

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Code (CA725)

Current Human Exposures Under Control

Last Revised: September 2011

Facility Name: Philip Services Corporation, BEI Kent Facility
Facility Address: 20245 77th Avenue South, Kent, WA
Facility EPA ID #: WAD991281767

1. Has all available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993 (GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air media known or reasonably suspected to be “contaminated”¹ above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			Contaminants are present in groundwater above the MTCA Standards. Some of the contaminants are: metals (Arsenic, Hexavalent Chromium, Cyanide, Lead), Benzene, Diesel, Trichloroethene, and Vinyl Chloride. (see Rationale and References below for more detail)
Air (indoors) ²			X	
Surface soil (e.g., <2 feet)	X			Contaminants are present in surface soils <2' above the MTCA Standards. Some of the contaminants are: metals (Arsenic, Cadmium), diesel oil and pesticides. (see Rationale and References below for more detail)
Surface water		X		
Sediment		X		
Subsurface soil (e.g., >2 feet)	X			Contaminants are present in subsurface soils >2' above the MTCA Standards. Some of these contaminants are: metals (Arsenic, Cadmium, Mercury), Benzene, Pesticides, and Diesel range organics (see Rationale and References below for more detail)
Air (outdoors)			X	

_____ If no (for all media) - skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.

X If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter “IN” status code.

Rationale and Reference(s):

Groundwater: Groundwater beneath the Philip Services Corporation, BEI Kent Facility is contaminated above the screening levels for the following primary constituents: Metals (Arsenic, Hexavalent Chromium, Cyanide and Lead), Benzene, Diesel, Trichloroethene, and Vinyl Chloride. These constituents exceed the screening levels set in

¹ “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggests that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

the Remedial Investigation Work Plan for identifying the primary constituents of concern at the facility. MTCA Method B levels protective of groundwater as a drinking water source were used. Presentation and analysis of these results are documented in the following report: *Final Remedial Investigation Report, PSC Kent Facility*; Geomatrix Consultants for Philips Services Corporation; December 2007. Additional references for work conducted by PSC Kent and reported to the Department of Ecology may be found in Attachment A to this Environmental Indicator Determination.

Surface Soil (<2’): Surface soils at less than 2’ are documented to contain primarily metals (Arsenic, Cadmium), diesel oil and pesticides at levels that exceed the screening levels. The screening levels for soils are set at the lower of the MTCA Method C direct contact level for Industrial Soils and the calculated protection of groundwater levels using MTCA’s fixed-parameter three-phase partitioning model. For the final screening level, the lower of these two levels are adjusted upward if the level is below the practical quantitation limit (PQL). Presentation and analysis of these results are documented in the following report: *Final Remedial Investigation Report, PSC Kent Facility*; Geomatrix Consultants for Philips Services Corporation; December 2007. Additional references for work conducted by PSC Kent and reported to the Department of Ecology may be found in Attachment A to this Environmental Indicator Determination.

Subsurface Soil (>2’): Subsurface soils at greater than 2’ depth within the vadose zone are documented to contain primarily metals (Arsenic, Cadmium, Mercury), Benzene, Pesticides, and Diesel range organics at levels that exceed the screening level. The screening levels for soils are set at the lower of the MTCA Method C direct contact level for Industrial Soils and the calculated protection of groundwater levels using MTCA’s fixed-parameter three-phase partitioning model. For the final screening level, the lower of these two levels are adjusted upward if the level is below the practical quantitation limit (PQL). Presentation and analysis of these results are documented in the following report: *Final Remedial Investigation Report, PSC Kent Facility*; Geomatrix Consultants for Philips Services Corporation; December 2007. Additional references for work conducted by PSC Kent and reported to the Department of Ecology may be found in Attachment A to this Environmental Indicator Determination.

- Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential Human Receptors (Under Current Conditions)

“Contaminated” media	Residents	Workers	Daycare	Construction	Trespassers	Recreation	Food ³
Groundwater	No	No		Yes			
Air (indoors)	No	Unknown		No			
Surface soil (e.g., <2 feet)	No	No		Yes			
Surface water	No	No		No			
Sediment	No	No		No			
Subsurface soil (e.g., >2 feet)	No	No		Yes			
Air (outdoors)	No	Yes		Yes			

Instructions for Summary Exposure Pathway Evaluation Table:

- Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated”) as identified in #2 above.
- Enter “yes” or “no” for potential “completeness” under each “Contaminated” Media – Potential Human Receptor combination (Pathway).

³ Indirect pathway/receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- _____ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- _____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.
- X _____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

Residents do not live within a mile of the site. The facility is located in an industrialized area. Kent residents are hooked up to municipal water supply. Groundwater within a mile of the facility is not used for municipal water supply. Because there are no residents located in the industrial area, there are currently no complete pathways between contaminated water or soil and local residents. Because residents are not located in the vicinity of the facility, they also will not be exposed to contaminants from potential releases to air.

Industrial Workers located in buildings onsite could be exposed to contaminated indoor air which may be impacted by vapor intrusion from shallow groundwater contaminated with volatile organic compounds (VOCs) such as benzene, trichloroethene or vinyl chloride. These workers may also be exposed to contaminated indoor air resulting from releases to air at the various processing areas located near the main office buildings onsite. Since PSC Kent is an active commercial Treatment, Storage and Disposal (TSD) site, there could be exposure to any of the volatile contaminants received for treatment at the facility. In addition, workers could potentially be exposed to contaminant releases to outdoor air at the hazardous waste processing units at the facility. The facility is almost entirely paved; therefore contamination through dermal contact with surface soil is unlikely.

Construction Workers sometimes are needed at the site to install or remove tanks, underground piping, underground sumps, and pavement. Because these workers remove soils and potentially excavate down to groundwater, they are subject to more potentially complete exposure pathways than other workers at the site. The construction workers may be exposed to groundwater if they are excavating during times after heavy rains when the water table is high such as in late winter or spring. Their exposure could be to contaminants such as those listed in Section 2 above. Construction workers are likely to be exposed to contaminants in both surface <2' and subsurface >2' soils when they are conducting excavation activities. These contaminants are currently documented to be metals (Arsenic, Cadmium, Mercury), Benzene, Pesticides, and Diesel range organics. The exposure levels may also depend on the area of the site where construction workers are excavating soils, since not all areas have soils contaminated with the same constituents. For additional information please see: *Final Remedial Investigation Report, PSC Kent Facility*; Geomatrix Consultants; December 2007.

Daycare Workers are not present on or adjacent to this facility. Therefore, daycare workers will not be exposed to contaminants at this site.

Trespassers are unlikely to be able to access the site due to security measures and therefore are unlikely to be exposed.

Recreation or recreational facilities are not located within 500' of this site. Therefore, people will not be exposed as a result of recreational activities taking place on or near this facility.

Food such as coffee, vending machine fare, and personnel lunches may be present onsite. Restaurants or other commercial food preparation does not take place within 500' of the site. Growing crops for consumption does not take place within 500' of this site. Food is not considered likely to become contaminated by the activities at this site.

4. Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be "significant"⁴ (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

_____ If no (exposures cannot be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

X If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

Industrial Workers may be exposed to volatile organic compounds which migrate from shallow groundwater via the vapor intrusion pathway. Since the office building is the same building that houses some hazardous waste management activities, there may also be migration of VOCs into worker offices. We do not believe that this pathway is 'significant' since the groundwater contains levels of VOCs that are low enough not to build up in indoor air in the office buildings. Levels of contaminants in indoor air have not been tested directly, so this pathway is indicated as 'unknown.' Industrial workers may also be exposed to volatile contaminants that may be released to outdoor air at processing areas for hazardous waste. The main tanks where this activity takes place have been closed to industrial hazardous waste operations; however, these tanks continue to be used for "moderate risk waste" which is a category of hazardous waste. It is 'unknown' what the frequency, duration or levels of constituents released to air are as a result of hazardous waste processing activities. The primary concern is treatment of hazardous waste in open tanks. Industrial workers wear personal protective equipment that may reduce the significance of this potential exposure.

Construction Workers may be exposed to groundwater contaminated with metals (arsenic, hexavalent chromium, cyanide and lead), benzene, diesel, trichloroethene, and vinyl chloride. This exposure would occur as a result of encountering groundwater during excavation activities. Construction workers may also be exposed to contaminated soils during excavation. The contaminants to which construction workers may be exposed are: metals (Arsenic, Cadmium, Mercury), Benzene, Pesticides, and Diesel range organics. For

⁴ If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

exposures to groundwater and soil, we do not believe that they will be 'significant' since the duration of the exposure would only be for the timeframe during which construction activities are taking place. Also, while the levels of contaminants in groundwater and soil may be above the MTCA Standard, they are still well below the acute risk for the contaminant. Construction workers also may be exposed to contaminants in outdoor air that are a result of hazardous waste treatment activities taking place on site. It is unknown at this time the amounts and duration of elevated levels of contaminants in air.

5. Can the "significant" exposures (identified in #4) be shown to be within acceptable limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable") - continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s): _____

6. Check the appropriate RCRAInfo status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the _____ facility, EPA ID # _____, located at _____ under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

Completed by Robin Harrover Date Sept. 21, 2011
Robin Harrover
Hydrogeologist/Project Manager

Supervisor Julie Sellick Date 9/21/11
Julie Sellick, Section Manager
Hazardous Waste and Toxics Reduction Program
Department of Ecology, Northwest Regional Office

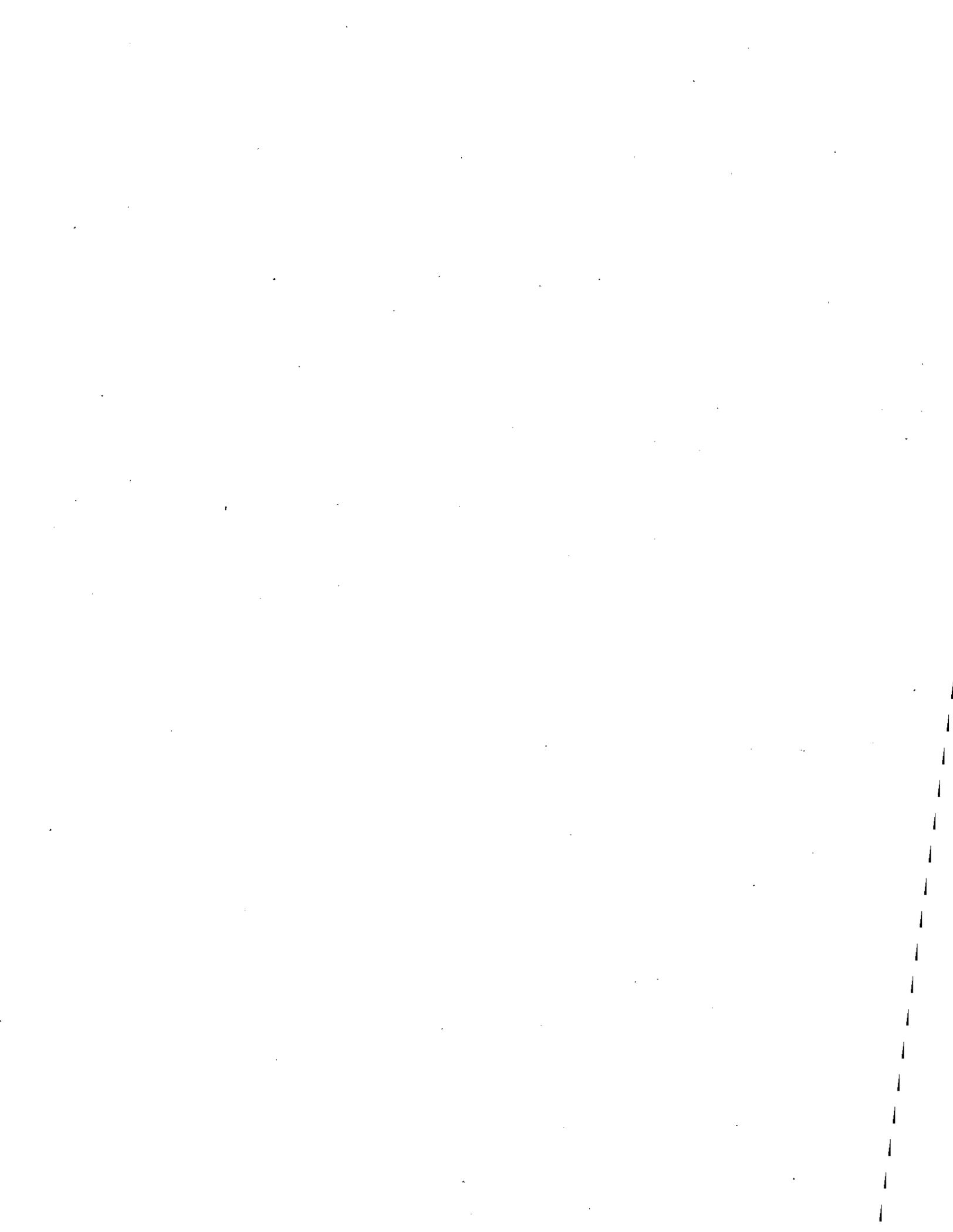
Locations where References may be found:

Department of Ecology, Northwest Regional Office
3190 160th Ave. SE
Bellevue, WA 98008-5452
(425) 649-7190

Contact telephone and e-mail numbers:

Robin Harrover
(425) 649-7232
robin.harrover@ecy.wa.gov

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.



DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRA Info code (CA750)

Migration of Contaminated Groundwater Under Control
Last Revised: September 2011

Facility Name: Philip Services Corporation, BEI Kent Facility
Facility Address: 20245 77th Avenue South, Kent, WA
Facility EPA ID #: WAD991281767

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future. _

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993 (GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is groundwater known or reasonably suspected to be “contaminated”¹ above appropriately protective “levels” (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

If yes - continue after identifying key contaminants, citing appropriate “levels,” and referencing supporting documentation.

If no - skip to #8 and enter “YE” status code, after citing appropriate “levels,” and referencing supporting documentation to demonstrate that groundwater is not “contaminated.”

If unknown - skip to #8 and enter “IN” status code.

Rationale and Reference(s):

Philip Services Corporation, doing business as Burlington Environmental, LLC, operates a hazardous waste treatment, storage and disposal facility (TSD) in Kent, Washington (hereafter referred to as PSC Kent). This facility has historically had a number of different owners, but has operated as a TSD since prior to 1989, when Chemical Processors, Inc. purchased the site from Crosby and Overton. The site was developed from farmland into a 6.25-acre industrial facility with hazardous waste container storage areas and treatment of hazardous waste taking place in tanks. During operation, PSC Kent documented spills and leaks of liquid waste to soils. PSC Kent has also documented releases from at least one tank to subsurface groundwater. There is a ditch that partially runs through a culvert just north of the northern property boundary. Overflow from a stormwater sump has historically released wastewater to the ditch.

A remedial investigation completed in December 2007 documents the current known contamination in soils, surface water and groundwater. This report reveals that groundwater is contaminated above the MTCA Standards set for the screening level. The groundwater screening level was selected from the lowest of: (1) the risk-based water concentrations that are protective of potable groundwater use and protective of surface water (MTCA Method B groundwater cleanup levels), (2) the risk-based water concentrations that are protective of surface water beneficial uses (MTCA Method B surface water cleanup levels), and (3) state and federal surface water quality criteria. The remedial investigation report identifies the following constituents as historically present in groundwater at levels above the screening level: Metals (Arsenic, Hexavalent Chromium, Cyanide and Lead), Benzene, Diesel, Trichloroethene, and Vinyl Chloride. For more information, see: *Final Remedial Investigation Report, PSC Kent Facility*; Geomatrix Consultants; December 2007, and Attachment A to this EI Report.

3. Has the migration of contaminated groundwater stabilized (such that contaminated groundwater is expected to remain within “existing area of contaminated groundwater”² as defined by the monitoring locations designated at the time of this determination)?

If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated

¹ “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate “levels” (appropriate for the protection of the groundwater resource and its beneficial uses).

² “existing area of contaminated groundwater” is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of “contamination” that can and will be sampled/tested in the future to physically verify that all “contaminated” groundwater remains within this area, and that the further migration of “contaminated” groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination").

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination") - skip to #8 and enter "NO" status code, after providing an explanation.

If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

In 2009, PSC Kent completed additional remedial investigation work to determine if contaminants found in groundwater beneath the facility have migrated beyond the property boundary. A groundwater sample from a geoprobe boring located approximately 35' south of the facility property boundary indicated levels of cyanide in groundwater of from 6 to 435 ug/L. Arsenic was also present in the groundwater sampled, having from 2 to 45 ug/L of arsenic. In a groundwater monitoring well located approximately 40' offsite from the eastern property boundary, cyanide has been detected at 10 ug/L and Arsenic has been detected at 11 ug/L. These offsite locations are downgradient with respect to groundwater flow from the site. We believe that contamination is migrating offsite. Not enough investigation has been done as of December 2010 to determine if the migration of contaminants offsite has stabilized. Work on corrective action at the PSC Kent has slowed during 2011 to allow for permit renewal at the site. After completion of the new permit, corrective action work will resume. Therefore, the determination of stabilization within the current groundwater monitoring network is marked as 'unknown.'

[Refer to: *Stabilization Tanks Area Results*, PSC Kent Facility, Kent Washington; AMEC Geomatrix, Inc. for Burlington Environmental, LLC.; March 17, 2010; *Letter, Ecology Comment and Approval of the Amendment to the 2009 Data Gaps Work Plan, and the Revised 2009 Data Gaps Work Plan, PSC Kent facility, Burlington Environmental, LLC WAD991281767*, Department of Ecology, December 17, 2009; *2009 Data Gaps work Plan, PSC Kent Facility, Kent, Washington*, AMEC Geomatrix, Inc., July 2009; *Final Remedial Investigation Report, PSC Kent Facility*, Geomatrix Consultants, December 2007; *Letter, Ecology Comments and Approval of the Additional Remedial Investigation Work Plan, PSC Kent Facility, and Ecology approval of the Permit Modification Changing the Date of Submittal for the Final Remedial investigation (RI) Report from March 2007 to December 2007, RCRA Permit No. WAD991281767*, Department of Ecology, May 11, 2007; *Additional Remedial Investigation Work Plan, PSC Kent Facility*, Geomatrix Consultants, April 13, 2007; *Letter, Review and Comment on the Draft Remedial Investigation Report, Volumes I and II, PSC Kent Facility, March 31, 2004 – WAD991281767*, Department of Ecology, February 13, 2007; *Draft Remedial Investigation Report, Volumes I – III, PSC Kent Facility*, Geomatrix Consultants; Exponent; March 31, 2004].

4. Does "contaminated" groundwater discharge into surface water bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): _____

5. Is the discharge of "contaminated" groundwater into surface water likely to be "insignificant" (i.e., the

maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgment/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): _____

6. Can the discharge of "contaminated" groundwater into surface water be shown to be "currently acceptable" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented)?⁴

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered

³ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater cannot be shown to be "currently acceptable") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s): _____

7. Will groundwater monitoring/measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): _____

8. Check the appropriate RCRAInfo status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the _____ facility, EPA ID # _____, located at _____. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

NO - Unacceptable migration of contaminated groundwater is observed or expected.

IN - More information is needed to make a determination.

Completed by Robin Harrover Date Sept. 21, 2011
Robin Harrover
Hydrogeologist/Project Manager

Supervisor Julie Sellick Date 9/21/11
Julie Sellick, Section Manager
Hazardous Waste and Toxics Reduction Program
Department of Ecology, Northwest Regional Office

Locations where References may be found:

Department of Ecology, Northwest Regional Office
3190 160th Ave. SE
Bellevue, WA 98008-5452
(425) 649-7190

Contact telephone and e-mail numbers:

Robin Harrover
(425) 649-7232
robin.harrover@ecy.wa.gov

Philip Services Corporation – Kent Facility
Attachment A:
Rationale and References
Updated: September, 2011

Rationale:

A Draft Remedial Investigation Report was submitted to the Department of Ecology dated March 31, 2004. Due to limited resources, the Department of Ecology completed its review of this report with a comment letter dated February 13, 2007. In response to this letter, Philip Kent submitted an additional RI Work Plan which Ecology approved by letter dated May 11, 2007. Philip Kent has implemented additional remedial investigation actions to address Ecology's request for additional information. This included some additional soil sampling for pesticides, groundwater testing for pesticides and groundwater monitoring beyond the eastern boundary of the facility to test for contaminants potentially migrating off-site.

Ecology received a report from Philip Kent summarizing the additional remedial investigation field investigation in December, 2007. Ecology reviewed this report and requested that Philip Kent submit a work plan to cover the remaining data gaps in the Final Remedial Investigation Report. Philip Kent completed and submitted this report dated July 10, 2009. The work plan was revised in the fall of 2009 in order to include some additional sampling adjacent to the stabilization tanks T5305 and T5306. Leak testing of both tanks indicated that leaks existed. The leaks were repaired. Only tank T5306 could be re-certified for use. PSC Kent reported the results of field work completed near the tanks in a letter report dated March 17, 2010. The other data gap results were incorporated into the Feasibility Study work Plan. PSC Kent submitted their Feasibility Study Work Plan to Ecology, dated July 13, 2010. This plan is currently under review by the Department of Ecology.

In 2011 the Department of Ecology is drafting a permit renewal including a final facility closure plan and an agreed order for the corrective action work yet to be completed at the site. Work on the Feasibility Study will re-commence once the permit renewal is issued.

References:

Feasibility Study Work Plan, PSC Kent Facility, Kent, Washington; AMEC Geomatrix, Inc. for Burlington Environmental, LLC; July 13, 2010.

Stabilization Tanks Area Results, PSC Kent Facility, Kent Washington; AMEC Geomatrix, Inc. for Burlington Environmental, LLC.; March 17, 2010;

Letter, Ecology Comment and Approval of the Amendment to the 2009 Data Gaps Work Plan, and the Revised 2009 Data Gaps Work Plan, PSC Kent facility, Burlington Environmental, LLC WAD991281767; Department of Ecology, December 17, 2009

2009 Data Gaps work Plan, PSC Kent Facility, Kent, Washington; AMEC Geomatrix, Inc.; July 2009.

Final Remedial Investigation Report, PSC Kent Facility; Geomatrix Consultants; December 2007.

Letter, Ecology Comments and Approval of the Additional Remedial Investigation Work Plan, PSC Kent Facility; and Ecology approval of the Permit Modification Changing the Date of Submittal for the Final Remedial investigation (RI) Report from March 2007 to December 2007, RCRA Permit No. WAD991281767; Department of Ecology, May 11, 2007.

Additional Remedial Investigation Work Plan, PSC Kent Facility; Geomatrix Consultants; April 13, 2007.

Letter, Review and Comment on the Draft Remedial Investigation Report, Volumes I and II, PSC Kent Facility; March 31, 2004 – WAD991281767; Department of Ecology, February 13, 2007.

Draft Remedial Investigation Report, Volumes I– III, PSC Kent Facility; Geomatrix Consultants; Exponent; March 31, 2004.

Addendum to the Groundwater Analysis Report, PSC Kent Facility; PSC Regulatory Affairs Dept., February 2, 2004.

Surface Water Analysis Report, PSC Kent Facility; PSC Regulatory Affairs Dept., August 23, 2002.

Letter, Review and approval of Addendum II to the Remedial Investigation Work Plan, PSC Kent Facility, Department of Ecology, August 15, 2002.

Addendum II to the Remedial Investigation Workplan, PSC Kent Facility; PSC Regulatory Affairs Dept., August 15, 2002.

Soil Analysis Report, PSC Kent Facility; PSC Regulatory Affairs Dept., August 15, 2002.

Kent Groundwater Analysis Report, PSC Kent Facility; PSC Regulatory Affairs Dept., February 28, 2002.

Permit for the Storage and Treatment of Dangerous Waste, Permit No. WAD991281767; Department of Ecology, U.S. Environmental Protection Agency, September 28, 1998.