water Elevation (in feet)	Shallow to Intermediate Vertical Piezometric Gradient (in feet/foot)	Intermediate Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)	Intermediate to Deep Vertical Piezometric Gradient (in feet/foot)	Deep Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)	Shallow to Deep Vertical Piezometric Gradient (in feet/foot)
October 2013										
2R	351.78	-0.005	**2I**	**327.50**	351.91	0.003	**2D**	**297.50**	351.82	-0.001
MW-12S	351.89	-0.001	**MW-12ID**	**326.80**	351.91	<±0.001	**MW-12D**	**293.00**	351.91	<±0.001
MW-47S	352.11	-0.001	**MW-47I**	**326.70**	352.13	-0.001	**MW-47D**	**293.40**	352.15	-0.001
MW-48S	352.16	0.001	**MW-48I**	**327.90**	352.14	-0.005	**MW-48D**	**293.30**	352.33	-0.003
MW-49S	351.53	<±0.001	**MW-49I**	**328.90**	351.52	-0.007	**MW-49D**	**299.50**	351.72	-0.004
NVM-01	352.08	<±0.001	**NVM-01I**	**324.10**	352.07	<±0.001	**NVM-01D**	**296.40**	352.06	<±0.001
Average of Water Elevations and Vertical Hydraulic Gradients - July 2008 Through October 2013										
2R	352.74	-0.004	**2I**	**327.50**	352.85	0.001	**2D**	**297.50**	352.77	-0.001
MW-12S	352.85	-0.001	**MW-12ID**	**326.80**	352.89	<±0.001	**MW-12D**	**293.00**	352.88	<±0.001
MW-47S	353.14	<±0.001	**MW-47I**	**326.70**	353.13	<±0.001	**MW-47D**	**293.40**	353.16	<±0.001
MW-48S	353.19	0.001	**MW-48I**	**327.90**	353.17	-0.004	**MW-48D**	**293.30**	353.38	-0.003
MW-49S	352.47	0.002	**MW-49I**	**328.90**	352.43	-0.005	**MW-49D**	**299.50**	352.67	-0.004
NVM-01	353.20	0.004	**NVM-01I**	**324.10**	353.07	<±0.001	**NVM-01D**	**296.40**	353.07	0.002

Downward gradients follow gravity and are shown as positive numbers. Upward gradients go against gravity and are shown as negative (-) numbers. Example: If a shallow well has a lower water elevation than the cluster's intermediate well, the gradient from the shallow well to the intermediate well will be a negative number.

Vertical Datum is based on NAVD 1988

ENVIRONMENTAL PARTNERS INC

TABLE 4
Evaluation of Vertical Gradients
Off-Property Well Pairs
2013 Annual Report
Pasco Landfill, Pasco, WA

Shallow Well	Water Elevation (in feet)	Shallow to Intermediate Vertical Piezometric Gradient (in feet/foot)	Intermediate Well	Elevation at Center of Screen (in feet)	Water Elevation (in feet)
October 2013					
MW-11S	349.93	-0.048	**MW-11I**	**328.94**	350.93
MW-29S	349.66	-0.007	**MW-29I**	**331.39**	349.78
MW-38S	347.65	0.001	**MW-38I**	**333.17**	347.63
MW-43S	347.13	0.005	**MW-43I**	**327.22**	347.04
Average Water Elevations and Vertical Hydraulic Gradients - April 2011 to October 2013					
MW-11S	351.80	-0.008	**MW-11I**	**328.94**	351.99
MW-29S	350.59	-0.006	**MW-29I**	**331.39**	350.70
MW-38S	348.40	0.002	**MW-38I**	**333.17**	348.36
MW-43S	347.79	0.004	**MW-43I**	**327.22**	347.71

Notes:

Downward gradients are shown as positive numbers. Upward gradients are shown as negative (-) numbers. The intermediate wells were installed in March 2011.

Elevations for MW-29S/I are based on the June 2012 survey measurements.

SITE	DATE	Dissolved Oxygen (mg/l)	Oxidation Reduction Potential (mV)	pH	Specific Conductivity (mS/m)	Temperature (Degrees Celcius)	Turbidity (NTU)
2R	1/30/13	3.48	59	8.15	52.2	16.92	0.73
	4/18/13	2.91	26	8.32	50.8	19.22	0.66
	7/25/13	6.52	67	7.72	56.8	19.12	0.92
	10/23/13	7.21	25	7.78	49.9	14.70	0.00
2I	4/18/13	2.46	47	8.22	49.9	18.52	0.84
	10/23/13	6.83	67	7.62	49.8	16.92	0.00
4R	1/30/13	5.01	137	7.50	63.5	16.25	0.71
	4/17/13	1.90	104	7.79	60.4	17.02	0.71
	7/24/13	3.11	101	7.17	69.9	19.28	0.58
	10/22/13	1.39	91	7.41	62.8	18.40	0.15
EE-2	4/16/13	4.57	110	8.31	51.0	17.03	0.46
	10/23/13	6.49	47	7.90	47.8	13.74	0.00
MW-10S	1/31/13	5.31	29	8.11	52.7	17.14	1.02
	4/16/13	4.47	46	8.26	51.0	16.88	0.59
	7/23/13	6.54	75	7.82	56.3	19.68	1.75
	10/22/13	4.16	13	7.92	50.8	17.84	0.36
MW-11S	1/31/13	5.32	64	7.96	54.6	17.36	1.11
	4/16/13	4.65	81	8.13	52.7	17.49	0.55
	7/23/13	6.06	93	7.70	55.0	20.90	2.54
	10/22/13	4.56	28	7.79	51.6	15.14	0.56
MW-11I	4/16/13	4.34	86	8.18	50.7	16.63	0.38
	10/22/13	4.46	53	7.85	50.1	15.11	0.16
MW-12S	1/30/13	1.45	81	7.95	53.9	17.99	0.79
	2/20/13	4.55	59	7.79	50.3	17.67	1.14
	3/20/13	4.29	41	7.90	50.4	17.81	0.60
	4/17/13	3.27	42	8.17	52.6	18.60	0.81
	5/21/13	2.16	30	8.04	53.0	18.01	0.60
	6/18/13	2.63	56	7.92	53.2	20.15	0.00
	7/24/13	2.77	72	7.53	55.5	23.50	0.82
	10/22/13	2.28	55	7.76	53.8	18.40	0.01
MW-12ID	4/18/13	2.95	39	8.39	49.1	17.95	0.74
	10/22/13	3.64	58	7.95	49.5	17.84	0.00
MW-13S	1/29/13	4.50	96	8.14	51.9	17.75	0.71
	4/18/13	2.91	38	8.27	51.7	18.59	0.79
	7/24/13	4.81	64	7.66	57.2	23.19	0.82
	10/22/13	3.60	50	7.83	51.8	18.25	0.12
MW-15S	1/30/13	2.58	83	7.69	60.1	16.95	0.87
	4/17/13	2.84	56	7.94	56.9	17.12	0.89
	7/24/13	4.52	85	7.26	60.5	21.86	0.13
	10/22/13	2.63	55	7.54	58.1	18.11	0.06
MW-16S	1/30/13	2.40	42	7.58	57.1	16.35	0.40
	4/16/13	0.15	19	7.60	58.7	17.31	0.48
	7/24/13	2.02	24	7.13	55.8	23.96	0.79
	10/23/13	2.51	20	7.46	52.5	17.45	0.00
MW-17SR	1/30/13	6.17	77	7.92	50.7	16.35	0.72
	4/17/13	4.43	47	8.34	49.9	17.23	0.95
	7/24/13	6.62	52	7.69	56.1	18.13	0.49
	10/22/13	3.36	36	7.90	50.0	17.85	0.00
MW-18S	1/30/13	4.20	55	8.18	52.4	16.89	1.20
	4/16/13	5.55	51	8.25	51.6	17.67	0.36
	7/24/13	6.08	54	7.74	53.9	20.78	0.73
	10/23/13	5.48	31	7.92	50.2	16.60	0.00
MW-19S	1/29/13	6.27	73	7.91	61.3	16.17	0.60
	4/16/13	4.92	-8	7.93	58.4	17.46	0.59
	7/24/13	5.74	24	7.43	71.0	23.03	0.83
	10/23/13	4.50	-103	7.59	56.0	19.47	0.42
MW-20S	1/29/13	5.16	84	8.31	50.6	16.74	0.80
	4/16/13	4.45	55	8.31	51.8	17.04	0.51
	7/24/13	5.65	63	7.83	51.4	23.06	0.76
	10/23/13	5.32	33	7.99	50.3	16.64	0.00
MW-22S	1/29/13	4.44	101	8.16	51.1	16.54	0.67
	4/17/13	3.92	95	8.32	50.5	17.07	0.58
	7/24/13	6.40	112	7.64	60.0	20.34	0.74
	10/22/13	3.26	98	7.85	51.1	18.05	0.00

SITE	DATE	Dissolved Oxygen (mg/l)	Oxidation Reduction Potential (mV)	pH	Specific Conductivity (mS/m)	Temperature (Degrees Celcius)	Turbidity (NTU)
MW-23S	1/30/13	3.95	81	8.00	52.1	15.87	0.76
	4/17/13	1.74	79	8.18	54.4	16.72	0.58
	7/24/13	3.66	76	7.59	56.0	20.65	0.89
	10/22/13	1.74	78	7.75	55.9	18.00	0.00
MW-24S	1/30/13	4.10	80	7.95	57.1	16.24	0.45
	4/17/13	3.82	48	8.21	55.9	17.85	0.72
	7/25/13	6.69	76	7.46	67.2	18.24	0.78
	10/22/13	3.38	52	7.76	56.3	18.16	0.00
MW-25S	4/16/13	4.66	79	8.36	50.7	17.03	0.36
MW-25SR	10/23/13	4.97	2	7.99	50.9	18.64	2.30
MW-26S	1/30/13	4.98	127	8.24	50.4	16.35	0.55
	4/16/13	4.46	144	8.33	50.5	16.58	0.38
MW-26SR	7/24/13	6.59	46	7.76	54.8	20.40	1.63
	10/23/13	5.47	8	7.94	50.5	17.16	0.61
MW-27SR	1/29/13	5.09	106	8.18	50.6	16.93	0.65
	4/16/13	4.91	107	8.22	51.5	17.97	0.40
	7/24/13	6.03	79	7.68	55.5	20.80	0.70
	10/23/13	4.76	55	7.90	50.4	18.42	0.00
MW-29S	1/31/13	6.32	72	7.95	58.2	17.99	0.97
	4/16/13	4.34	47	8.20	56.9	17.51	0.89
	7/23/13	6.58	89	7.74	58.3	21.24	1.48
	10/23/13	4.32	20	7.85	53.0	18.90	0.39
MW-29I	4/16/13	3.87	66	8.25	52.7	17.64	0.48
	10/23/13	4.06	31	7.89	51.9	18.65	0.00
MW-31S	1/31/13	5.46	70	7.92	54.8	17.03	0.74
	4/16/13	5.56	57	8.11	53.2	17.34	0.69
	7/23/13	6.39	82	7.66	55.8	20.38	2.11
	10/23/13	4.35	18	7.76	53.3	18.55	0.21
MW-34S	1/29/13	5.55	113	8.07	53.2	16.63	0.58
	4/18/13	4.09	37	8.13	52.0	16.11	0.42
	7/23/13	6.31	111	7.63	55.4	21.36	0.72
	10/23/13	4.53	37	7.76	53.8	18.54	0.08
MW-37S	1/29/13	5.47	93	8.09	53.1	16.73	0.69
	4/18/13	5.10	19	8.00	52.6	16.12	0.84
	7/23/13	6.97	99	7.58	57.2	19.19	1.06
	10/23/13	4.55	11	7.79	53.4	18.67	0.12
MW-38S	1/29/13	6.79	126	8.32	46.9	17.23	0.66
	4/17/13	6.55	89	8.47	44.9	17.71	0.51
	7/23/13	8.81	117	7.88	47.3	20.31	0.72
	10/24/13	5.57	36	7.99	43.8	18.26	0.00
MW-38I	4/17/13	4.75	67	8.41	52.4	17.87	0.76
	10/24/13	4.12	19	7.90	53.1	18.17	0.00
MW-40S	1/29/13	5.62	117	8.18	54.3	16.78	0.63
	4/18/13	4.23	41	8.27	53.4	16.58	0.66
	7/23/13	6.19	104	7.77	55.1	21.86	0.86
	10/23/13	4.39	35	7.89	53.5	18.52	0.04
MW-41SR	1/29/13	6.72	101	8.26	46.4	16.50	3.27
	4/18/13	4.20	32	8.36	45.8	18.46	6.26
	7/23/13	7.22	102	7.80	49.6	20.94	5.84
	10/24/13	4.71	25	7.90	48.5	18.22	1.78
MW-42S	1/29/13	6.88	102	8.16	53.2	17.19	0.50
	4/18/13	4.51	23	8.29	54.2	16.93	0.78
	7/23/13	6.48	99	7.73	53.9	22.74	0.74
	10/24/13	5.45	23	7.82	53.2	18.09	0.13
MW-43S	1/29/13	6.04	106	8.17	54.4	16.43	0.56
	4/17/13	5.03	55	8.33	53.0	17.50	0.61
	7/23/13	5.91	94	7.76	55.2	22.98	0.64
	10/24/13	4.59	38	7.83	54.2	18.00	0.02
MW-43I	1/29/13	5.86	119	8.17	53.6	17.02	0.53
	4/17/13	4.89	61	8.34	52.0	17.11	0.59
	7/23/13	5.85	102	7.76	53.3	23.04	0.94
	10/24/13	4.67	30	7.82	52.8	17.79	0.12
MW-44S	4/17/13	5.51	60	8.20	58.4	17.77	0.62
	10/24/13	5.27	19	7.71	58.3	17.94	0.21

SITE	DATE	Dissolved Oxygen (mg/l)	Oxidation Reduction Potential (mV)	pH	Specific Conductivity (mS/m)	Temperature (Degrees Celcius)	Turbidity (NTU)
MW-45S	4/18/13	3.34	39	8.21	55.6	17.49	0.70
	10/24/13	4.17	24	7.77	56.0	17.68	0.17
MW-47S	1/30/13	0.00	-166	7.69	60.2	18.48	1.80
	2/20/13	0.51	-176	7.68	57.0	18.74	2.64
	3/20/13	0.69	-167	7.68	58.1	18.91	5.90
	4/17/13	0.00	-177	7.90	62.1	19.84	3.36
	5/21/13	0.00	-179	7.78	64.1	18.60	2.86
	6/18/13	0.00	-194	7.75	60.7	19.90	2.24
	7/25/13	0.00	-157	7.37	61.3	21.30	4.34
	10/22/13	0.00	-176	7.52	57.6	18.24	1.96
MW-47I	4/18/13	2.72	63	8.34	50.0	17.88	0.74
	10/22/13	3.91	64	7.89	49.6	17.19	0.00
MW-49S	1/30/13	0.00	57	7.78	59.5	17.28	0.72
	4/17/13	1.39	26	8.01	56.8	17.96	1.43
	7/25/13	0.09	47	7.34	64.3	19.97	0.83
	10/22/13	0.72	29	7.41	36.6	14.89	0.00
MW-49I	4/17/13	3.77	98	8.39	49.4	16.92	1.04
	10/22/13	5.44	95	7.76	48.6	16.26	0.00
MW-50S	1/30/13	0.00	-45	7.72	71.2	18.17	0.79
	2/20/13	2.51	-10	7.75	64.8	19.60	0.88
	3/20/13	1.45	-57	7.73	70.2	19.96	0.51
	4/17/13	0.00	-94	7.94	77.8	20.75	0.87
	5/21/13	0.00	-84	7.78	83.3	20.20	0.71
	6/18/13	0.00	-20	7.78	79.3	20.51	0.36
	7/25/13	0.00	-25	7.36	78.7	23.14	1.29
	10/22/13	0.00	3	7.56	62.8	19.21	0.09
MW-51S	1/30/13	3.58	68	8.14	52.1	16.08	0.44
	4/17/13	3.78	50	8.38	50.3	17.33	0.76
	7/25/13	6.61	49	7.73	56.5	18.67	0.48
	10/22/13	4.80	48	7.85	49.4	14.38	0.00
MW-52S	1/30/13	4.23	104	7.99	60.6	21.29	0.30
	2/20/13	3.15	94	7.89	61.4	21.99	0.81
	3/20/13	3.99	63	7.75	66.4	22.80	0.55
	4/16/13	4.65	103	7.88	63.2	20.57	0.63
	5/21/13	4.67	46	8.04	57.9	21.93	0.76
	6/18/13	3.58	46	8.14	57.5	21.92	0.25
	7/24/13	5.51	78	7.79	57.4	25.79	1.08
	10/23/13	5.42	52	7.84	59.1	19.57	0.00
MW-53S	1/30/13	3.98	110	7.91	64.2	21.21	0.70
	2/20/13	3.10	99	7.95	61.9	20.16	0.77
	3/20/13	3.56	63	7.97	63.4	22.91	0.77
	4/16/13	3.96	129	7.96	67.3	22.45	0.55
	5/21/13	3.72	64	7.88	67.3	23.06	0.86
	6/18/13	2.65	51	7.87	64.0	21.77	0.63
	7/24/13	4.74	88	7.45	65.3	23.81	0.83
	10/23/13	5.80	47	7.68	60.4	16.99	0.00
MW-54I	1/29/13	6.78	185	8.01	57.1	16.57	0.50
	4/17/13	5.82	110	8.20	55.0	16.01	0.54
	7/23/13	5.33	118	7.74	56.7	23.22	0.72
	10/24/13	6.43	73	7.68	57.2	16.55	0.04
MW-55S	1/29/13	5.01	66	8.18	50.1	16.65	0.68
	4/16/13	4.05	43	8.18	51.4	17.02	0.53
	7/24/13	6.09	43	7.70	55.6	20.92	0.87
	10/23/13	4.66	9	7.84	51.3	18.24	0.19
NVM-01	1/30/13	0.00	66	7.79	58.0	18.38	0.76
	2/20/13	3.11	63	7.77	54.8	18.55	0.81
	3/20/13	1.87	43	7.78	55.7	19.05	0.66
	4/18/13	0.00	36	7.98	58.0	18.96	0.84
	5/21/13	0.17	-3	7.91	56.1	18.59	0.94
	6/18/13	0.55	19	7.83	61.7	20.07	0.00
	7/25/13	1.13	42	7.40	64.4	20.82	0.76
	10/22/13	0.85	27	7.59	56.1	18.12	0.00
NVM-01I	4/18/13	2.93	39	8.39	49.9	18.14	0.72
	10/22/13	4.04	51	7.95	49.5	17.03	0.03

SITE	DATE	Dissolved Oxygen (mg/l)	Oxidation Reduction Potential (mV)	pH	Specific Conductivity (mS/m)	Temperature (Degrees Celcius)	Turbidity (NTU)
BRADLEY	1/31/13	3.01	227	7.81	59.6	15.84	0.65
	4/18/13	1.86	182	8.13	56.8	17.16	0.81
	10/24/13	2.50	182	7.68	57.9	16.81	0.00
HAND	4/19/13	1.57	83	8.14	52.6	16.20	0.43
	10/24/13	1.29	101	7.79	54.4	17.06	0.00
LOPEZ	4/19/13	0.48	-116	8.17	52.7	16.18	2.38
	10/24/13	0.30	-134	7.84	54.7	17.29	1.48
MONTALVO	4/19/13	2.47	94	8.11	54.2	15.92	0.91
	10/24/13	3.07	98	7.78	55.2	16.29	0.00
NORVELL	4/18/13	2.37	82	8.20	54.1	16.30	0.78
	10/24/13	3.32	52	7.73	56.2	16.23	0.00
RADA	4/18/13	2.88	68	8.20	54.0	18.82	0.92
	7/25/13	6.61	124	7.58	63.9	16.66	0.92
	10/24/13	3.50	74	7.77	55.3	16.09	0.00
SALINAS	4/19/13	2.88	30	8.18	49.6	15.97	0.70
	10/24/13	3.42	46	7.80	50.8	16.53	0.00
WEST	1/31/13	3.86	47	8.26	45.9	13.60	4.68
	4/18/13	2.08	33	8.52	48.5	15.99	8.30
	7/25/13	5.89	79	7.84	56.0	17.18	3.45
	10/24/13	2.37	30	7.96	46.6	16.52	4.48
YENNEY2	1/31/13	5.28	108	7.99	54.4	15.69	0.60
	4/19/13	3.87	57	7.93	50.6	15.71	1.15
	10/24/13	3.41	16	7.85	52.4	15.96	0.22
YENNEY3	4/19/13	3.98	24	8.22	50.0	15.51	0.93
	7/25/13	7.03	66	7.79	60.3	16.33	1.50

ENVIRONMENTAL PARTNERS INC

TABLE 6
Volitile Organic Compounds in Groundwater
Detected Compounds Only (in ug/L)
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1/2013 - 12/31/2013

Well Group	WELL	DATE	Tetra-chloro-ethene	Trichloro-ethene	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	1,2-Dichloro-ethane	Chloro-form	Ethyl-benzene	Toluene	m,p-Xylene
2013 Draft Clean-up Levels (µg/L)			**0.69**	**2.5**	**0.057**	**16**	**0.38**	**-**	**-**	**615**	**-**
Municipal Solid Waste (MSW) Landfill Wells	4R	1/30/13	**1.5**	0.44	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	**1.2**	0.29	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	**1.4**	0.32	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	**1.9**	0.34	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-16S	1/30/13	0.23	0.14	< 0.020 U	2.2	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	0.42	0.082	< 0.020 U	3.3	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	0.061	< 0.053 U	< 0.020 U	3	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	0.32	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-17SR	1/30/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	0.18	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
Zone A Wells	EE-2	4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	0.073	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-13S	1/29/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-47S	1/30/13	< 0.050 U	0.25	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	< 0.050 U	0.097	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/25/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	< 0.050 U	0.082	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-47I	4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-50S	1/30/13	0.18	0.56	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	0.13	0.41	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/25/13	< 0.050 U	0.29	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	0.39	0.29	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-52S	1/30/13	< 0.050 U	0.12	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-53S	1/30/13	< 0.050 U	0.20	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	0.12	**3.5**	0.022	< 2.0 U	< 0.014 U	< 2.0 U	2.5	30	6.7
		5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	6.4	< 4.0 U
		6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	4.7	< 4.0 U
		7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U

EPA Methods 8260 and 8260SIM
U = Compound not detected above reporting limit.

Results in **bold text** indicate an exceedance of a dCUL.

TABLE 6
Volitile Organic Compounds in Groundwater
Detected Compounds Only (in ug/L)
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1/2013 - 12/31/2013

Well Group	WELL	DATE	Tetra-chloro-ethene	Trichloro-ethene	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	1,2-Dichloro-ethane	Chloro-form	Ethyl-benzene	Toluene	m,p-Xylene
2013 Draft Clean-up Levels (µg/L)			**0.69**	**2.5**	**0.057**	**16**	**0.38**	**-**	**-**	**615**	**-**
Zone A Wells	NVM-01	1/30/13	< 0.050 U	0.24	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/18/13	< 0.050 U	0.06	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/25/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	0.091	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	NVM-01I	4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
Zone B	MW-26S	1/30/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-26SR	7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
Zone C/D	MW-55S	1/29/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
Zone E	MW-27SR	1/29/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	0.079	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
Sentinel Wells	MW-23S	1/30/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	0.18	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-15S	1/30/13	0.36	0.45	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	0.34	0.29	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	0.57	0.13	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-18S	1/30/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-19S	1/29/13	0.23	0.14	< 0.020 U	< 2.0 U	< 0.014 U	3.8	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	0.13	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	0.48	0.11	< 0.020 U	< 2.0 U	< 0.014 U	5.7	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	2R	1/30/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/25/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	0.084	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	2I	4/18/13	< 0.050 U	0.093	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-12S	1/30/13	< 0.050 U	0.30	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	< 0.050 U	0.056	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	0.09	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-12ID	4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U

EPA Methods 8260 and 8260SIM
U = Compound not detected above reporting limit.

Results in **bold text** indicate an exceedance of a dCUL.

ENVIRONMENTAL PARTNERS INC

TABLE 6
Volitile Organic Compounds in Groundwater
Detected Compounds Only (in ug/L)
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1/2013 - 12/31/2013

Well Group	WELL	DATE	Tetra-chloro-ethene	Trichloro-ethene	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	1,2-Dichloro-ethane	Chloro-form	Ethyl-benzene	Toluene	m,p-Xylene
2013 Draft Clean-up Levels (µg/L)			**0.69**	**2.5**	**0.057**	**16**	**0.38**	**-**	**-**	**615**	**-**
Sentinel Wells	MW-49S	1/30/13	< 0.050 U	0.58	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	< 0.050 U	0.15	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/25/13	< 0.050 U	0.14	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	0.12	0.075	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-49I	4/17/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
Property Boundary Wells	MW-22S	1/29/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-24S	1/30/13	0.16	0.33	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	0.13	0.19	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/25/13	0.077	0.17	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	0.50	0.20	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-10S	1/31/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-11S	1/31/13	< 0.050 U	0.23	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-11I	4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-51S	1/30/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/25/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/22/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
Off-Property Wells	MW-29S	1/31/13	< 0.050 U	0.57	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	< 0.050 U	0.37	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	0.28	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-29I	4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-31S	1/31/13	< 0.050 U	0.19	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-34S	1/29/13	< 0.050 U	0.16	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-37S	1/29/13	< 0.050 U	0.15	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-38S	1/29/13	< 0.050 U	0.71	< 0.020 U	< 2.0 U	0.038	3.5	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	< 0.050 U	0.64	0.023	< 2.0 U	< 0.014 U	3.5	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	0.74	0.028	< 2.0 U	< 0.014 U	4.8	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	0.53	< 0.020 U	< 2.0 U	< 0.014 U	4.3	< 2.0 U	< 2.0 U	< 4.0 U
	MW-38I	4/17/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-40S	1/29/13	0.095	0.17	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/18/13	0.10	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U

EPA Methods 8260 and 8260SIM
U = Compound not detected above reporting limit.

Results in **bold text** indicate an exceedance of a dCUL.

Well Group	WELL	DATE	Tetra-chloro-ethene	Trichloro-ethene	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	1,2-Dichloro-ethane	Chloro-form	Ethyl-benzene	Toluene	m,p-Xylene
2013 Draft Clean-up Levels (µg/L)			**0.69**	**2.5**	**0.057**	**16**	**0.38**	**-**	**-**	**615**	**-**
Off-Property Wells	MW-41SR	1/29/13	< 0.050 U	0.35	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/18/13	< 0.050 U	0.24	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-42S	1/29/13	< 0.050 U	0.17	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	0.17	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-43S	1/29/13	< 0.050 U	0.36	< 0.020 U	< 2.0 U	0.043	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	< 0.050 U	0.21	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	0.13	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-43I	1/29/13	< 0.050 U	0.20	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	< 0.050 U	0.079	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-44S	4/17/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-45S	4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-54I	1/29/13	< 0.050 U	0.35	< 0.020 U	< 2.0 U	0.03	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/17/13	< 0.050 U	0.21	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/23/13	< 0.050 U	0.14	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	0.12	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
Upgradient Wells	MW-20S	1/29/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-25S	4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	MW-25SR	10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
Residential Wells	Bradley	1/31/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	Hand	4/19/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	Lopez	4/19/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	Montalvo	4/19/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	Norvell	4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	Norvell2	4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	Rada	4/18/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/25/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	Salinas	4/19/13	0.10	0.11	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	0.34	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	WEST	1/31/13	< 0.050 U	0.16	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/18/13	< 0.050 U	0.059	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/25/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	Yenney2	1/31/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		4/19/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		10/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	Yenney3	4/19/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
		7/25/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U

EPA Methods 8260 and 8260SIM
U = Compound not detected above reporting limit.

Results in **bold text** indicate an exceedance of a dCUL.

ENVIRONMENTAL PARTNERS INC

TABLE 7
Monthly Groundwater Monitoring
Detected Compounds Only (in ug/L)
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1/2013 - 12/31/2013

WELL	DATE	Tetra-chloro-ethene	Trichloro-ethene	1,1-Dichloro-ethene	cis-1,2-Dichloro-ethene	1,2-Dichloro-ethane	Chloro-form	Ethyl-benzene	Toluene	m,p-Xylene
2013 dCULs (µg/L)		**0.69**	**2.5**	**0.057**	**16**	**0.38**	**-**	**-**	**615**	**-**
MW-47S	1/30/13	< 0.050 U	0.25	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	4/17/13	< 0.050 U	0.097	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	7/25/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	10/22/13	< 0.050 U	0.082	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
MW-50S	1/30/13	0.18	0.56	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	4/17/13	0.13	0.41	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	7/25/13	< 0.050 U	0.29	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	10/22/13	0.39	0.29	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
MW-52S	1/30/13	< 0.050 U	0.12	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	4/16/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
MW-53S	1/30/13	< 0.050 U	0.2	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	4/16/13	0.12	**3.5**	0.022	< 2.0 U	< 0.014 U	< 2.0 U	2.5	30	6.7
	5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	6.4	< 4.0 U
	6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	4.7	< 4.0 U
	7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	10/23/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
NVM-01	1/30/13	< 0.050 U	0.24	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	4/18/13	< 0.050 U	0.06	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	7/25/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	10/22/13	0.091	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
MW-12S	1/30/13	< 0.050 U	0.3	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	2/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	3/20/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	4/17/13	< 0.050 U	0.056	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	5/21/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	6/18/13	< 2 U	< 2 U	< 2 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	7/24/13	< 0.050 U	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U
	10/22/13	0.09	< 0.053 U	< 0.020 U	< 2.0 U	< 0.014 U	< 2.0 U	< 2.0 U	< 2.0 U	< 4.0 U

EPA Methods 8260 and 8260SIM
U = Compound not detected above reporting limit.

dCUL = Site-specific draft 2007 cleanup levels
Results in **bold text** indicate an exceedance of a dCUL.

ENVIRONMENTAL PARTNERS INC

TABLE 8
Semi-Volatile Organic Compounds in Groundwater
(in ug/L)
2013 Annual Report
Pasco Landfill, Pasco, WA

SAMPLED: 1/1 - 12/31/2013

SEMI-VOLATILE ORGANIC COMPOUND	Q1-2013					Q2-2013			Q3-2012	Q4-2013		
	MW-12S	MW-26S	MW-47S	MW-50S	NVM-01	MW-26S	MW-52S	MW-53S	MW-26SR	MW-26SR	MW-52S	MW-53S
1,2,4-Trichlorobenzene	R	R	R	R	R	R	R	R	R	R	R	R
1,2-Dichlorobenzene	R	R	R	R	R	R	R	R	R	R	R	R
1,3-Dichlorobenzene	R	R	R	R	R	R	R	R	R	R	R	R
1,4-Dichlorobenzene	R	R	R	R	R	R	R	R	R	R	R	R
1-Methylnaphthalene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,3,4,6-Tetrachlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,4,5-Trichlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,4,6-Trichlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,4-Dichlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,4-Dimethylphenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,4-Dinitrophenol	< 10 UJ	< 10 UJ	< 10 UJ	< 10 UJ	< 10 UJ	< 10 U	< 10 U	< 10 U	< 10 U	< 10 UJ	< 10 UJ	< 10 UJ
2,4-Dinitrotoluene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,6-Dichlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2,6-Dinitrotoluene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2-Chloronaphthalene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2-Chlorophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2-Methylnaphthalene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2-Nitroaniline	< 2 UJ	< 2 UJ	< 2 UJ	< 2 U	< 2 UJ	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
2-Nitrophenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
3,3'-Dichlorobenzidine	NA	NA	NA	NA	NA	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
4,6-Dinitro-2-methylphenol	< 2.5 UJ	< 2.5 UJ	< 2.5 UJ	< 2.5 U	< 2.5 UJ	< 2.5 UJ	< 2.5 UJ	< 2.5 UJ	< 2.5 UJ	< 2.5 U	< 2.5 U	< 2.5 U
4-Bromophenyl phenyl ether	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
4-Chloro-3-methylphenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
4-Chloroaniline	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 UJ	< 2 UJ	< 2 UJ	< 2 U	< 2 U	< 2 U	< 2 U
4-Chlorophenyl phenyl ether	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
4-Nitroaniline	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U	< 2.3 U
4-Nitrophenol	R	R	R	R	R	R	R	R	R	< 4.5 U	R	R
Acenaphthene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Acenaphthylene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Aniline	< 5 U	< 5 U	< 5 U	< 5 UJ	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Anthracene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Azobenzene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benz_a_anthracene	R	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Benzo(a)pyrene	< 0.029 U	< 0.029 U	< 0.029 U	< 0.029 U	< 0.029 U	< 0.029 U	< 0.029 U	< 0.029 U	< 0.029 U	< 0.029 U	< 0.029 U	< 0.029 U
Benzo(b)fluoranthene	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U	< 0.03 U
Benzo(ghi)perylene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Benzo(k)fluoranthene	< 0.021 U	< 0.021 U	< 0.021 U	< 0.021 U	< 0.021 U	< 0.021 U	< 0.021 U	< 0.021 U	< 0.021 U	< 0.021 U	< 0.021 U	< 0.021 U
Benzoic acid	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 UJ	< 10 UJ	< 10 UJ
Benzyl alcohol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 UJ	< 2 U	< 2 U	< 2 U
Bis(2-chloroethoxy)methane	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U

EPA Methods 8270 and 8270SIM
Detections in **bold text**

R = Data refused
NA = Not analyzed

U = Compound not detected above reporting limit
J = Estimated concentration or reporting limit

ENVIRONMENTAL PARTNERS INC

TABLE 8
Semi-Volatile Organic Compounds in Groundwater
(in ug/L)
2013 Annual Report
Pasco Landfill, Pasco, WA

SAMPLED: 1/1 - 12/31/2013

SEMI-VOLATILE ORGANIC COMPOUND	Q1-2013					Q2-2013			Q3-2012	Q4-2013		
	MW-12S	MW-26S	MW-47S	MW-50S	NVM-01	MW-26S	MW-52S	MW-53S	MW-26SR	MW-26SR	MW-52S	MW-53S
Bis(2-chloroethyl)ether	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U
Bis(2-chloroisopropyl) ether	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 UJ	< 2 U	< 2 U	< 2 U
Bis(2-Ethylhexyl) phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	**2.1**	< 2 U	< 2 U	< 2 U	< 2 U
Butyl benzyl phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Carbazole	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Chrysene	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Dibenz_a,h_anthracene	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.03**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Dibenzofuran	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Dibutyl phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	**2.1**	**2.3**	< 2 U	< 2 U	< 2 U	< 2 U
Diethyl phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Dimethyl phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Di-n-octyl phthalate	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Fluoranthene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Fluorene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Hexachlorobenzene	R	R	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U
Hexachlorobutadiene	R	R	R	R	R	R	R	R	< 0.56 U	R	R	R
Hexachlorocyclopentadiene	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 UJ	< 5 UJ	< 5 UJ	< 5 U	< 5 U	< 5 U	< 5 U
Hexachloroethane	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Indeno(1,2,3-cd)pyrene	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	**0.03**	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Isophorone	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
m,p-Cresol (2:1 ratio)	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
m-Nitroaniline	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
Naphthalene	R	R	R	R	R	R	R	R	R	R	R	R
Nitrobenzene	< 2 UJ	< 2 UJ	< 2 UJ	< 2 U	< 2 UJ	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
N-Nitrosodimethylamine	< 2 U	< 2 U	< 2 U	< 2 UJ	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
N-Nitrosodi-n-propylamine	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U
N-Nitrosodiphenylamine	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
o-Cresol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Pentachlorophenol	R	R	R	R	R	R	R	R	R	< 0.5 U	R	R
Phenanthrene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Phenol	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 UJ	< 2 U	< 2 U	< 2 U
Pyrene	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U
Pyridine	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U	< 5 U

EPA Methods 8270 and 8270SIM
Detections in **bold text**

R = Data refused
NA = Not analyzed

U = Compound not detected above reporting limit
J = Estimated concentration or reporting limit

ENVIRONMENTAL PARTNERS INC

TABLE 9
1,4-Dioxane in Groundwater
(in micrograms per liter)
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1 - 12/31/2013

WELL GROUPING	WELL	Q2-2013	Q3-2013
METHOD B VALUE		**0.44**	**0.44**
MSW Landfill	#4R	0.3 J	< 0.2 UJ
	MW-16S	0.4	< 0.2 UJ
Zone A	MW-47S	< 0.2 UJ	< 0.2 UJ
	MW-50S	< 0.2 UJ	< 0.2 UJ
	MW-53S	< 0.2 UJ	< 0.2 UJ
Sentinel	MW-12S	< 0.2 UJ	< 0.2 UJ
	MW-49S	< 0.2 UJ	< 0.2 UJ
Property Boundary	MW-11S	< 0.2 UJ	< 0.2 UJ
Off-Property	MW-29S	< 0.2 UJ	< 0.2 UJ
	MW-38S	< 0.2 UJ	< 0.2 UJ
	MW-54I	< 0.2 UJ	< 0.2 UJ
Other Wells	MW-15S	< 0.2 UJ	< 0.2 UJ
	MW-55S	< 0.2 UJ	< 0.2 UJ

EPA Method 8270
CLARC groundwater, Method B, carcinogen, standard formula value

U = Compound not detected above reporting limit
J = Estimated concentration or reporting limit

ENVIRONMENTAL PARTNERS INC

TABLE 10
Chlorinated Herbicides in Groundwater
(in ug/L)
2013 Annual Report
Pasco Landfill, Pasco, WA

SAMPLED: 1/1 to 12/31/2013

HERBICIDE	Q1-2013							Q2-2013			Q3-2013	Q4-2013	
	MW-12S	MW-26S	MW-47S	MW-50S	MW-52S	MW-53S	NVM-01	MW-26	MW-52S	MW-53S	MW-26SR	MW-52S	MW-53S
2,4,5-T	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ	< 0.04 U	< 0.04 U
2,4-D	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ	< 0.04 U	< 0.04 U
2,4-DB	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ	< 0.04 U	< 0.04 U
4-Nitrophenol	< 0.04 U	< 0.04 U	**0.075**	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ	< 0.04 U	< 0.04 U
Dicamba	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ	< 0.04 U	< 0.04 U
Dichlorprop	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ	< 0.04 U	< 0.04 U
Dinoseb	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ	< 0.04 U	< 0.04 U
MCPA	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ	< 0.04 U	< 0.04 U
Mecoprop	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ	< 0.04 U	< 0.04 U
Pentachlorophenol	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ	< 0.04 U	< 0.04 U
Silvex	< 0.04 UJ	< 0.04 UJ	< 0.04 UJ	< 0.04 UJ	< 0.04 UJ	< 0.04 UJ	< 0.04 UJ	< 0.04 U	< 0.04 U	< 0.04 U	< 0.04 UJ	< 0.04 U	< 0.04 U

EPA Method 8321B
Detections in **bold text**

U = Compound not detected above reporting limit
UJ = Estimated reporting limit

ENVIRONMENTAL PARTNERS INC

TABLE 11
Chromium in Groundwater
(in ug/L)
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1 - 12/31/2013

WELL	Total Chromium				Hexavalent Chromium			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
MW-12S	2.4	0.61	1.6	1.3	< 10 U	< 10 U	< 10 U	< 10 U
MW-13S	2.5	3.5	3.1	2.5	< 10 U	< 10 U	< 10 U	< 10 U
MW-19S	3.1	16	6.1	18	< 10 U	< 10 U	< 10 U	< 10 U
MW-20S	3.3	NS	2	NS	< 10 U	NS	< 10 U	NS
MW-22S	6.6 J	2.7 J	3.7 J	1.9	< 10 U	< 10 U	< 10 U	< 10 U
MW-27SR	1.9	2.1	2	2.1	< 10 U	< 10 U	< 10 U	< 10 U
MW-55S	4.7	4.2	5.7	5.2	< 10 U	< 10 U	< 10 U	< 10 U

Note:
The 2013 draft cleanup level for chromium III is 100 µg/L.

EPA Methods 200.8/6020, and 7196.
NS = Not sampled
NA = Not analyzed
U = Compound not detected above reporting limit.
J = Compound detected. Concentration estimated.

ENVIRONMENTAL PARTNERS INC

TABLE 12
Natural Attenuation Parameters in Groundwater
(in mg/L)
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1 - 12/31/2013

WELL	Quarter	Nitrate (as N)	Nitrite (as N)	Ammonia (as N)	Sulfate	Ferrous Iron	Manganese	Chemical Oxygen Demand	Total Dissolved Solids	Ethene	Ethane	Methane	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Chloride	Total Organic Carbon
2R	Q2	10.4	< 0.043 U	< 0.05 U	60	0 UJ	< 0.0036 U	< 5 U	360	< 0.01 U	< 0.01 U	< 0.01 U	180	180	< 9 U	< 9 U	24	1.1
	Q4	2.7	< 0.001 U	< 0.05 U	77	0 UJ	< 0.0036 U	< 5 U	390	< 0.01 U	< 0.01 U	< 0.01 U	200	180	19	< 9 U	27	1
MW-12S	Q2	9.3	< 0.043 U	< 0.05 U	60	0 UJ	< 0.0036 U	< 5 U	380	< 0.01 U	< 0.01 U	< 0.01 U	190	190	< 9 U	< 9 U	24	1.1
	Q4	2.0	< 0.001 U	< 0.05 U	70	0 UJ	< 0.0036 U	< 5 U	400	< 0.01 U	< 0.01 U	< 0.01 U	210	200	< 9 U	< 9 U	26	1.1
MW-20S	Q2	10.8	< 0.043 U	< 0.05 U	60	0 UJ	0.0014	< 5 U	360	< 0.01 U	< 0.01 U	< 0.01 U	190	190	< 9 U	< 9 U	24	1.2
	Q4	2.5	< 0.001 U	< 0.05 U	65	0 UJ	< 0.001 U	< 5 U	370	< 0.01 U	< 0.01 U	< 0.01 U	200	180	18	< 9 U	22	1.1
MW-25S	Q2	11.1	< 0.043 U	< 0.05 U	57	0 UJ	< 0.0036 U	< 5 U	350	< 0.01 U	< 0.01 U	< 0.01 U	180	180	< 9 U	< 9 U	24	1.1
	Q4	2.5	< 0.001 U	< 0.05 U	66	0 UJ	0.0081	< 5 U	380	< 0.01 U	< 0.01 U	< 0.01 U	200	180	19	< 9 U	22	1
MW-47S	Q2	1.9	< 0.043 U	0.07	100	1.1 J	0.930	< 5 U	430	< 0.01 U	< 0.01 U	< 0.01 U	200	200	< 9 U	< 9 U	45	1.4
	Q4	0.1	0.023	0.059	10	1.4 J	0.960	< 5 U	430	< 0.01 U	< 0.01 U	< 0.01 U	210	210	< 9 U	< 9 U	34	1.2
MW-49S	Q2	5.4	0.3344	< 0.05 U	74	0 UJ	0.064	< 5 U	420	< 0.01 U	< 0.01 U	< 0.01 U	220	220	< 9 U	< 9 U	32	1.4
	Q4	1.1	0.097	< 0.05 U	85	0 UJ	0.190	< 5 U	450	< 0.01 U	< 0.01 U	< 0.01 U	220	220	< 9 U	< 9 U	39	1.3
MW-50S	Q2	8.6	0.3952	0.071	71	0.2 J	2.30	< 5 U	500	< 0.01 U	< 0.01 U	< 0.01 U	260	260	< 9 U	< 9 U	63	1.6
	Q4	2.0	0.091	< 0.05 U	75	0 UJ	1.80	< 5 U	420	< 0.01 U	< 0.01 U	< 0.01 U	230	230	< 9 U	< 9 U	34	1.3

EPA Methods 300.0, 350.1, 6020, RSK-175, SM 2320B, SM 2540C, SM 5220D, SM 5310B, and Hach 8146.
NA = Not analyzed

NO3 x 0.226 = NO3 as N
NO2 x 0.304 = NO2 as N

ENVIRONMENTAL PARTNERS INC

TABLE 13
Landfill Parameters in Groundwater
(in mg/L)
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1 - 12/31/2013

WELL	Quarter	Nitrate (as N)	Ammonia (as N)	Sulfate	Total Dissolved Solids	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Chloride	Total Organic Carbon	Calcium	Total Iron	Magnesium	Manganese	Potassium	Sodium
4R	Q2	8.6	< 0.05 U	62	440	260	260	< 9 U	< 9 U	27	1.3	84	< 0.020 U	24	< 0.001 U	10	34
	Q4	1.7	< 0.05 U	66	460	300	300	< 9 U	< 9 U	26	1.3	94	< 0.020 U	24	0.0077 J	7.6	36
MW-16S	Q2	6.8	< 0.05 U	60	430	260	260	< 9 U	< 9 U	23	1.3	75	0.045	27	0.0074	6.8	33
	Q4	1.9	< 0.05 U	64	400	220	220	< 9 U	< 9 U	22	1.1	74	0.027	20	0.0032	7	33
MW-17SR	Q2	10.6	< 0.05 U	60	370	190	190	< 9 U	< 9 U	23	1.1	60	< 0.020 U	23	< 0.001 U	6.6	32
	Q4	2.5	< 0.05 U	66	360	200	190	12	< 9 U	22	1.1	61	< 0.020 U	23	< 0.001 U	6.4	32
MW-20S	Q2	10.8	< 0.05 U	60	360	190	190	< 9 U	< 9 U	24	1.2	59	0.076	23	0.0014	6.7	32
	Q4	2.5	< 0.05 U	65	370	200	180	18	< 9 U	22	1.1	58	< 0.020 U	23	< 0.001 U	6.5	32
MW-22S	Q2	10.6	< 0.05 U	61	390	190	190	< 9 U	< 9 U	23	1.1	60	0.35	22	0.0011	7.2	35
	Q4	2.5	< 0.05 U	67	360	210	190	12	< 9 U	23	1.2	64	< 0.020 U	23	< 0.001 U	7.2	34
MW-25S	Q2	11.1	< 0.05 U	57	350	180	180	< 9 U	< 9 U	24	1.1	60	0.033	21	< 0.0036 U	7.9	35
	Q4	2.5	< 0.05 U	66	380	200	180	19	< 9 U	22	1	61	0.48	22	0.0081	7.9	33

EPA Methods 300.0, 350.1, 6010, SM 2320B, SM 2540C, and SM 5310B.

U = Compound not detected above reporting limit.
J = Compound detected. Concentration estimated.

ENVIRONMENTAL PARTNERS INC

TABLE 14
VOCs in Residential Wells
Detected Compounds Only
(in ug/L)
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1/2013 - 12/31/2013

Volatile Organic Compound	Q1-2013	Q2-2013		Q3-2012	Q4-2012	2013 Draft Clean-up Level (µg/L)
	West	Salinas	West	--	Salinas	
Tetrachloroethene	< 0.050 U	0.10	< 0.050 U	No VOCs were detected in residential wells	0.34	**0.69**
Trichloroethene	0.16	0.11	0.059		< 0.053 U	**2.5**

EPA Methods 8260 and 8260SIM
U = Compound not detected above reporting limit.

ENVIRONMENTAL PARTNERS INC

TABLE 15
SVE System Operational Parameters
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 10/1 - 12/31/2013

Well	Date	VOC Sample	Well Head Vacuum (in. H_2O)	Skid Vacuum (in. H_2O)	Skid Airflow (cfm)	Well Head Airflow (cfm)	Dilution Airflow (cfm)	Well Head Temperature (F)	Well Head CO2 (%)	Well Head O2 (%)	Well Head Balance Gas (%)	Well Head PID (ppm)	Skid LEL (%)	Well Head LEL (%)
VEW-06S	10/7/13	--	-54	--	--	89	0	122	5.1	14.2	80.1	1,690	--	12
VEW-06S	10/16/13	x	-54	--	--	92	0	122	5.1	13.9	80.4	2,156	--	9
VEW-06S	10/21/13	--	-54	--	--	91	0	122	5.0	14.3	80.0	2,043	--	11
VEW-06S	10/28/13	--	-56	--	--	77	0	120	5.0	14.5	80.0	3,367	--	10
VEW-06S	11/4/13	--	-38	--	--	80	0	122	4.6	14.6	80.2	3,400	--	9
VEW-06S	11/11/13	x	-55	--	--	82	0	121	4.8	15.1	79.6	3,014	--	8
VEW-06S	11/18/13	--	-55	--	--	84	0	121	5.8	12.7	81.0	3,002	--	9
VEW-06S	11/25/13	--	-54	--	--	78	0	120	4.9	14.9	79.6	2,707	--	9
VEW-06S	12/2/13	--	-56	--	--	70	0	118	5.1	14.9	79.6	2,657	--	10
VEW-06S	12/9/13	--	0.0	--	--	--	--	--	--	--	--	--	--	--
VEW-06S	12/16/13	--	0.1	--	--	--	--	--	--	--	--	--	--	--
VEW-06S	12/26/13	--	-1.0	--	0	0	0	109	9.5	7.8	82.8	1,742	--	4
VEW-06S	12/30/13	--	-1.3	--	0	0	0	117	9.4	7.2	83.1	2,195	--	5
VEW-06I	10/7/13	--	-2.4	--	--	5	0	131	15.2	2.7	76.9	3,632	--	100
VEW-06I	10/16/13	x	-2.4	--	--	5	0	135	15.2	2.7	77.5	4,437	--	100
VEW-06I	10/21/13	--	-2.3	--	--	5	0	133	15.0	3.0	77.6	3,714	--	97
VEW-06I	10/28/13	--	-2.3	--	--	5	0	130	15.2	3.1	77.8	4,872	--	81
VEW-06I	11/4/13	--	-2.7	--	--	5	0	136	14.3	3.4	79.4	4,443	--	80
VEW-06I	11/11/13	x	-2.3	--	--	5	0	132	15.3	3.2	79.0	4,301	--	65
VEW-06I	11/18/13	--	-2.7	--	--	5	0	135	18.7	0.5	76.2	4,720	--	91
VEW-06I	11/25/13	--	-1.9	--	--	5	0	122	14.8	3.7	78.4	3,838	--	61
VEW-06I	12/2/13	--	-2.3	--	--	5	0	122	15.8	3.7	78.4	4,760	--	56
VEW-06I	12/9/13	--	-0.7	--	--	--	--	--	--	--	--	--	--	--
VEW-06I	12/16/13	--	-0.7	--	--	--	--	--	--	--	--	--	--	--
VEW-06I	12/26/13	--	-1.5	--	0	0	0	137	18.3	0.0	79.7	9,999	--	63
VEW-06I	12/30/13	--	-0.1	--	0	0	0	132	17.7	0.0	78.2	9,999	--	85
VEW-06D	10/7/13	--	-6.6	--	--	92	0	101	5.9	14.3	79.4	998	--	9
VEW-06D	10/16/13	x	-7.6	--	--	102	0	102	6.3	13.5	79.9	1,252	--	5
VEW-06D	10/21/13	--	-7.8	--	--	100	0	102	6.2	13.9	79.4	1,414	--	8
VEW-06D	10/28/13	--	-7.7	--	--	100	0	100	6.2	14.2	79.2	1,702	--	8
VEW-06D	11/4/13	--	-7.2	--	--	104	0	102	5.4	14.5	79.7	1,787	--	6
VEW-06D	11/11/13	x	-7.7	--	--	94	0	100	6.3	14.0	79.3	1,878	--	5
VEW-06D	11/18/13	--	-5.4	--	--	98	0	104	6.3	13.6	79.6	1,693	--	7
VEW-06D	11/25/13	--	-5.9	--	--	96	0	102	6.2	14.3	79.2	1,738	--	7
VEW-06D	12/2/13	--	-6.9	--	--	94	0	100	6.4	14.3	79.2	1,651	--	6
VEW-06D	12/9/13	--	-8.4	-57	114	114	0	102	7.5	12.8	79.3	3,590	13	7
VEW-06D	12/16/13	--	-9.6	-54	116	116	0	102	6.4	13.4	79.9	4,813	19	4
VEW-06D	12/26/13	--	-8.6	-47	105	105	0	100	6.1	14.7	79.2	9,999	9	2
VEW-06D	12/30/13	--	-8.8	-50	130	130	0	98	7.2	13.0	79.6	9,999	5	5

VEW-06S, VEW-06I, VEW-07S, and VEW-07I were shut off on December 2, 2013.

Well	Date	VOC Sample	Well Head Vacuum (in. H_2O)	Skid Vacuum (in. H_2O)	Skid Airflow (cfm)	Well Head Airflow (cfm)	Dilution Airflow (cfm)	Well Head Temperature (F)	Well Head CO2 (%)	Well Head O2 (%)	Well Head Balance Gas (%)	Well Head PID (ppm)	Skid LEL (%)	Well Head LEL (%)
VEW-07S	10/7/13	--	-34	--	--	109	0	123	4.6	14.4	78.0	3,673	--	44
VEW-07S	10/16/13	x	-34	--	--	109	0	122	4.5	14.3	79.7	4,665	--	26
VEW-07S	10/21/13	--	-34	--	--	105	0	122	4.6	14.7	79.5	3,704	--	24
VEW-07S	10/28/13	--	-35	--	--	110	0	121	4.8	14.4	79.3	5,530	--	27
VEW-07S	11/4/13	--	-36	--	--	111	0	122	4.3	14.6	80.1	4,948	--	21
VEW-07S	11/11/13	x	-36	--	--	110	0	121	4.9	14.1	80.0	6,747	--	17
VEW-07S	11/18/13	--	-36	--	--	116	0	121	5.6	12.4	80.6	6,212	--	26
VEW-07S	11/25/13	--	-37	--	--	115	0	121	4.5	14.7	79.2	4,713	--	19
VEW-07S	12/2/13	--	-37	--	--	113	0	120	4.8	14.5	79.9	4,935	--	15
VEW-07S	12/9/13	--	0.0	--	--	--	--	--	--	--	--	--	--	--
VEW-07S	12/16/13	--	-0.1	--	--	--	--	--	--	--	--	--	--	--
VEW-07S	12/26/13	--	0.0	--	0	0	0	109	9.5	7.8	82.8	1,742	--	4
VEW-07S	12/30/13	--	0.0	--	0	0	0	118	9.6	7.2	82.6	2,997	--	12
VEW-07I	10/7/13	--	-26.8	-61	123	18	105	135	10.8	5.4	60.5	4,125	11	100
VEW-07I	10/16/13	x	-24.6	-63	125	21	104	137	10.2	5.8	75.5	4,587	11	100
VEW-07I	10/21/13	--	-24.0	-64	124	20	104	137	10.7	5.3	70.0	4,218	7	100
VEW-07I	10/28/13	--	-24.7	-63	126	23	103	135	11.6	4.7	68.2	4,431	2	100
VEW-07I	11/4/13	--	-40.8	-50	122	16	106	135	11.6	4.1	72.6	3,468	38	100
VEW-07I	11/11/13	x	-24.9	-58	125	19	106	137	11.7	4.8	76.1	4,818	32	100
VEW-07I	11/18/13	--	-26.1	-60	123	18	105	139	13.0	2.5	65.9	5,547	29	100
VEW-07I	11/25/13	--	-27.0	-62	125	18	107	139	10.8	5.5	73.1	4,939	27	100
VEW-07I	12/2/13	--	-26.3	-57	125	19	106	138	11.9	4.5	76.1	4,428	32	100
VEW-07I	12/9/13	--	0.0	--	--	--	--	--	--	--	--	--	--	--
VEW-07I	12/16/13	--	-0.1	--	--	--	--	--	--	--	--	--	--	--
VEW-07I	12/26/13	--	0.0	--	0	0	0	137	12.5	5.0	81.0	9,999	--	40
VEW-07I	12/30/13	--	0.0	--	0	0	0	138	12.5	3.6	80.8	9,999	--	64
VEW-07D	10/7/13	--	-9.4	--	--	105	0	96	2.1	18.3	78.9	1,314	--	11
VEW-07D	10/16/13	x	-9.3	--	--	105	0	97	2.0	17.9	79.6	1,405	--	12
VEW-07D	10/21/13	--	-9.7	--	--	109	0	96	2.1	18.4	78.7	1,401	--	15
VEW-07D	10/28/13	--	-7.1	--	--	109	0	95	2.2	18.5	78.9	1,966	--	9
VEW-07D	11/4/13	--	-9.2	--	--	103	0	96	2.0	18.1	79.6	1,887	--	5
VEW-07D	11/11/13	x	-8.6	--	--	107	0	96	2.4	17.8	79.6	1,932	--	3
VEW-07D	11/18/13	--	-7.4	--	--	106	0	99	2.6	17.5	79.3	1,861	--	7
VEW-07D	11/25/13	--	-8.4	--	--	109	0	97	2.2	18.3	79.1	1,853	--	8
VEW-07D	12/2/13	--	-8.6	--	--	109	0	95	2.3	18.2	79.0	1,938	--	7
VEW-07D	12/9/13	--	-10.9	-58	125	125	0	97	2.8	17.0	80.8	3,948	10	3
VEW-07D	12/16/13	--	-10.9	-55	118	118	0	98	2.4	17.6	79.9	3,899	17	1
VEW-07D	12/26/13	--	-9.8	-46	109	109	0	96	3.1	17.4	79.1	3,312	13	9
VEW-07D	12/30/13	--	-10.4	-52	124	124	0	94	2.9	17.4	79.0	2,740	13	11

VEW-06S, VEW-06I, VEW-07S, and VEW-07I were shut off on December 2, 2013.

Well	Date	VOC Sample	Well Head Vacuum (in. H_2O)	Skid Vacuum (in. H_2O)	Skid Airflow (cfm)	Well Head Airflow (cfm)	Dilution Airflow (cfm)	Well Head Temperature (F)	Well Head CO2 (%)	Well Head O2 (%)	Well Head Balance Gas (%)	Well Head PID (ppm)	Skid LEL (%)	Well Head LEL (%)
VMW-51I	10/7/13	--	-1.3	--	--	--	--	113	20.2	0.3	78.9	725	--	11
VMW-51I	10/16/13	--	-1.5	--	--	--	--	111	21.1	0.0	78.5	836	--	8
VMW-51I	10/21/13	--	-1.4	--	--	--	--	113	20.5	0.0	79.0	852	--	10
VMW-51I	10/28/13	--	-1.2	--	--	--	--	110	20.5	0.1	78.7	1,130	--	9
VMW-51I	11/4/13	--	-1.4	--	--	--	--	110	20.0	0.1	79.2	1,013	--	9
VMW-51I	11/11/13	--	-1.5	--	--	--	--	109	21.1	0.0	78.3	1,145	--	9
VMW-51I	11/18/13	--	-1.0	--	--	--	--	111	21.0	0.0	78.5	1,052	--	10
VMW-51I	11/25/13	--	-1.3	--	--	--	--	108	20.8	0.0	78.7	1,089	--	9
VMW-51I	12/2/13	--	-1.5	--	--	--	--	108	20.8	0.0	78.7	1,046	--	9
VMW-51I	12/9/13	--	-0.1	-52	--	--	--	108	23.3	0.0	76.5	617	--	6
VMW-51I	12/16/13	--	-0.3	-48	--	--	--	109	21.8	0.0	77.8	1,363	--	6
VMW-51I	12/26/13	--	-0.2	-46	--	--	--	106	23.0	0.2	75.6	1,195	--	19
VMW-51I	12/30/13	--	-0.3	-41	--	--	--	108	23.8	0.2	75.4	1,261	--	6
VMW-50S	12/9/13	--	-0.5	-51	--	--	--	72	15.7	7.3	77.1	80	--	0
VMW-50S	12/16/13	--	-0.8	-52	--	--	--	76	11.0	9.7	79.3	78	--	0
VMW-50S	12/26/13	--	-0.8	-47	--	--	--	71	14.7	7.3	77.6	121	--	4
VMW-50S	12/30/13	--	-0.6	-47	--	--	--	70	14.2	7.7	77.3	49	--	2

VEW-06S, VEW-06I, VEW-07S, and VEW-07I were shut off on December 2, 2013.

ENVIRONMENTAL PARTNERS INC

TABLE 16
Vacuum Monitoring
(in inches of water)
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1 - 12/31/2013

Date	VEW-06S	VEW-06I	VEW-06D	VEW-07S	VEW-07I	VEW-07D	VEW-04	VEW-05	VMP-01	VMP-02	VMP-03	VMP-04	VMP-05	VMP-06	VMP-07	VMP-08	VMP-09	VMP-10	VMW-50S	VMW-51I	VMW-51D
3/11/13	-51	-7.3	-5.9	-27	-21.8	-7.4	-0.1	-1.1	-1.2	-1.7	-1.9	-6.4	-8.2	-1.8	-0.6	-1.4	-1.0	-0.9	-0.9	-1.5	-1.3
4/9/13	-57	-2.3	-5.8	-26	-25.4	-7.2	-0.5	-0.9	-1.2	-1.5	-2.0	-6.7	-7.5	-1.6	-0.5	-1.4	-1.0	-0.8	--	-1.3	-1.2
5/6/13	-52	-2.3	-7.1	-33	-25.2	-7.4	-0.7	-1.1	-1.1	-1.7	-1.8	-6.4	-9.1	-1.9	-0.5	-1.4	-1.1	-0.8	--	-1.4	-1.4
5/28/13	-54	-2.5	-7.6	-34	-24.7	-8.1	-1.0	-1.3	-1.2	-1.6	-1.8	-5.9	-9.4	-2.0	-0.5	-1.5	-1.1	-0.9	--	-1.5	-1.6
6/24/13	-54	-2.4	-7.5	-34	-26.4	-7.9	-0.7	-1.0	-1.2	-1.7	-1.8	-5.8	-9.4	-1.9	-0.6	-1.5	-1.2	-0.9	--	-1.5	-1.0
7/22/13	-53	-2.2	-7.9	-34	-25.3	-9.0	-1.4	-1.7	-1.2	-1.8	-1.8	-5.9	-9.2	-1.9	-0.6	-1.5	-1.2	-0.9	--	-1.7	-2.0
8/19/13	-53	-2.3	-7.6	-34	-24.1	-8.8	-1.1	-1.4	-1.2	-1.6	-1.8	-5.6	-9.1	-1.8	-0.6	-1.5	-1.2	-0.9	--	-1.4	-1.6
9/16/13	-57	-2.1	-7.3	-33	-24.2	-8.9	-0.9	-1.3	-1.2	-1.5	-1.6	-5.1	-8.9	-1.7	-0.5	-1.3	-1.0	-0.8	--	-1.4	-1.6
10/16/13	-54	-2.4	-7.6	-34	-24.6	-9.3	-1.0	-1.3	-1.2	-1.6	-1.7	-5.4	-9.2	-1.7	-0.6	-1.4	-1.2	-1.0	--	-1.5	-1.6
11/11/13	-55	-2.3	-7.7	-36	-24.9	-8.6	-1.2	-1.5	-1.1	-1.6	-1.7	-5.3	-9.5	-1.8	-0.6	-1.5	-1.2	-0.9	--	-1.5	-1.7
12/9/13	0.0	-0.7	-8.4	0.0	0.0	-10.9	-0.3	-0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.5	-0.1	-0.9
12/16/13	0.1	-0.7	-9.6	-0.1	-0.1	-10.9	0.0	-0.1	-1.0	-1.2	-0.6	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.8	-0.3	-0.1
12/26/13	-1.0	-1.5	-8.6	0.0	0.0	-9.8	0.0	-0.1	-1.0	-1.2	-0.6	0.0	0.0	0.0	-0.1	-0.1	0.0	0.0	-0.8	-0.2	0.0
12/30/13	-1.3	-0.1	-8.8	0.0	0.0	-10.4	0.0	-0.2	-0.7	-1.1	-0.5	-0.1	-0.1	0.0	-0.1	-0.1	0.0	0.0	-0.6	-0.3	-0.1

ENVIRONMENTAL PARTNERS INC

TABLE 17
SVE System Analytical Data and Removal Rates
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 10/1 - 12/31/2013

Sample Location	Sample Date	Tetra chloro ethene	Trichloro ethene	1,1-Dichloro ethene	cis-1,2-Dichloro ethene	trans-1,2-Dichloro ethene	Vinyl chloride	1,1,1-Trichloro ethane	1,1-Dichloro ethane	1,2-Dichloro ethane	Chloro ethane	Chloro form	Methylene chloride	Chloro methane	1,2,3-Trichloro benzene
SV-FS	10/16/13	8.6	150	1.2	3.3	< 0.20 U	0.49	6.8	26	12	2.3	0.39	72	2.4	0.28
	10/28/13	14	200	1.5	3	< 0.20 U	0.42	7.1	24	11	2.5	0.4	77	1.9	0.63
	11/11/13	2.3	83	0.79	0.52	< 0.20 U	0.066	4.8	4.9	2.5	< 0.20 U	0.42	63	< 0.20 U	0.22
	11/25/13	14	160	1.9	3.5	< 0.20 U	0.56	7.7	23	12	3.8	0.55	70	3.2	0.26
	12/9/13	6.7	120	3.1	2.8	< 0.20 U	0.49	6.5	9.3	5.1	0.6	0.6	76	0.62	< 0.20 U
	12/26/13	51	400	15	10	0.22	1.4	26	27	12	1.3	2.2	210	0.28	< 0.20 U
VEW-06S	10/16/13	10	160	0.65	3.5	< 0.20 U	0.46	1	15	12	4.1	0.36	67	4.3	< 0.20 U
	11/11/13	4	74	0.42	2	< 0.20 U	0.24	0.39	9.3	8	3.5	0.29	61	< 0.20 U	< 0.20 U
VEW-06I	10/16/13	19	250	2.5	16	0.48	1.2	5.1	38	19	8.4	0.76	150	38	< 0.20 U
	11/11/13	7	93	1.5	8.9	0.27	0.59	1.2	15	8.3	5.9	0.45	98	23	< 0.20 U
VEW-06D	10/16/13	8	74	1.9	2.2	< 0.20 U	0.21	5.5	5.2	7.3	< 0.20 U	0.74	44	< 0.20 U	< 0.20 U
	11/11/13	3	120	1.4	1.3	< 0.20 U	0.12	2.9	3.3	3.5	< 0.20 U	0.52	43	< 0.20 U	0.23
	12/9/13	10	150	5.2	4.7	< 0.20 U	0.64	6.9	8.9	7	< 0.20 U	0.78	110	< 0.20 U	< 0.20 U
VEW-07S	10/16/13	9	140	1.6	5.6	< 0.20 U	0.92	9.8	61	14	6.2	0.37	120	5.2	0.28
	11/11/13	7	150	9	5.1	0.56	4.4	11	38	11	8.6	1.2	100	5.2	0.23
VEW-07I	10/16/13	62	1,000	9	41	0.91	4.9	100	230	120	27	1.2	710	30	< 0.20 U
	11/11/13	37	910	8.3	24	0.55	3.7	46	160	63	< 0.20 U	1.1	700	13	0.22
VEW-07D	10/16/13	5	92	0.67	0.91	< 0.20 U	< 0.02 U	7	8.1	2.5	< 0.20 U	0.54	14	< 0.20 U	< 0.20 U
	11/11/13	5	48	1.7	4	< 0.20 U	0.58	7.5	7.5	12	5.1	0.34	30	3.4	< 0.20 U
	12/9/13	6.8	140	1.7	1.1	< 0.20 U	0.22	7.7	8.9	3.5	< 0.20 U	0.49	59	< 0.20 U	< 0.20 U

Detected Compounds Only
Concentrations are in µg/L
Compound names in blue text make up 1% or more of total VOCs

ENVIRONMENTAL PARTNERS INC

TABLE 17
SVE System Analytical Data and Removal Rates
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 10/1 - 12/31/2013

Sample Location	Sample Date	1,2,4-Trichloro benzene	1,2-Dichloro benzene	1,3-Dichloro benzene	1,4-Dichloro benzene	Chloro benzene	Benzene	Ethyl benzene	1,2,4-Trimethyl benzene	1,3,5-Trimethyl benzene	n-propyl benzene	Isopropyl benzene (Cumene)	n-butyl Benzene	**Toluene**	p-Isopropyl toluene
SV-FS	10/16/13	< 0.20 U	2.4	< 0.20 U	0.2	0.26	2.5	150	35	14	9.4	7.1	0.71	3,000	0.47
	10/28/13	0.42	3.3	< 0.20 U	0.35	0.41	2.8	190	65	40	19	13	3.3	1,400	1.5
	11/11/13	< 0.20 U	0.56	< 0.20 U	< 0.20 U	< 0.20 U	0.51	63	6.3	4	2.1	1.7	0.21	680	< 0.20 U
	11/25/13	< 0.20 U	3.1	< 0.20 U	0.26	0.42	3.1	220	53	31	22	13	3	2,800	1.3
	12/9/13	< 0.20 U	0.64	< 0.20 U	< 0.20 U	< 0.20 U	1.2	70	11	6.4	3.3	1.8	0.21	620	< 0.20 U
	12/26/13	< 0.20 U	5.1	0.3	0.45	0.47	5.6	300	81	54	37	16	5.1	2,300	3.2
VEW-06S	10/16/13	< 0.20 U	0.73	< 0.20 U	< 0.20 U	0.26	2.4	150	12	9.2	7.3	6.7	0.29	1,500	0.35
	11/11/13	< 0.20 U	0.36	< 0.20 U	< 0.20 U	< 0.20 U	1.8	60	12	6.5	3.2	2.7	0.47	1,000	0.25
VEW-06I	10/16/13	< 0.20 U	0.87	< 0.20 U	< 0.20 U	0.65	8.7	220	26	13	12	14	0.35	6,800	0.52
	11/11/13	< 0.20 U	0.65	< 0.20 U	< 0.20 U	0.26	4.4	170	27	12	7.1	5.8	0.7	1,000	0.41
VEW-06D	10/16/13	< 0.20 U	0.79	< 0.20 U	< 0.20 U	< 0.20 U	1	67	13	8.2	4.6	3.4	0.29	550	0.29
	11/11/13	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	0.4	130	3.8	2.3	1.7	1.4	< 0.20 U	750	< 0.20 U
	12/9/13	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	1.6	65	1.8	1.4	1.3	1.1	< 0.20 U	880	< 0.20 U
VEW-07S	10/16/13	< 0.20 U	1.1	< 0.20 U	< 0.20 U	0.38	3.6	230	38	29	11	8.4	0.47	7,500	0.58
	11/11/13	< 0.20 U	3.7	< 0.20 U	0.29	0.59	14	160	23	13	9.1	14	1.3	5,300	0.51
VEW-07I	10/16/13	< 0.20 U	0.75	< 0.20 U	< 0.20 U	0.6	15	410	13	9.2	7.9	9.1	0.27	55,000	0.25
	11/11/13	< 0.20 U	3.1	< 0.20 U	0.26	0.53	14	500	13	5.2	13	11	1	96,000	0.42
VEW-07D	10/16/13	< 0.20 U	0.99	< 0.20 U	< 0.20 U	< 0.20 U	0.54	99	25	11	5.4	3.4	0.34	830	0.35
	11/11/13	< 0.20 U	1.2	< 0.20 U	< 0.20 U	0.23	2.8	44	15	8.7	6.6	5.2	0.52	530	0.22
	12/9/13	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	0.9	100	3.9	3.1	2.4	1.5	< 0.20 U	720	< 0.20 U

Detected Compounds Only
Concentrations are in µg/L
Compound names in blue text make up 1% or more of total VOCs

ENVIRONMENTAL PARTNERS INC

TABLE 17
SVE System Analytical Data and Removal Rates
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 10/1 - 12/31/2013

Sample Location	Sample Date	m,p-Xylene	o-Xylene	4-Methyl-2-pentanone (MIBK)	2-butanone (MEK)	Acetone	Naptha lene	Trichloro fluoro methane (CFC-11)	Carbon disulfide	Dichloro difluoro methane (CFC-12)	Ethanol	Total VOCs (µg/L) [X]	Flow Rate (scfm) [Y]	Removal Rate (lbs/day)
SV-FS	10/16/13	410	110	470	760	590	0.79	2.6	< 0.20 U	< 0.20 U	430	**6,281**	533	**301**
	10/28/13	470	140	460	790	610	1.7	3.1	< 0.20 U	< 0.20 U	1,100	**5,657**	522	**266**
	11/11/13	170	54	220	650	550	0.45	< 0.20 U	< 0.20 U	< 0.20 U	280	**2,845**	518	**133**
	11/25/13	750	220	530	990	780	1.5	2.3	< 0.20 U	< 0.20 U	1,400	**8,124**	523	**382**
	12/9/13	200	48	120	570	780	< 0.20 U	0.32	< 0.20 U	0.3	1,100	**3,765**	239	**81**
	12/26/13	850	210	450	830	710	0.69	1.8	0.3	< 0.20 U	12,000	**18,617**	214	**358**
VEW-06S	10/16/13	420	120	350	500	480	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	440	**4,278**	92	**35**
	11/11/13	160	55	280	430	490	0.55	< 0.20 U	< 0.20 U	< 0.20 U	920	**3,586**	82	**26**
VEW-06I	10/16/13	660	190	1,300	2,900	1,400	0.23	< 0.20 U	1.6	< 0.20 U	450	**14,546**	5	**7**
	11/11/13	590	160	580	2,500	1,400	0.59	< 0.20 U	0.97	< 0.20 U	2,900	**9,623**	5	**4**
VEW-06D	10/16/13	180	56	110	430	310	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	440	**2,323**	102	**21**
	11/11/13	320	110	230	380	430	0.4	< 0.20 U	< 0.20 U	< 0.20 U	190	**2,729**	94	**23**
	12/9/13	150	28	120	530	370	< 0.20 U	0	< 0.20 U	0.49	83	**2,538**	114	**26**
VEW-07S	10/16/13	620	170	750	1,200	1,000	0.29	8	< 0.20 U	< 0.20 U	280	**12,225**	109	**120**
	11/11/13	1,100	130	680	1,500	1,200	0.73	8	< 0.20 U	< 0.20 U	1,600	**12,109**	110	**120**
VEW-07I	10/16/13	1,100	260	3,900	9,700	5,200	0.21	48	0.41	< 0.20 U	450	**78,461**	21	**148**
	11/11/13	1,400	450	9,900	15,000	8,900	0.73	< 0.20 U	< 0.20 U	< 0.20 U	17,000	**151,179**	19	**258**
VEW-07D	10/16/13	280	96	250	480	460	0.24	< 0.20 U	< 0.20 U	< 0.20 U	< 1 U	**2,673**	105	**25**
	11/11/13	120	37	210	490	490	0.6	5	< 0.20 U	< 0.20 U	1,500	**3,592**	107	**35**
	12/9/13	290	63	150	550	460	< 0.20 U	0.23	< 0.20 U	< 0.20 U	300	**2,874**	125	**32**

Removal Rate in lbs/day = (X) ug/l x 28.32 L/ft3 x (Y) ft3/min x 0.002205 lbs/gm / 1,000,0000 ug/gm x 1440 min/day

Detected Compounds Only
Concentrations are in µg/L
Compound names in blue text make up 1% or more of total VOCs

ENVIRONMENTAL PARTNERS INC

TABLE 18
Compounds that Constitute at Least 1% of Total VOCs
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 10/1 - 12/31/2013

Sample Location	Sample Date	Trichloroethene	Toluene	m,p-Xylene	o-Xylene	Total Xylenes (m, p & o)	4-Methyl-2-pentanone (MIBK)	2-butanone (MEK)	Acetone	Ethanol	Total VOCs
SV-FS	10/16/13	150	3,000	410	110	520	470	760	590	430	**6,801**
	10/28/13	200	1,400	470	140	610	460	790	610	1,100	**6,267**
	11/11/13	83	680	170	54	224	220	650	550	280	**3,069**
	11/25/13	160	2,800	750	220	970	530	990	780	1,400	**9,094**
	12/9/13	120	620	200	48	248	120	570	780	1,100	**4,013**
	12/26/13	400	2,300	850	210	1060	450	830	710	12,000	**19,677**
VEW-06S	10/16/13	160	1,500	420	120	540	350	500	480	440	**4,818**
	11/11/13	74	1,000	160	55	215	280	430	490	920	**3,801**
VEW-06I	10/16/13	250	6,800	660	190	850	1,300	2,900	1,400	450	**15,396**
	11/11/13	93	1,000	590	160	750	580	2,500	1,400	2,900	**10,373**
VEW-06D	10/16/13	74	550	180	56	236	110	430	310	440	**2,559**
	11/11/13	120	750	320	110	430	230	380	430	190	**3,159**
	12/9/13	150	880	150	28	178	120	530	370	83	**2,716**
VEW-07S	10/16/13	140	7,500	620	170	790	750	1,200	1,000	280	**13,015**
	11/11/13	150	5,300	1,100	130	1,230	680	1,500	1,200	1,600	**13,339**
VEW-07I	10/16/13	1,000	55,000	1,100	260	1,360	3,900	9,700	5,200	450	**79,821**
	11/11/13	910	96,000	1,400	450	1,850	9,900	15,000	8,900	17,000	**153,029**
VEW-07D	10/16/13	92	830	280	96	376	250	480	460	< 1 U	**3,049**
	11/11/13	48	530	120	37	157	210	490	490	1,500	**3,749**
	12/9/13	140	720	290	63	353	150	550	460	300	**3,227**

Concentrations are in µg/L

ENVIRONMENTAL PARTNERS INC

TABLE 19
Percentages of VOCs Detected
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 10/1 - 12/31/2013

Sample Location	Sample Date	Trichloroethene	Toluene	Total Xylenes (m, p & o)	4-Methyl-2-pentanone (MIBK)	2-butanone (MEK)	Acetone	Ethanol	Total
SV-FS	10/16/13	2	44	8	7	11	9	6	87
	10/28/13	3	22	10	7	13	10	18	82
	11/11/13	3	22	7	7	21	18	9	88
	11/25/13	2	31	11	6	11	9	15	84
	12/9/13	3	15	6	3	14	19	27	89
	12/26/13	2	12	5	2	4	4	61	90
VEW-06S	10/16/13	3	31	11	7	10	10	9	82
	11/11/13	2	26	6	7	11	13	24	90
VEW-06I	10/16/13	2	44	6	8	19	9	3	91
	11/11/13	1	10	7	6	24	13	28	89
VEW-06D	10/16/13	3	21	9	4	17	12	17	84
	11/11/13	4	24	14	7	12	14	6	80
	12/9/13	6	32	7	4	20	14	3	85
VEW-07S	10/16/13	1	58	6	6	9	8	2	90
	11/11/13	1	40	9	5	11	9	12	87
VEW-07I	10/16/13	1	69	2	5	12	7	1	96
	11/11/13	1	63	1	6	10	6	11	98
VEW-07D	10/16/13	3	27	12	8	16	15	0	82
	11/11/13	1	14	4	6	13	13	40	91
	12/9/13	4	22	11	5	17	14	9	83

Compounds that constitute 1% or more of total VOCs detected

ENVIRONMENTAL PARTNERS INC

TABLE 20
Waste Disposal Volumes
2013 Annual Report
Pasco Landfill, Pasco, WA

PERIOD: 1/1 to 12/31/2013

Waste	Shipment Volume (gallons)	Disposal or Treatment Facility	Disposal Date	Designation	SVE Equipment Skid Volume (gallons)	Conveyance Line at MSW Flare Volume (gallons)
SVE Condensate	4,820	Burlington Environmental, Kent, WA	1/15/2013	DW D035, D040	3,528	1,292
SVE Condensate	5,060	Burlington Environmental, Kent, WA	2/7/2013	DW D035, D040	3,726	1,334
SVE Condensate	4,429	Burlington Environmental, Kent, WA	2/25/2013	DW D035, D040	2,533	1,896
SVE Condensate	5,023	Burlington Environmental, Kent, WA	3/20/2013	DW D035, D040	3,151	1,872
SVE Condensate	4,280	Burlington Environmental, Kent, WA	4/8/2013	DW D035, D040	2,225	2,055
SVE Condensate	2,258	Burlington Environmental, Kent, WA	4/24/2013	DW D035, D040	1,150	1,108
SVE Condensate	3,965	Burlington Environmental, Kent, WA	5/15/2013	DW D035, D040	1,619	2,346
SVE Condensate	4,478	Burlington Environmental, Kent, WA	6/10/2013	DW D035, D040	1,490	2,988
SVE Condensate	4,904	Burlington Environmental, Kent, WA	7/9/2013	DW D035, D040	1,648	3,256
SVE Condensate	4,280	Burlington Environmental, Kent, WA	7/31/2013	DW D035, D040	1,996	2,284
SVE Condensate	4,988	Burlington Environmental, Kent, WA	9/3/2013	DW D035, D040	1,727	3,261
SVE Condensate	5,089	Burlington Environmental, Kent, WA	9/30/2013	DW D035, D040	2,863	2,226
SVE Condensate	4,327	Burlington Environmental, Kent, WA	10/23/2013	DW D035, D040	2,865	1,462
SVE Condensate	4,988	Burlington Environmental, Kent, WA	11/11/2013	DW D035, D040	2,026	2,962
SVE Condensate	4,621	Burlington Environmental, Kent, WA	12/3/2013	DW D035, D040	2,344	2,277
SVE Condensate	2,897	Burlington Environmental, Kent, WA	12/18/2013	DW D035, D040	2,523	374
	70,407				**37,414**	**32,993**

Purge water	1,120	City of Pasco POTW	8/15/2013	non-regulated	--	--

Total waste disposed of during 2013:

70,407 Gallons of hazardous waste were disposed of at Burlington Environmental in Kent, Washington.

37,414 Gallons were from the SVE equipment skid.

32,993 Gallons were from the SVE conveyance line.

1,120 Gallons of non-regulated waste were disposed of at the City of Pasco POTW.

ENVIRONMENTAL PARTNERS INC

TABLE 21
Summary of Fourth Quarter 2013 SVE System Shutdowns and Restarts
2013 Annual Report
PERIOD: 10/1 to 12/31/2013 Pasco Landfill, Pasco, WA

Date	Time	Details
10/22/2013	0706 hrs	All SVE blowers (regenerative and VEW-07I) and the flare shut down. It appears the flare shut down first.
	0843 hrs	Flare on. SVE blowers remained off.
	0853 hrs	Flare temperature at 1,820 ºF. SVE blowers remained off.
	0858 hrs	SVE blowers (regenerative and VEW-07I) on. Flare remained on.
10/29/2013	1119 hrs	All SVE blowers (regenerative and VEW-07I) and the flare were shut off to work on the LEL sensor.
	1149 hrs	Flare turned back on. SVE blowers remained off.
	1155 hrs	Flare at 1,800 ºF. SVE blowers remained off.
	1201 hrs	SVE blowers (regenerative and VEW-07I) on. Flare remained on.
10/30/2013	0945 hrs	All SVE blowers (regenerative and VEW-07I) and the flare shut off to perform odor assessment.
	1112 hrs	Flare turned back on. SVE blowers remained off.
	1116 hrs	Flare at 1,657 ºF. SVE blowers remained off.
	1230 hrs	SVE blowers (VEW-06I and VEW-07I) on. Flare remained on.
	1405 hrs	SVE blowers (VEW-06I and VEW-07I) off. Flare remained on.
	1410 hrs	Regenerative blower on. Flare remained on.
	1615 hrs	SVE blowers back to normal operation. (i.e. VEW-06I blower off and regenerative and VEW-07I blowers on) Flare remained on.
11/4/2013	0749 hrs	VEW-07I blower off to perform inspection of green hose at VEW-06I and VEW-07I. Flare and regenerative blower remained on.
	1046 hrs	VEW-07I blower on. Flare and regenerative blower remained on.
11/8/2013	0847 hrs	VEW-07I blower shut down for high LEL. Flare and regenerative blower remained on.
	1035 hrs	VEW-07I blower on. Flare and regenerative blower remained on.
11/11/2013	0930 hrs	Shutdown the SVE system (VEW-07I and regenerative blowers) and the flare to collect a condensate sample from the VEW-07I green hose and switch blowers at the flare.
	1008 hrs	Flare on. All SVE blowers remained off.
	1013 hrs	Flare at 1,850 ºF. All SVE blowers remained off.
	1037 hrs	SVE on (VEW-07I and regenerative blowers). Flare remained on.
11/17/2013	1546 hrs	SVE shut down (VEW-07I and regenerative blowers) for oil/water separator pump failure. Flare remained on.
11/18/2013	1331 hrs	SVE system on (VEW-07I and regenerative blowers). Flare remained on.
12/2/2013	1714 hrs	Manually shut down the VEW-07I blower along with VEW-06I, VEW-06S, VEW-07S in response to balefill smoldering. The flare, VEW-07D and VEW-06D remained on.
12/9/2013	0247 hrs	SVE system (regenerative blower) shutdown. Condensate pumps froze. Flare remained on.
	0743 hrs	SVE system (regenerative blower) on. Flare remained on.