DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: **Chevron Chemical Company**
Facility Address: **800 Metuchen Road, South Plainfield, New Jersey 07080**
Facility EPA ID#: **NJD002171593**

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EIs) are measures being used by the Resource Conservation and Recovery Act (RCRA) Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved) to track changes in the quality of the environment. The two EIs 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 objectives of the RCRA Corrective Action program, the EIs 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 groundwater 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 determination status codes should remain in the Resource Conservation Recovery Act Information (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).

Facility Information

The Chevron Chemical Co. (Chevron) facility is located on a 19-acre site near the eastern terminus of Metuchen Road in South Plainfield Township, New Jersey. The property is currently zoned for industrial use and contains one permanent building along with a containment area for former aboveground storage tanks (ASTs). A wooded area is present at the southeastern portion of the site. The Chevron site is primarily surrounded by industrial property, including the Conrail rail spur, Hummel Chemical Company,

and United Steel Deck properties to the north and east; the U.S. Plastics (formerly Cyprus Minerals) and Insulation Materials properties to the west; and an undeveloped wooded area to the south and west. The Abramson property is adjacent to the Chevron site to the southeast, and consists primarily of wetlands. The Chevron site is located within the Bound Brook watershed. A drainage pathway of Bound Brook runs along the wooded area in the southern section of the Chevron property. An intermittent tributary of Bound Brook drains the southern part of the site and discharges via a culvert at the southernmost corner of the Chevron site. The nearest residential properties are located approximately 1,000 feet to the west and 800 feet to the southeast of the Chevron property.

From 1952 to 1985, pesticide formulation, storage, and distribution activities were conducted at the site. Pesticide formulation was discontinued in 1985, while distribution and warehousing of pesticides and other agricultural chemicals continued at the site until 1990. Active ingredients for pesticide products were shipped to the facility where they were mixed with other chemicals to produce commercial formulations of the pesticide products. Pesticide active ingredients and other product components were shipped to the facility by truck or rail, and were stored in the main building, in an outdoor drum storage area, or in the product ASTs. Prior to operation of the facility by Chevron, the site was used as a rail switching and coal storage yard (Ref. 1). During the operations conducted at the site, a number of waste disposal activities and spills occurred, including burial of wastes in drums, discharge of waste rinse waters to an unlined pond, and leaks and spills from tanks and containers at the site.

References:

1. Summary of ECRA/ISRA Site Activities, Chevron Chemical Company, Plainfield, New Jersey. Prepared by Foster Wheeler Environmental Corporation. Dated September, 1995.

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 (SWMUs), regulated units (RUs), and areas of concern (AOCs)), been **considered** in this EI determination?

   _X_ 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

Summary of AOCs: The Remedial Investigation/Remedial Actions Summary Report (RI/RASR) (Ref. 1) and the Summary of Environmental Responsibility Cleanup Act (ECRA)/Industrial Site Recovery Act (ISRA) Site Activities (Ref. 2) outline each area of environmental concern (AEC) that has been investigated at the site. The locations of the AECs are shown on Figure 1-2 of the Hydrogeologic Assessment Report (Ref. 10). Activities and processes performed in Area E (Eastern Unlined Drainage Ditch), Area G (Former Incinerator Pad), Area H (Compressor Blowdown Area), and Area I (Septic Tank and Lateral Leach Fields) have not impacted site groundwater; therefore, descriptions of areas E, G, H, and I are not included in the following discussion. In addition, there is no discussion presented for Area K because file materials for the Chevron facility do not indicate that any AEC was ever designated as Area K. A description of the areas with documented or potential groundwater impacts and the contaminants detected above the New Jersey Department of Environmental Protection (NJDEP) standards[1] are outlined below.

Area A, Chevron Railroad Spur: Area A is along the northwestern property boundary adjacent to the main building. The railroad spur was used to deliver containers of pesticide formulation materials to the main building. Liquid materials were pumped from tanker cars parked on the spur to the Bulk Oil/Solvent Storage Area (Area L) south/southeast of the main building. Chevron investigated the area in 1989, and the results indicated the presence of organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), and metals in surface and subsurface soils. Approximately 536 cubic yards of contaminated soil and 80 railroad ties were excavated and shipped off site for disposal in 1989. Restoration activities included the installation of a 6-millimeter (mm) polyethylene liner and a layer of geotextile fabric, backfilling the excavation, and installing an asphalt cap and fence. Results of the 1992/1993 soil characterization and delineation sampling detected dieldrin, dichlorodiphenyltrichloroethane (DDT), and toxaphene above proposed surface soil standards, while three OCPs (gamma-benzene hexachloride (-BHC), DDT, and toxaphene) were detected above proposed subsurface soil standards. Chevron proposed no further characterization for this area (Ref. 1); however, NJDEP's decision on this proposal was not found in the file materials.

[1] Chevron has evaluated on-site surface soil contaminants using the New Jersey Non-Residential Direct Contact Soil Cleanup Criteria (NJ NRDCSCC) while subsurface soil contaminants were compared to the New Jersey Impact to Groundwater Soil Cleanup Criteria (NJ IGWSCC). Off-site soil contamination has been compared to the New Jersey Residential Direct Contact Soil Cleanup Criteria (NJ RDCSCC). It should be noted that NJDEP has directed Chevron to compare on-site soil contamination to the NJ NRDCSCC and/or the NJ IGWSCC, whichever was lower. However, no revision of the evaluations or additional delineation was found in the available materials.

Area B, SCOPE Area No. 1: Based on employee interviews, Chevron identified Area B as an area in the central portion of the site that may have been used for disposal of an off-specification pesticide sold under the brand name SCOPE. SCOPE was a pesticide that contained disulfoton (an OPP). During the 1992/1993 soil delineation sampling event, only dieldrin was present in surface soil slightly above the surface soil standards. Chevron proposed no further action for the area (Ref. 1). NJDEP's decision on this request was not found in the file materials.

Area C, SCOPE Area No. 2: A second area suspected of being used for disposal of SCOPE pesticide was also investigated in 1989. This area is located at the southern corner of the Chevron property. Test pits excavated at this area encountered disposed bottles of SCOPE and aerosol containers of fertilizer. Approximately 5,000 SCOPE bottles, 2,500 aerosol cans, and 1,420 cubic yards of soil were excavated and disposed off site. The 1989 post-excavation samples revealed residual levels of OCPs. A 10-mm polyethylene liner and clean fill were placed in the completed excavation. An additional layer of topsoil was added and the area was revegetated. Results of the 1992/1993 soil characterization and delineation sampling showed no compounds present above surface or subsurface standards. Chevron proposed no further characterization for this area (Ref. 1); however, NJDEP's decision on this proposal was not found in the file materials.

Area D, Former Rinsate Pond: Container rinsates were disposed in a pond located at the southeast corner of the site. The pond was taken out of service prior to initiation of remedial activities in 1989 (Ref. 7). In 1989, OCPs, VOCs, and TPH were detected in soil samples collected at the former pond location. Subsequently, approximately 11,000 tons of contaminated material were excavated and disposed off site. A 10-mm polyethylene liner and clean fill were placed in the completed excavation. Results of the 1992/1993 soil characterization and delineation sampling indicated OCPs (dieldrin, gamma-BHC, heptachlor, aldrin, and DDT) above proposed surface soil standards, while only gamma-BHC was detected slightly above proposed subsurface soil standards. Chevron proposed no further characterization for this area (Ref. 1); however, NJDEP's decision on this proposal was not found in the file materials. According to January 2003 correspondence with NJDEP, Chevron has proposed additional investigation to characterize visibly impacted soil in the vicinity of the Former Rinsate Pond (Ref. 11).

Area F, Drum Storage Pad: This concrete pad at the southern corner of the main building was used to store product and waste drums. OCPs, base neutral (BN) compounds, and TPH were detected above New Jersey soil standards in samples collected around the base of the pad in 1989. Approximately 400 tons of contaminated materials were excavated and disposed off site in 1990. The excavation was backfilled with clean soil and regraded. Results of the 1992/1993 soil characterization and delineation sampling event indicated seven OCPs (dichlorodiphenyldichloroethylene (DDD), DDT, dichlorodiphenyldichloroethylene (DDE), dieldrin, heptachlor, aldrin, and gamma-BHC) above proposed surface soil standards, and two OCPs (DDT, gamma-BHC) above proposed subsurface soil standards. Chevron proposed no further characterization for this area (Ref. 1); however, NJDEP's decision on this proposal was not found in the file materials.

Area J, Truck Loading/Off-Loading Area: Bulk petroleum products were off-loaded at the southern corner of the main building at a fill stand located adjacent to the Bulk Oil/Solvent Storage Area (Area L). The unloading area was located on a concrete pad that was enclosed by a metal building constructed during the 1970s, while the unloading facilities were still in use. The pad had secondary containment with a sump and drain that discharged to a storage tank located in the main building. Soil samples collected in 1989 detected VOCs, BNs, and TPH above NJDEP standards. Chevron indicates that no soil has been excavated from this area because the

concrete functions as a cap to impacted soils and excavation would require demolition of the building and concrete (Ref. 1). Results of the 1992/1993 characterization and delineation soil sampling detected four OCPs (heptachlor, aldrin, dieldrin, and DDT) above proposed surface soil standards, while no constituents were detected above proposed subsurface soil standards. Chevron proposed no further characterization for this area (Ref. 1); however, NJDEP's decision on this proposal was not found in the file materials.

Area L, Bulk Oil/Solvent Storage Area: A total of 19 ASTs were located on a concrete pad at the southeast corner of the main building. These tanks were used to store formulation materials and petroleum products. A secondary containment wall was added to the pad in the early 1970s. All formulation tanks were removed by 1989, but one 10,000-gallon fuel oil AST remains in use at this area. Soils adjacent to this area were excavated and removed from the site as part of the remedial activities undertaken for Area A (Chevron Rail Spur) and Area E (Eastern Unlined Drainage Ditch) in 1989 and 1990. Additional soil was excavated from this area in 1992, in conjunction with the removal of contaminated soil from Area A and impacted areas on the Hummel property northeast of the site (Ref. 3). Post-excavation sample results detected OCP, VOCs, TPH and metals in subsurface soil in this area. Chevron indicated that this area may be a potential source for impacts to groundwater; however, further characterization and excavation could not be performed without jeopardizing the structural integrity of the main building. In 1999, Chevron proposed no further characterization for this area (Ref. 1); however, NJDEP's decision on this proposal was not found in the file materials.

Area M, Conrail Railroad Spur: An off-site railroad spur parallel to the Chevron railroad spur (Area A) is located adjacent to and just outside the northeast property boundary. Because OCP constituents were detected above New Jersey soil standards at Area A, NJDEP directed Chevron to evaluate the extent of soil contamination due to OCPs at the adjacent Conrail spur. Results from the 1993, 1995, 1997, and 1998 soil sampling events reported several OCP compounds, including DDT and its derivatives, chlordane, dieldrin, heptachlor, aldrin, alpha-BHC, beta-BHC, and arsenic detected above the NJ RDCSCC (Ref. 6). The soil contamination is present beneath stone ballast at the rail spur. The stone ballast consists of gravel and stone, in a layer at least 1.0 to 1.5 feet thick, that is permeable and allows for infiltration. Chevron had indicated that the ballast prevents direct exposure to soil contamination at the rail spur. Chevron plans to initiate discussions with Conrail to determine whether a Deed Notice is possible for this area. Chevron also plans to establish applicable remediation standards and to determine whether additional delineation sampling is needed based upon these remediation standards. Finally, Chevron plans to prepare a Remedial Action Workplan (RAW) for remediation of soil at the Conrail property.

Area N, Tributary of Bound Brook: Area N is a wooded area that includes an unnamed tributary of Bound Brook that flows across the southern portion of the site. Soil and sediment sampling was performed in this area in 1992/1993 for two areas of characterization (the upland and lowland areas). Samples from the upland area detected only dieldrin above the proposed surface soil standards in one sample location. Six OCPs (DDT, DDD, dieldrin, aldrin, heptachlor, and gamma-BHC) were detected above proposed surface soil standards in lowland areas; only one OCP (gamma-BHC) was reported above proposed subsurface soil standards in the lowland areas. Six OCPs (aldrin, heptachlor, dieldrin, DDD, DDE, and DDT) were detected in sediment above proposed surface soil standards in lowland areas. Chevron proposed no further characterization for this area (Ref. 1), but NJDEP did not accept this recommendation. According to correspondence with NJDEP, Chevron has completed an Interim Remedial Action Workplan (RAW) for Area N soil, dated September 12, 2002 (Ref. 12). The RAW proposed to remediate/excavate a potential source of off-site contamination while restoring the stream channel in accordance with the Department's Land Use Regulatory Program requirements. NJDEP accepted the workplan, but requested that Chevron address possible recontamination of Area N by erosion of upstream contaminated soil from the United Steel Deck property. Chevron disagreed with NJDEP's position on recontamination of Area N. In the same correspondence (Ref. 12), Chevron indicated that a site-wide remedial action plan will be submitted to NJDEP after approval of the forthcoming Supplemental Remedial Investigation Report.

Area O, Northern Property Boundary: Surface and subsurface soil samples were collected from this area of the site along the northern property boundary in 1992/1993 to characterize any potential contamination. No constituents were detected above proposed surface or subsurface standards. Chevron proposed no further characterization for this area (Ref. 1); however, NJDEP's decision on this proposal was not found in the file materials.

Area P/Q, Upgradient and Non Process Area: A total of 108 soil samples were collected from 29 locations in this area along the northwestern property boundary in 1992/1993 to characterize any potential contamination. No constituents were detected above proposed surface or subsurface standards. Chevron proposed no further action for this area (Ref. 1); however, NJDEP's decision on this proposal was not found in the file materials.

Area R, Western Unlined Drainage Ditch (Unmapped Wetlands)/Area S, Western Unlined Drainage Ditch (Mapped Wetlands): A total of 13 samples from 5 locations were collected in this unlined drainage ditch in 1992/1993 to delineate potential soil and sediment contamination. Surface and subsurface soil samples contained no constituents above the proposed standards in either the unmapped or mapped wetlands. However, two OCPs (DDE and DDT) were detected above proposed surface soil standards in one of two sediment samples in the unmapped wetlands, and dieldrin was detected in five of nine sediment samples in the mapped wetlands. Chevron proposed no further characterization for these two areas (Ref. 1); however, NJDEP's decision on this proposal was not found in the file materials.

Off-Site Areas, Hummel and Steel Deck Properties: The Hummel and Steel Deck properties are located north and east of the Chevron site. Soil sampling conducted by Chevron at the Hummel (from 1992 to 1997) and Steel Deck (from 1995 to 1997) properties detected OCPs (alpha-BHC, beta-BHC, gamma-BHC, aldrin, dieldrin, chlordane, DDT and its derivatives, and others) in surface and subsurface soil above the NJ RDCSCC. OCP concentrations generally decrease with depth. These compounds have also been detected in sediment in the culvert extending from the pond at the southwestern part of the Steel Deck property; however, detected concentrations are below the NJ RDCSCC. An unlined drainage ditch that runs along the Conrail rail spur adjacent to the eastern border of the Chevron property discharges to the pond; it is believed that surficial contamination was transported by the drainage system to the sediment in the pond at Steel Deck. Chevron plans to submit a Supplemental Investigation Work Plan (SIWP), which will propose additional soil sampling to resolve the horizontal and vertical delineation of contamination at these adjacent properties (Ref. 9). Chevron has proposed to negotiate instituting a Deed Notice and engineering controls at these off-site locations with the respective property owners (Ref. 6), but the status of these proposed actions were not documented in the available file materials. Chevron has also proposed to install a geotextile liner beneath a 3-inch layer of crushed stone or gravel on the eastern fence line of the Hummel property to minimize direct contact with exposed soils. A majority of the Hummel (72%) and Steel Deck (89%) properties are covered by asphalt or concrete (Ref. 4).

Off-Site Area, Abramson Property: The Abramson property is a 15-acre undeveloped, forested site located southeast of the Chevron property, and is separated from Chevron by a Conrail spur. The site is not secured and has been recently reclassified from planned residential development to an undevelopable wetland by the Borough of South Plainfield (Ref. 5). The Abramson site is bounded to the north and northeast by single family residences. The Abramson site receives stormwater runoff from the Chevron site. Soil investigations in 1993 in perimeter areas of the Chevron property, adjacent to the Abramson property, detected OCPs, arsenic, and TPH above the NJ RDCSCC. Additional investigations in April 1993 in the culvert outflow, adjacent to the Abramson property, detected heptachlor, dieldrin, DDD, and chlordane above the NJ RDCSCC. However, soil/sediment samples collected in September 1993, in the downgradient section of the Abramson property drainage pathway, adjacent to the culvert at Metuchen Road, did not detect compounds above the NJ RDCSCC. Chevron negotiated an access agreement with the property owner, John Abramson, on August 14, 1997. Accordingly, Chevron planned to survey and sample the site (Ref. 5). Available file information includes maps identifying sample results collected at the Abramson property (Ref. 8). The Abramson site was divided into four

areas of investigation: AOI-1 (South-southwestern Portion of the Abramson Property), AOI-2 (Intermittent Stormwater Drainage Channel Samples), AOI-3 (Soil Pile Sample Along Main Stormwater Drainage Channel), and AOI-4 (Soil Samples Along North-northwest Property Boundary Upgradient of Main Stormwater Drainage Channel). Only chlordane and dieldrin were detected above the NJ RDCSCC in AOI-1 (maximum concentration: chlordane = 264 mg/kg; dieldrin = 1.45 mg/kg) and AOI-2 (maximum concentration: chlordane = 312 [J1[2]] mg/kg; dieldrin = 5.97 [J1[2]] mg/kg). The highest concentrations were found in the drainage channels near the Chevron property boundary and in the wetland areas in the southwestern portion of the site. According to available file materials, Chevron planned to implement additional soil sampling at this property, but encountered access difficulties. A Phase II Investigation Report detailing the results of additional activities at the Abramson property was scheduled to be submitted to NJDEP in February 2001. However, no additional information on the status of these investigations was available in the file materials. According to correspondence with NJDEP, Chevron has completed an Abramson Property Soil Delineation Report, dated March 22, 2002, and a Baseline Ecological Evaluation (BEE) for Abramson Property Soil, dated October 22, 2002.

Groundwater: More than 30 on-site wells have been installed to assess groundwater contamination at the Chevron property. Groundwater contamination has been detected at the site, with benzene, toluene, ethylbenzene, and xylene (BTEX), OCP, and arsenic contamination present in the overburden unit at concentrations above New Jersey Class II Ground Water Quality Criteria (NJ GWQC). Groundwater has been monitored semi-annually since January 1992. A groundwater pump and treat system was put into operation in November 1994. The extracted groundwater was treated by a carbon-adsorption process, and the treated groundwater was injected back into the aquifer at two recharge wells under a New Jersey Pollutant Discharge Elimination System (NJPDES) Permit. Treatment system effluent was sampled on a quarterly basis to ensure that the recharge water was of acceptable quality. Operation of the treatment system was suspended in December 1999 for upgrade work following a control system failure. The system was not placed back on-line pursuant to an agreement between Chevron and NJDEP to further evaluate groundwater contamination at the site (Ref. 9). The evaluation, presented in the Hydrogeologic Assessment Report (Ref. 10), concluded that pump and treat technology would not effectively remediate OCP-contaminated groundwater within a reasonable time frame. The report concluded that suspension of groundwater extraction operations would not result in significant migration of contaminated groundwater, and proposed continued monitoring to further evaluate natural attenuation and other localized treatment/remediation options.

References:

1. Soils Remedial Investigations/Remedial Actions Summary Report for Project Activities Performed March, 1992 to May, 1993, Volume 1, Chevron Chemical Company, South Plainfield, New Jersey. Prepared by Enserch Environmental Corporation. Dated July 1994.
2. Summary of ECRA/ISRA Site Activities, Chevron Chemical Company, Plainfield, New Jersey. Prepared by Foster Wheeler Environmental Corporation. Dated September 1995.
3. Off-Site Soils Remedial Investigation Summary Report for Project Activities Performed April 1992 to March 1995, Volume 1, Chevron Chemical Company, Plainfield, New Jersey. Prepared by Foster Wheeler Environmental Corporation. Dated December 1995.
4. Addendum No. 1 to the 1995 Off-Site Soils Remedial Investigation Summary Report for Project Activities Performed March and June 1997, Volume 1. Prepared by Foster Wheeler Environmental Corporation. Dated October 1997.
5. Work Plan for Abramson Property Investigative Sampling, Chevron Chemical Company, Plainfield, New Jersey. Prepared by Foster Wheeler Environmental Corporation. Dated May 1998.
6. Addendum No. 2 to the 1995 Off-Site Soils Remedial Investigation Summary Report for Project Activities Performed March 1997 and September/November 1998, Volume 1. Prepared by Foster Wheeler Environmental Corporation. Dated February 1999.

[2] J1 = estimated value due to percent moisture >50%

7. January 1999 Semi-Annual Groundwater Sampling and Analysis Report, Volume 1, Chevron Chemical Company, Plainfield, New Jersey. Prepared by Foster Wheeler Environmental Corporation. Dated June 1999.
8. Letter from Stephen Maybury, NJDEP to Chevron, re: NJPDES Permit. Dated March 8, 2000.
9. Letter from John R. Vogeley, BBL Environmental Services, Inc., to Sharon Bruder, NJDEP, re: Meeting of November 1, 2000 and Revised Remedial Action Schedule. Dated November 16, 2000.
10. Hydrogeologic Assessment Report, Volumes I and II. Prepared by Blasland, Bouck & Lee. Dated June 2001.
11. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Response to NJDEP Comment Letter Received on October 18, 2002, Chevron Chemical Company, S. Plainfield, Middlesex County ISRA Case #E88205, Hydrogeologic Assessment Report and Abramson Property, Baseline Ecological Evaluation (BEE) Dated: June 14, 2001, EPA Information Evaluation Letter Dated: November 29, 2001, Response to NJDEP's 07/26/01 and 8/23/01 Comment Letters Dated: February 2, 2002, Supplemental Remedial Investigation Workplan (RIW) for Off-Site Soils Dated: March 12, 2002, Abramson Property Soil Delineation Report Dated: March 22, 2002, Supplemental Remedial Investigation Report for On-Site Soil Dated: March 29, 2002. Dated January 29, 2003.
12. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Chevron Chemical Company, South Plainfield, Middlesex County, ISRA Case #E88205, Response to NJDEP Comment Letter Dated March 18, 2003 and Response to NJDEP Comment Letter Dated April 29, 2003. Dated June 13, 2003.

2. Is **groundwater** known or reasonably suspected to be "**contaminated**"[3] 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?

   _X_ 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:

Groundwater Conditions
Groundwater occurs in two water-bearing units underlying the facility: overburden and fractured bedrock. The overburden unit consists of approximately three to four feet of sandy and silty fill material, underlain by gray to red-brown fine- to coarse-grained silty sand that has a saturated thickness of 7 to 26 feet across the site. Groundwater in the overburden unit occurs under unconfined conditions. According to the latest groundwater monitoring results, depth to water varies from approximately three to seven feet below top of casing (Ref. 6). Groundwater flow in the overburden unit beneath the site is to the southwest towards Bound Brook, which is located 750 feet from site and acts as the discharge area for the overburden unit (Ref. 2). See the Groundwater Contour Map, dated April 21, 2003 (Figure 1) in the most recent groundwater monitoring report for a depiction of groundwater flow direction (Ref. 6). South of Bound Brook, groundwater flow in the overburden unit is to the north and northwest, discharging to the surface water system (Ref. 1). Groundwater flow in the fractured bedrock occurs under confined conditions in the shale layers of the Passaic Formation. Hydraulic conductivity within the Passaic Formation is highly variable, but it is reported that the upper portion of the Passaic Formation consists of low permeability shale and that the lower portion consists of more permeable units (Ref. 2).

The overburden and fractured bedrock units are separated by a silty clay layer that ranges from 24 feet thick in the northwest portion of site to 32 feet thick in the southeastern portion of the site (Ref. 2). In the central portion of the site, the silty clay is underlain by a sand layer up to four feet thick. The clay unit, in combination with the low permeability shale units of the upper Passaic Formation, acts as an aquitard that prevents the downward vertical migration of contaminants (Ref. 2). Sampling of bedrock well BR-1 in 1993 indicated no groundwater contamination (Ref. 3), which verifies the effectiveness of the clay unit to act as a hydraulic barrier to groundwater flow.

Groundwater in the overburden unit is classified as New Jersey Class II-A potable groundwater, although it is reported that shallow groundwater is not currently used as a source of potable water (Ref. 3). The Passaic Formation is a primary source of water supply for the region (Ref. 2).

Groundwater Quality
Semi-annual groundwater sampling of the overburden unit has been conducted at the site since January 1992. The monitoring program includes water level measurements and sample collection from 14 on-site wells (DSW-2, DSW-6, DSW-7, DSW-9, P-1, P-2, P-3, P-7, P-9, P-11, P-12, P-13, P-17, and P-19) and 4 off-site wells (MR-1, MR-2, TP-1, and TP-2). Water level measurements are taken at an additional 23 monitoring wells as part of the groundwater monitoring program. See Figure 1 in the most recent groundwater monitoring report for monitoring well locations (Ref. 6).

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[3] "Contamination" and "contaminated" describe 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).

BTEX, OCPs, and arsenic have historically been detected in groundwater beneath the site at concentrations above NJ GWQC. Maximum concentrations in excess of NJ GWQC reported during the most recent monitoring event (April 2003) are presented in Table 1. Chevron has reported that the arsenic contamination is likely the result of background conditions, former coal yard operations conducted prior to Chevron's ownership of the site, or fill material used at the site (Ref. 5). A response to Chevron's argument was not located in file materials. The source areas for BTEX and OCP groundwater contamination have been identified as the former Rinsate Pond area, the historic Loading/Storage area, and SCOPE Areas 1 (Area B) and 2 (Area C). The location of these areas is illustrated in Figure 3-13 of the Hydrogeologic Assessment Report (Ref. 2).

Table 1 - Contaminant Concentrations Above NJ GWQC - April 2003 (µg/L)

Constituent	Well I.D.	Concentration[1]	NJ GWQC[2]
VOCs			
Benzene	P-7	16	1
Ethylbenzene	DSW-7	1100	700
Xylenes	DSW-7	6000	1000
Chlorobenzene	P-12	63	50
Organochlorine Pesticides			
Aldrin	P-13	0.12	0.04
Alpha-BHC	P-1	6	0.02
Beta-BHC	P-9	6.1	0.2
Gamma-BHC	P-1	15	0.2
Chlordane	P-3	60	0.5
Dieldrin	P-3	8	0.03
Endosulfan I	P-1	6.7	0.4
Endosulfan sulfate	P-3	3	0.4
Endrin	P-19	2.4	2
Metals			
Arsenic	P-13	126	8

1. Ref. 6 is the data source. Samples were collected in April 2003 in fulfillment of the semi-annual monitoring requirement.
2. Criteria listed are the higher of NJ GWQC and the Practical Quantitation Level (PQL).

BTEX contamination, with some OCPs, appears to originate at the south end of the main building in the historic Loading/Storage Area. During the April 2003 groundwater monitoring event, total BTEX compounds were reported at a maximum concentration of 7,100 µg/l at well DSW-7, near the former oil/solvent tank area. These concentrations decreased to 430 µg/l in downgradient well P-7 and further decreased to 14 µg/l further downgradient of the suspected source area in on-site well P-12.

VOC and OCP contamination is also present in groundwater at the southern part of the site. This plume has been attributed to discharges to the subsurface from the Former Rinsate Pond and Scope Areas. As illustrated in Table 1, the highest OCP concentrations reported during the latest monitoring event (April 2003) occurred in wells P-1, P-3, P-9, P-13, and P-19, which are located in the vicinity of the former

Rinsate Pond and SCOPE Areas, with the exception of well P-9. The maximum OCP concentrations are generally one to two orders of magnitude greater than the NJ GWQC (Table 1). Chevron reports no evidence of free product on site based on the results of field observations and sampling conducted in January and April 2003 (Ref. 5).

Arsenic concentrations in excess of NJ GWQC have been reported in monitoring wells across the site (Ref. 6). As shown in Table 1, the highest concentration was reported in well P-13, which is located on site along the downgradient property boundary. Sampling of wells MR-1, MR-2, TP-1, and TP-2 in November 2002 indicate arsenic concentrations below NJ GWQC in off-site, downgradient groundwater (Ref. 4). As mentioned previously, Chevron has argued that the observed arsenic concentrations are not attributable to Chevron site activities.

OCP concentrations above NJ GWQC have been reported in groundwater monitoring wells MR-1 and MR-2, located immediately off site adjacent to Metuchen Road (unpaved portion). The most recent monitoring results (April 2003) indicate OCP concentrations above NJ GWQC in off-site well MR-2 for alpha-BHC and dieldrin (Ref. 6). Sporadic exceedances above NJ GWQC have also been reported in well MR-1, although none were reported in April 2003. Nevertheless, OCP-contaminated groundwater has not migrated to off-site wells TP-1 and TP-2, which are located downgradient of wells MR-1 and MR-2 beyond the roadway and Conrail line tracks.

References:

1. Groundwater Modeling Report for the Revised Groundwater Treatment System, Chevron Chemical Company, Plainfield, New Jersey. Prepared by Foster Wheeler Environmental Corporation. Dated May, 1998.
2. Hydrogeologic Assessment Report, Volumes I and II. Prepared by Blasland, Bouck & Lee. Dated June 2001.
3. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Response to NJDEP Comment Letter Received on October 18, 2002, Chevron Chemical Company, S. Plainfield, Middlesex County ISRA Case #E88205, Hydrogeologic Assessment Report and Abramson Property, Baseline Ecological Evaluation (BEE) Dated: June 14, 2001, EPA Information Evaluation Letter Dated: November 29, 2001, Response to NJDEP's 07/26/01 and 8/23/01 Comment Letters Dated: February 2, 2002, Supplemental Remedial Investigation Workplan (RIW) for Off-Site Soils Dated: March 12, 2002, Abramson Property Soil Delineation Report Dated: March 22, 2002, Supplemental Remedial Investigation Report for On-Site Soil Dated: March 29, 2002. Dated January 29, 2003.
4. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Fourth Quarter 2002 Groundwater Monitoring Event Results, Former Ortho Products Facility, South Plainfield, New Jersey. Dated March 5, 2003.
5. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Chevron Chemical Company, South Plainfield, Middlesex County, ISRA Case #E88205, Response to NJDEP Comment Letter Dated March 18, 2003 and Response to NJDEP Comment Letter Dated April 29, 2003. Dated June 13, 2003.
6. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Second Quarter 2003 Groundwater Monitoring Event Results, Former Ortho Products Facility, South Plainfield, New Jersey, BBL Project #43178.050. Dated July 2, 2003.

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within the "existing area of contaminated groundwater"[4] as defined by the monitoring locations designated at the time of this determination)?

    _X_ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination."[2]

    ____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

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

Rationale:

Completed Remedial Actions
Chevron initiated groundwater remediation activities in November 1994. Water was extracted from the overburden unit and treated by carbon adsorption, and was re-injected into the subsurface at well ER-1 or ER-2 at the northwestern corner of the property. By December 1998, the system had recovered and treated a total of approximately 17,617,000 gallons from wells P-12 and DSW-8 (Ref. 1). Operation of the treatment system was suspended in December 1999 for upgrade work following a control system failure. The system was not placed back on-line pursuant to an agreement between Chevron and NJDEP to further evaluate groundwater contamination at the site (Ref. 2). The evaluation, presented in the Hydrogeologic Assessment Report, concluded that pump and treat technology would not effectively remediate OCP-contaminated groundwater within a reasonable time frame (Ref. 3). The report concluded that discontinuing extraction operations would not result in significant migration of contaminated groundwater. Consequently, the pump and treat system has not operated since December 1999.

Contaminant Stabilization
The migration of contaminated groundwater appears to be stabilized at the Chevron facility as evidenced by the following conditions:

- The vertical extent of groundwater contamination is limited to the base of the overburden unit due to the low hydraulic conductivity and continuous distribution of the underlying clay layer and upper portion of the Passaic Formation.

- Results of predictive modeling indicate that the area of groundwater impacts will not increase significantly and will not impact downgradient receptors in the foreseeable future. Pore volume analysis and one-dimensional solute-transport modeling were performed as part of the Hydrogeologic Assessment Report (Ref. 3). The modeling predicts that OCPs would not migrate significant distances due to their low solubility, low volatility, and strong preference for the sorbed

[4] "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.

phase. For example, the model predicts that migration of alpha-BHC, dieldrin, and chlordane for a distance of 25 feet would take 10, 17, and 40 years, respectively.

- Contaminant concentrations in downgradient wells have decreased due to operation of the pump and treat system and natural attenuation based on a review of historic data collected from 1992 to the end of 1999, when the pump and treat system ceased operation. Statistical analysis of the 1992 - 1999 groundwater monitoring data by the Mann-Kendall test indicated no significant trend(s) for most compounds in most wells (59 percent of the well-specific contaminant concentrations), a significant decreasing trend in 37 percent, and a significant increasing trend in 4 percent (Ref. 4). None of the wells that were identified with increasing trends (wells P-3, P-11, P-12, P-19, and DSW-2) are located at the leading edge of the contaminant plumes. Such increases are therefore most likely representative of more heavily impacted pockets of contamination located in the vicinity of suspected source areas.

- Contaminant concentrations in downgradient wells have decreased due to natural attenuation since operation of the pump and treat system ceased.

  Table 2 presents contaminant concentrations reported in three downgradient wells (MR-1, MR-2, and P-13) that define the leading edge of the OCP contaminant plume. These data were collected in January 2001, approximately one year after the pump and treat system ceased operation, and in April 2003, more than three years after system shutdown. A review of Table 2 illustrates that OCP concentrations in well MR-1 have decreased significantly. Three of the four OCPs (alpha-BHC, beta-BHC, and gamma-BHC) detected in 2001 were not detected in 2003, and the fourth OCP (dieldrin) decreased by over 50 percent. OCP concentrations in well MR-2, which reported a larger suite of OCP constituents than well MR-1, also decreased from 2001 to 2003. Only alpha-BHC concentrations increased between 2001 and 2003, and the current concentration is only slightly above the NJ GWQC of 0.02 µg/L for this constituent.

  Table 2 also presents VOC contaminant concentrations in well P-12, which is located downgradient of source area wells DSW-7 and P-7. As shown in the table, benzene and xylene concentrations in well P-12 have decreased from 2001 to 2003. Arsenic concentrations are not presented in Table 2 because arsenic was not analyzed in 2001. However, more recent data suggest that concentrations at well P-13, which has reported the highest historic concentrations and is located along the downgradient property boundary, may be decreasing. Arsenic concentrations in well P-13 decreased from 158 µg/L in November 2002 (Ref. 5) to 126 µg/L in April 2003 (Ref. 6).

- OCP-contaminated groundwater (and other constituents) have not migrated to off-site wells TP-1 and TP-2, which are located downgradient of wells MR-1 and MR-2 beyond the roadway and Conrail line tracks.

Table 2 - Comparison of Contaminant Concentrations Over Time in Downgradient Wells (µg/L)

Well	Contaminant	NJ GWQC	January 2001 Concentration[1]	April 2003 Concentration[1]
OCPs				
MR-1	Alpha-BHC Dieldrin	0.02 0.03	0.024 0.034	ND 0.015
MR-2	Alpha-BHC Beta-BHC Chlordane Dieldrin Endosulfansulfate	0.02 0.2 0.5 0.03 0.4	ND 0.2 2.1 0.6 0.8	0.022 0.037 ND 0.24 0.16
VOCs				
P-12	Benzene Xylenes	140	2465	130.28

1 Data sources are Refs. 3 and 6. Table 2 only includes contaminants for which NJ GWQC have been established.

Proposed Remedial Action and Monitoring

In the June 2001 Hydrogeologic Assessment Report (Ref. 3), Chevron proposed a monitoring program to evaluate potential groundwater remedial actions including natural attenuation and/or localized treatment/remediation. Chevron described plans to maintain the pump and treat system so that it could be restarted if necessary to protect human health and the environment. NJDEP reviewed Chevron's proposal for monitoring to assess the potential for natural attenuation and stated that such a proposal was premature because source control was incomplete (Ref. 4). Chevron agreed with NJDEP's position and stated that longer periods of monitoring than typically completed may be required due to the relatively slow attenuation rates for OCPs. In addition, Chevron agreed to perform additional characterization of the former source areas in the vicinity of the former Eastern Unlined Drainage Ditch and the former Rinsate Pond (Area D)(Ref. 4). Chevron also stated that a Classification Exemption Area (CEA) would be developed and submitted to NJDEP to designate areas of the aquifer that are currently impacted above the NJ GWQC (Ref. 4).

References:

1. July 1998 Semi-Annual Groundwater Sampling and Analysis Report, Volume 1, Chevron Chemical Company, Plainfield, New Jersey. Prepared by Foster Wheeler Environmental Corporation. Dated February, 1999.
2. Letter from John R. Vogeley, BBL Environmental Services, Inc., to Sharon Bruder, NJDEP, re: Meeting of November 1, 2000 and Revised Remedial Action Schedule. Dated November 16, 2000.
3. Hydrogeologic Assessment Report, Volumes I and II. Prepared by Blasland, Bouck & Lee. Dated June 2001.
4. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Response to NJDEP Comment Letter Received on October 18, 2002, Chevron Chemical Company, S. Plainfield, Middlesex County ISRA Case #E88205, Hydrogeologic Assessment Report and Abramson Property, Baseline Ecological Evaluation (BEE) Dated: June 14, 2001, EPA Information Evaluation Letter Dated: November 29, 2001, Response to NJDEP's 07/26/01 and 8/23/01 Comment Letters Dated: February 2, 2002, Supplemental Remedial Investigation Workplan (RIW) for Off-Site Soils Dated: March 12, 2002, Abramson Property Soil Delineation Report Dated:

March 22, 2002, Supplemental Remedial Investigation Report for On-Site Soil Dated: March 29, 2002. Dated January 29, 2003.

5. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Fourth Quarter 2002 Groundwater Monitoring Event Results, Former Ortho Products Facility, South Plainfield, New Jersey. Dated March 5, 2003.
6. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Second Quarter 2003 Groundwater Monitoring Event Results, Former Ortho Products Facility, South Plainfield, New Jersey, BBL Project #43178.050. Dated July 2, 2003.

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

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

_X_ 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:

Bound Brook is located off site along the western side of the facility, approximately 750 feet from the facility boundary. Groundwater flow in the overburden unit is towards the southwest towards Bound Brook, where groundwater discharge occurs. Analytical data collected in April 2003 from off-site monitoring wells TP-1 and TP-2, located between the facility and brook, report no contaminants above the NJ GWQC (Ref. 4). Consequently, contaminated groundwater from the Chevron site is not discharging to Bound Brook. However, NJDEP has expressed concern that wetlands may exist between wells TP-1 and TP-2 and wells MR-1 and MR-2, located closer to the site and reporting minor contamination in excess of the NJ GWQC as discussed in the response to Question 2 (Ref. 2). These wetlands may act as discharge areas for contaminated groundwater. Chevron has agreed to investigate the hydrologic regime and potential for groundwater discharge between wells MR-1/MR-2 and TP-1/TP-2 (Ref. 3).

An unnamed tributary of Bound Brook flows through the site to wetlands in the southern end of the Chevron property and in the adjacent Abramson property located to the south of the Chevron property. The location of the unnamed tributary of Bound Brook is illustrated in Figure 3-13 of the Hydrogeologic Assessment Report (Ref. 1). Based on a review of groundwater flow maps, including the most recent flow map presented in the July 2003 monitoring report (Ref. 4), the southwest flow direction in the overburden unit appears to preclude the discharge of contaminated groundwater to the wetland. However, detections of chlordane and dieldrin in a temporary well (PPNDP-DR-03) installed in the wetland (sample date 11/16/00) exceeded NJ GWQC and suggest that groundwater flow in this immediate area is not completely understood (Ref. 2). Consequently, NJDEP has requested additional hydrologic data from Chevron to demonstrate that the wetlands adjacent to the Abramson property are not subject to the discharge of contaminated groundwater (Ref. 3). Chevron has proposed an additional permanent monitoring well to be installed in the overburden unit to an approximate depth of 14 feet below ground surface at the approximate location shown in Figure 1 of a July 2003 letter to NJDEP (Ref. 5).

Based on currently available information, contaminated groundwater from the facility is not discharging to surface water. Investigations into potential discharge to wetlands downgradient of wells MR-1/MR-2 and to wetlands adjacent to the Abramson property are ongoing. When available, investigation results should be reviewed to assess the implications on this CA750 determination.

References:

1. Hydrogeologic Assessment Report, Volumes I and II. Prepared by Blasland, Bouck & Lee. Dated June 2001.
2. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Response to NJDEP Comment Letter Received on October 18, 2002, Chevron Chemical Company, S. Plainfield, Middlesex County ISRA Case #E88205, Hydrogeologic Assessment Report and

Abramson Property, Baseline Ecological Evaluation (BEE) Dated: June 14, 2001, EPA Information Evaluation Letter Dated: November 29, 2001, Response to NJDEP's 07/26/01 and 8/23/01 Comment Letters Dated: February 2, 2002, Supplemental Remedial Investigation Workplan (RIW) for Off-Site Soils Dated: March 12, 2002, Abramson Property Soil Delineation Report Dated: March 22, 2002, Supplemental Remedial Investigation Report for On-Site Soil Dated: March 29, 2002. Dated January 29, 2003.

3. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Chevron Chemical Company, South Plainfield, Middlesex County, ISRA Case #E88205, Response to NJDEP Comment Letter Dated March 18, 2003 and Response to NJDEP Comment Letter Dated April 29, 2003. Dated June 13, 2003.
4. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Second Quarter 2003 Groundwater Monitoring Event Results, Former Ortho Products Facility, South Plainfield, New Jersey, BBL Project #: 43178.050. Dated July 2, 2003.
5. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: New Monitoring Well, Abramson Property, Chevron Chemical Company, South Plainfield, Middlesex County, ISRA Case #E88205, BBL Project #43178.210#2. Dated July 18, 2003.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[5] of each contaminant discharging into surface water is less than 10 times its 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 ecosystems 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 concentration[3] 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 judgement/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 ecosystem.

____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] 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 concentrations[3] 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:

This question is not applicable. See response to Question #4.

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

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 ecosystems that should not be allowed to continue until a final remedy decision can be made and implemented[6])?

____ 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 ecosystems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment[7], appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialist, including an ecologist) adequately protective of receiving surface water, sediments, and ecosystems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered 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 ecosystem.

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

Rationale:

This question is not applicable. See response to Question #4.

[6] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, an 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.

[7] 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.

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?"

    _X_ 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:

Semi-annual groundwater sampling is currently conducted at the site. The monitoring network includes water level measurements and sample collection from 14 on-site wells (DSW-2, DSW-6, DSW-7, DSW-9, P-1, P-2, P-3, P-7, P-9, P-11, P-12, P-13, P-17 and P-19) and 4 off-site wells (MR-1, MR-2, TP-1, and TP-2) (Ref. 2). Water level measurements are taken at an additional 23 monitoring wells as part of the groundwater monitoring program. Chevron will use groundwater monitoring results to ensure that known groundwater contamination remains under control and within the existing impacted area and to evaluate natural attenuation as a possible groundwater remediation strategy (Ref. 1). A final groundwater monitoring network and monitoring program will be required as part of the Corrective Measure Study (CMS) and the expected proposal for the designation of the CEA discussed in the response to Question 3.

References:

1. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Response to NJDEP Comment Letter Received on October 18, 2002, Chevron Chemical Company, S. Plainfield, Middlesex County ISRA Case #E88205, Hydrogeologic Assessment Report and Abramson Property, Baseline Ecological Evaluation (BEE) Dated: June 14, 2001, EPA Information Evaluation Letter Dated: November 29, 2001, Response to NJDEP's 07/26/01 and 8/23/01 Comment Letters Dated: February 2, 2002, Supplemental Remedial Investigation Workplan (RIW) for Off-Site Soils Dated: March 12, 2002, Abramson Property Soil Delineation Report Dated: March 22, 2002, Supplemental Remedial Investigation Report for On-Site Soil Dated: March 29, 2002. Dated January 29, 2003.
2. Letter from Michael Fleischner, Blasland, Bouck & Lee, to Sharon Bruder, NJDEP, re: Second Quarter 2003 Groundwater Monitoring Event Results, Former Ortho Products Facility, South Plainfield, New Jersey, BBL Project #: 43178.050. Dated July 2, 2003.

8. Check the appropriate RCRIS 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).

__X__ 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 Chevron Chemical Company, South Plainfield facility, EPA ID# NJD002171593, located at 800 Metuchen Road, South Plainfield, New Jersey. 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: _____ Date:_____

Lucas Kingston
Hydrogeologist
Booz Allen Hamilton

Reviewed by: _____ Date:_____

Michele Benchouk
Hydrogeologist
Booz Allen Hamilton

Also Reviewed by: _____ Date:_____

Andrew Park, RPM
RCRA Programs Branch
USEPA Region 2

_____ Date:_____

Barry Tornick, Section Chief
RCRA Programs Branch
USEPA Region 2

Approved by: Original signed by: Date: September 16, 2005

Adolph Everett, Acting Chief
RCRA Programs Branch
USEPA Region 2

Locations where references may be found:

References reviewed to prepare this EI determination are identified after each response. Reference materials are available at the USEPA Region 2, RCRA Records Center, located at 290 Broadway, 15th Floor, New York, New York, and the New Jersey Department of Environmental Protection Office located at 401 East State Street, Records Center, 6th Floor, Trenton, New Jersey.

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Attachments

The following attachment have been provided to support this EI determination.

- Attachment 1 - Summary of Media Impacts Table

Attachment 1 - Summary of Media Impacts Table

Chevron Chemical Company (South Plainfield)

AOC	GW	AIR (Indoors)	SURF SOIL	SURF WATER	SED	SUB SURF SOIL	AIR (Outdoors)	CORRECTIVE ACTION MEASURE	CONTAMINANTS
Overburden Groundwater	Yes	NA						▸ Extract impacted groundwater for treatment via carbon adsorption followed by reinjection on site (completed) ▸ Implement CEA ▸ Continue groundwater monitoring to evaluate groundwater remedial actions including natural attenuation and/or localized treatment/remediation.	OCPs, VOCs, Arsenic
Bedrock Groundwater	No	NA						NA	None

NA - Not applicable