DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)
Current Human Exposures Under Control

Facility Name: **Clariant Corporation**
Facility Address: **Fair Lawn Avenue and Third Street, Fair Lawn, New Jersey 07410**
Facility EPA ID#: **NJD001213453**

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 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 "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 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 "Current Human Exposures Under Control" EI is for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and does 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 Determination status codes should remain in the RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

Facility Information

The Clariant Corporation (formerly Sandoz Chemicals) facility is a 13.5-acre property located at the intersection of Fair Lawn Avenue and Third Street in Fair Lawn, Bergen County, New Jersey. The facility is bounded to the west by the Passaic River and wooded areas, to the south and east by residential areas, and to the north by industrial properties.

Prior to 1946, the property was used as a sand and gravel mining operation. The property was mined to groundwater depth (approximately 30 feet below ground surface) over most of the site. The former quarry was then backfilled with a heterogeneous mixture of sand, gravel, and concrete rubble. Sandoz purchased the facility in 1946 from the Borough of Fair Lawn. In 1995, Sandoz Chemicals changed its name to Clariant Corporation. Manufacturing activities were conducted on approximately six acres at the southern end of the site. Clariant manufactured several products that were utilized by the textile and paper industries, such as softeners, optical brighteners, and dyes. Clariant generated hazardous waste consisting of primarily spent orthodichlorobenzene solvent mixture (ODCB-SM) consisting of 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, chlorobenzene, 1,2,4-trichlorobenzene, and benzene, which was recovered on site. The facility also had several underground storage tanks (USTs) that contained petroleum products and hazardous materials. Since 1991, approximately 1.5 acres at the far northern portion of the site have been leased to Joel Tanis and Sons, Inc., a manufacturer of ready-made concrete. Manufacturing operations ceased at the Clariant facility in November 1992.

Upon ceasing operations, the facility became subject to the regulations of the Industrial Site Recovery Act (ISRA), formerly known as the Environmental Cleanup Responsibility Act (ECRA). Since 1989, several site investigations and/or remediation activities have occurred. Previous investigations at the site were related to the closure of a RCRA hazardous waste tank and the subsequent closure of the UST farm. Site-wide facility investigation reports include a 1992 Site Investigation (SI) Report, a 1993 Soil Sampling Plan and Report, a 1994 Groundwater Investigation Report, and a 1998 Remedial Action Report (RAR). Current site activities include ongoing ISRA remedial investigations and remedial actions.

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?

   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 Areas of Environmental Concern (AEC): The Clariant facility has been the subject of ongoing investigations since 1989. Surface soil, subsurface soil, and groundwater contamination were identified during the 1992 SI. SI results were presented in the Site Investigation Plan and Results Report (September 1992). Subsequent investigation results were included in the Phase II Groundwater Investigation Report (January 1994), and Soil Sampling Plan Addendum (May 1994). **The SI identified 20 AECs at the property. Groundwater contamination has generally been investigated on a site-wide basis and has been designated a separate AEC. In addition, because historic fill is site-wide, it has been designated a separate AEC. Brief descriptions of each AEC and the contaminants detected above New Jersey Department of Environmental Protection (NJDEP) standards[1] are outlined below. A site plan is provided as Attachment 1.**

AEC A, Former UST Farm: Six 6,500-gallon USTs were formerly located on the north side of the property. Tanks 1 through 4 were installed in 1968, and tanks 5 and 6 were installed in 1972. All tanks were taken out of service in December 1990, and removed in March 1992 per the approved UST closure plan. Five monitoring wells and 19 soil borings were installed during the SI. Sampling results indicated contamination in both the saturated and unsaturated zones (Ref. 3). Detected contaminants include volatile organic compounds (VOCs) originating from ODCB-SM components. Contaminants were detected in subsurface soil and groundwater in excess of NJ standards. Groundwater and soil contamination at this AEC are currently being remediated by an air sparging/soil vapor extraction (AS/SVE) system used in conjunction with a groundwater treatment system (GWTS). In addition, a draft Declaration of Environmental Restriction (DER) was submitted to NJDEP in July 1998 as part of the RAR. The DER will restrict the use of impacted areas to non-residential use only in order to prevent exposure to elevated concentrations of contaminants in soil (Ref. 5).

AEC B-A/B, Window Well Area: The window well area consists of a trench, built along the west side of Building 305, which provided ventilation for the basement in this building. Coarse gravel covers the bottom of the window well. Two separate process lines existed in Building 305; the southern half (Section A) produced only water-based product, while the northern half (Section B) housed the production of solvent based products. Five soil samples were collected from

1 Clariant has evaluated on-site surface soil contaminants using the New Jersey Residential Direct Contact Soil Cleanup Criteria (NJ RDCSCC) and/or New Jersey Non-Residential Direct Contact Soil Cleanup Criteria (NJ NRDCSCC). Subsurface soil contaminants were compared to the New Jersey Impact to Groundwater Soil Cleanup Criteria (IGWSCC). Groundwater concentrations were comparted to NJ Ground Water Quality Criteria (GWQC) for a Class IIA Aquifer.

Section A during the SI. Copper, zinc, polyaromatic base/neutral extractable compounds, and Aroclor 1260 were detected in excess of relevant NJ standards (Ref. 2). In September 1994, the top two feet of soil was excavated from Section A. Confirmatory sampling results indicated concentrations below NJ RDCSCC (Ref. 2). Thus, Section A received a no further action determination from NJDEP in March 1995 (Ref. 5). In Section B, only subsurface soil samples were obtained during the SI. Results indicated the presence of several components of ODCB-SM at concentrations above NJ standards. Subsurface soil and groundwater contamination at Section B are being addressed through the AS/SVE and groundwater treatment systems implemented at AEC A (Ref. 4). Section B was also included in the draft DER submitted to NJDEP in July 1998 (Ref. 5).

AEC C, Former Lime Pit: From 1948 until 1973, sulfuric acid waste was discharged to a neutralization basin located northwest of the manufacturing buildings for neutralization with lime. Subsurface soil samples were obtained during the SI. No constituents were observed in the unsaturated zone in excess of NJ NRDCSCC; however, several organic parameters, including chlorobenzene and tetrachloroethylene (PCE), were detected in the saturated zone above NJ RDCSCC and NJ IGWSCC (Ref. 4). Subsurface soil and groundwater contamination in this area is currently being addressed by the AS/SVE system. This area was also included in the DER submitted to NJDEP in July 1998 (Ref. 5).

AEC D-001, New Jersey Pollutant Discharge Elimination System (NJPDES) Outfall 001: This AEC includes the former NJPDES Outfall 001 and surrounding surface soil. Discharge from this outfall included pavement drainage and cooling water from the B-Section (northern half) of Building 305 (AEC B). The outfall, which is no longer in use, was an 8-inch cast iron pipe located approximately 20 feet below the main plant elevation. One surface soil sample was collected during the SI. Benzo(b)fluoranthene (0.945 mg/kg), Aroclor 1260 (1.79 mg/kg), and cadmium (1.3 mg/kg), were all detected above NJ RDCSCC (Ref. 3). Chlorobenzene and PCE were also detected above NJ RDCSCC and NJ IGWSCC. Engineering controls (e.g., geotextile cover, barbed wire chain-link fence) were installed, and this area was included in the DER submitted to NJDEP in July 1998. Given the installation of engineering controls, no further action was proposed for this area (Ref. 5). The current status of the no further action proposal was not found in the file materials.

AEC D-002/D-003, NJPDES Outfall 002 and 003: This AEC includes NJPDES Outfalls 002 and 003, and surrounding surface soil. Outfall 002, located west of the southwest corner of Building 305, was used for roof drainage and non-contact cooling water from the A-Section (southern half) of Building 305 (AEC B). Because of the close proximity to NJPDES Outfall 003, which was used for discharge cooling tower overflow and drainage from the area between Buildings 303 and 305, these two outfall areas were combined after the delineation activities. One surface soil sample was collected from AEC D-002 during the SI. Benzo(a)pyrene (0.816 mg/kg) and cadmium (1.1 mg/kg) exceeded NJ RDCSCC. One surface soil sample was collected from AEC D-003 during the SI. Several polycyclic aromatic hydrocarbons (PAHs) and cadmium (7.7 mg/kg) exceeded NJ RDCSCC. In addition, Aroclor 1260 (3.9 mg/kg) exceeded both the NJ RDCSCC and NJ NRDCSCC (Ref. 3). Clariant proposed an alternative cleanup criterion for cadmium (39 mg/kg) in the July 1998 RAR. Engineering controls (e.g., geotextile cover, barbed wire chain-link fence) were installed and this area was included in the DER submitted to NJDEP in July 1998. Given the installation of engineering controls, no further action

was proposed for this area (Ref. 5). The current status of the no further action proposal was not found in the file materials.

AEC D-004, NJPDES Outfall 004: This AEC includes the NJPDES Outfall 004, used for the north plant area storm drainage, roof drainage of Buildings 305 and 306, and former floor drains in Building 306, as well as surrounding soil. This outfall, currently in use, is an eight-inch pipe which discharges roof drainage and storm water from the north and east of Buildings 305 and 306. Outfall 004 is located approximately 20 feet below the plant elevation and near the northwest corner of Building 305. One surface soil sample was collected during the SI. Aroclor 1260 (4.12 mg/kg) exceeded both the NJ RDCSCC and NJ NRDCSCC. In addition, cadmium (2.4 mg/kg) and lead (100 mg/kg) exceeded NJ RDCSCC (Ref. 3). Engineering controls (e.g., geotextile cover, barbed wire chain-link fence) were installed and this area was included in the DER submitted to NJDEP in July 1998. Given the installation of engineering controls, no further action was proposed for this area (Ref. 5). The current status of the no further action proposal was not found in the file materials.

AEC D-005, NJPDES Outfall 005: This AEC includes the NJPDES Outfall 005, which was constructed as a catch basin near the former UST farm, but reportedly was never used, and surrounding soil. Bis(2-ethylhexyl)phthalate (167 mg/kg) and cadmium (1.7 mg/kg) exceeded the NJ RDCSCC in one surface soil sample collected during the SI. Cadmium, however, did not exceed the site-specific criterion (39 mg/kg). In re-sampling, concentrations of bis(2-ethylhexyl)phthalate (0.62 mg/kg) were below NJ RDCSCC. Thus, the original detects were considered a lab artifact and NJDEP determined that no further action was necessary for this area in March 1995 (Ref. 5).

AEC E, Above Ground Storage Tank (AST) Farm: Seven ASTs were located in an area north of Building 306. Prior to 1977, this area was used for storage of non-hazardous materials. The tank farm was originally constructed on crushed stone, but was upgraded with secondary containment in 1986 when the facility obtained a RCRA permit. The tanks were used to store finished products, intermediates, recyclable materials, and waste. One tank (F-6) was removed in 1991 during RCRA closure. The remaining tanks were cleaned for reuse or recycling after being taken out of service when the plant closed in 1992. Two soil samples were collected during the SI. All contaminant concentrations, with the exception of chlorobenzene (7.85 mg/kg), were below the NJ RDCSCC and NJ NRDCSCC (Ref 2). When the secondary containment was removed, all detected contaminants were below NJ RDCSCC and NJ IGWSCC in two additional borings (Ref. 5). NJDEP determined no further action was necessary for this AEC in March 1995 (Ref. 5).

AEC F-1, Former Storage Area: This AEC is located in the northwest corner of the property and on the hillside west of Building 305. The SI divided this AEC into three separate areas, including F-1-1, F-1-2, and F-1-3. AEC F-1-2 is the largest area of the three and is located between Outfalls 001 and 003. AECs F-1-1 and F-1-3 are just south of Outfall 004. Three surface soil samples were collected during the SI. Aroclor 1260 and two PAH compounds exceeded both the NJ RDCSCC and NJ NRDCSCC. Cadmium (1.8 mg/kg) and lead (310 mg/kg) were also detected at concentrations in excess of the NJ RDCSCC (Ref. 2). Engineering controls (e.g., geotextile cover, barbed wire chain-link fence) were installed and this area was included in the DER submitted to NJDEP in July 1998. Given the installation of engineering

controls, no further action was proposed for this area (Ref. 5). The current status of the no further action proposal was not found in the file materials.

AEC F-2, Former Storage Area at Garbage Shed: This AEC includes the soil along the hillside south of the garbage shed to a point midway along the length of Building 305. The garbage shed was formerly used for temporary storage of empty raw material bags and triple rinsed drums. Two surface soil and one soil boring sample were collected during the SI. Several PAHs, zinc (2,810 mg/kg), and lead (180 mg/kg) exceeded the NJ NRDCSCC, and Aroclor 1254 (2.0 mg/kg) and cadmium (4.1 mg/kg) exceeded the NJ RDCSCC (Ref. 3). During 1995 and 1996, 19 cubic yards of soil were excavated over several events. Post excavation sampling confirmed that no contaminants remained above NJ RDCSCC. No further action was proposed for this area (Ref. 5). The current status of the no further action determination was not found in the file materials.

AEC F-3, Former Storage Area at Southwest Corner: This AEC includes portions of the hillside stretching from the mid to southern end of Building 305 to the northern end of Building 301. The former RCRA drum storage area, at the southwest corner of Building 305, was adjacent to this area. Four surface soil and two subsurface soil samples detected Aroclor 1254, dibenzo(a,h)anthracene, benzo(a)pyrene, polychlorinated biphenyls (PCBs), copper, cadmium, and lead above NJ RDCSCC and/or NJ NRDCSCC (Ref 2). Soil excavation was performed in this area. Post-excavation sampling results confirmed that no contaminants remained above NJ RDCSCC. No further action was proposed for this area (Ref. 5). The current status of the no further action determination was not found in the file materials.

AEC F-4, Former Waste Oil Storage Area: This AEC includes the area immediately south of Buildings 301 and 302, and extends to the property fence line[2]. Drums containing waste lubricating oil were formerly stored on pavement in this area within the property boundaries. There is no evidence of any historic releases at this AEC, nor is there evidence of impact from other AECs (Ref. 8). Two subsurface soil samples were collected during the SI and no contaminant concentrations were detected in excess of NJ RDCSCC. Five surface soil samples were collected in 1995 to delineate PAH contamination within this AEC and results indicated that benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, Aroclor 1254, beryllium, cadmium, and lead were present at concentrations exceeding NJ RDCSCC (Ref. 2). Clariant contends that the majority of the contamination is due to historical fill material. In 1996, soil excavations were performed in discrete areas along the fence line; however, concentrations of PAHs currently remain in excess of NJ NRDCSCC inside the fence in the uncapped area between the fence line and the on-site asphalt cap, and beneath the asphalt in this

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2 There are ongoing discussions between NJDEP and Clariant regarding an off-site area located adjacent to the property boundary at this AEC. This off-site area includes the grassy and sidewalk area up to and including Fair Lawn Avenue. PAHs are present in surface soil above NJ RDCSCC in this off-site area. Clariant contends that Fair Lawn Avenue (i.e., engine exhaust from vehicle traffic) is the source of PAH contamination, rather than site-related historic fill material or other site-related releases. Clariant indicates that the August 1995 sampling data demonstrate a concentration gradient with PAH concentrations decreasing from the roadway towards the improved portion of the site (Ref. 6). In addition, there is no evidence of any historic releases or impact from other AECs, and this area is hydraulically upgradient from the site. On this basis, Clariant requested no further action determination from NJDEP for this off-site area (Ref. 8). NJDEP is currently evaluating whether this off-site area has been impacted by Fair Lawn Avenue road traffic or by Clariant's past activities, and whether this area should be granted a no further action determination .

area (Ref. 8). NJDEP rejected Clariant's no further action proposal for the unpaved portions of this area on the basis that PAHs are present above NJ NRDCSCC and that New Jersey's presumptive remedy for all historic fill is capping (Ref. 6). Discussions are currently ongoing between NJDEP and the facility.

AEC F-5, Former Above Ground Tanks: This AEC is an unpaved area east of Building 303. Three ASTs used for storing sulfuric acid, castor oil, and sodium hydroxide were located in this area but were removed prior to 1983. Two surface soil samples were collected during the SI. Lead was detected in excess of the NJ NRDCSCC. In addition, cadmium and beryllium exceeded the NJ RDCSCC (Ref 2). In September 1994, soil was excavated and drummed for off-site disposal (Ref. 2). Post-excavation sampling results indicated remaining contaminant levels were below NJ RDCSCC (Ref. 2). NJDEP determined no further action was necessary for this AEC in March 1995 (Ref. 5).

AEC F-6, Former Drumming Station: This AEC consists of a portion of an asphalt-paved driveway at the southwest corner of Building 302, which is adjacent to the loading bay. Drum filling operations were performed in this area. One subsurface soil sample was collected during the SI. No constituents were detected in excess of NJ RDCSCC. NJDEP determined no further action was necessary for this AEC in March 1995 (Ref. 5).

AEC F-7, Solvent Shed and O/S Area: This AEC consisted of an asphalt-paved area southwest of Building 307, located between Buildings 302 and 304. During the SI, samples were collected in areas where asphalt had deteriorated. Cadmium was detected above the NJ RDCSCC. This area has been subsequently re-paved (Ref. 3). Clariant proposed an alternative cleanup standard for cadmium (39 mg/kg) in the 1998 RAR. Subsequently no further action was proposed for this area (Ref. 5). The current status of the no further action proposal was not found in the file materials.

AEC F-8, Leucophor Loading Dock Area: This AEC is located at the southwest corner of Building 306 and adjacent to the leucophor loading dock. As this area was used for loading of hazardous materials, it was investigated during the SI. No constituents were detected in excess of NJ RDCSCC in the two soil borings taken during the SI. NJDEP determined no further action was necessary for this AEC in May 1993 (Ref. 5).

AEC F-9, Main Loading Dock Area: This AEC is located at the east end of Building 306. As this area was used for loading of hazardous materials, it was investigated during the SI. No constituents were detected in excess of NJ RDCSCC in the one shallow and one deep soil samples obtained during the SI. NJDEP determined that no further action was necessary for this AEC in March 1995 (Ref. 5).

AEC F-10, Outside Drum Storage and Flammable Storage Shed Area: This AEC, located at the northeast corner of the plant, was historically used for drum storage of hazardous materials. No constituents were detected in excess of NJ RDCSCC in two surface and subsurface soil samples obtained during the SI. NJDEP determined no further action was necessary for this AEC in March 1994 (Ref. 5).

AEC G, Existing and Former Heating Oil USTs: This AEC includes locations north of Building 303, where two 10,000-gallon heating oil USTs were removed in 1988, and east of

Building 303, where two 20,000-gallon fuel oil USTs reside. Soil sampling was performed in 1988 when the two 10,000-gallon tanks were removed. No constituents were detected in excess of NJ RDCSCC. NJDEP determined no further action was necessary for this AEC in May 1993 (Ref. 5).

AEC H, Transformer Pad: This AEC consists of a concrete pad located just west of Building 303, where electrical transformers were located. Four samples were obtained during the SI and analyzed for total petroleum hydrocarbons (TPH) and PCBs. Neither constituent exceeded relevant screening criteria. NJDEP determined no further action was necessary for this AEC in May 1993 (Ref. 5).

AEC I/J, Fill Characterization: A significant portion of this property was excavated during past quarrying operations and was backfilled at various times to various depths. AEC I is fill material located on the unused land in the northern section of the property. AEC J is fill material located on the Tanis leased area, located just north of AEC I. Soil borings indicate that the fill consists primarily of silty sand and gravel, with occasional occurrences of shale fragments, clayey organic silt, bricks, and cinders. No constituents exceeded NJ RDCSCC in four soil borings in both Area I and Area J. NJDEP determined no further action was necessary for these AECs in May 1993 (Ref. 5).

AEC K, Gypsum Pile Characterization: There are several piles of gypsum material located in the northeastern portion of the site, adjacent to Tanis leased area (AEC J). The gypsum piles are dredged materials from the lime pit area. Two samples of the gypsum material were obtained during the SI. No constituents were detected above NJ RDCSCC. NJDEP determined no further action was necessary for this AEC in May 1993 (Ref. 5).

AEC L, Former Building 302 Dry Well: This AEC consisted of a dry well that was located in Building 302. According to the RAR, the dry well was excavated, sampled, and plugged. Based on soil sample results, no further action was proposed for this area in the RAR (Ref. 5). The results of the soil samples did not warrant a groundwater investigation because all results were below the NJ IGWSCC. The current status of no further action proposal was not found in the file materials.

AEC M. Former Building Elevator Drain: This AEC is the elevator drain in Building 302. According to the RAR, the elevator drain was sampled for VOCs and PCBs as part of the SI. Based on soil sample results, no further action was proposed for this area in the RAR (Ref. 5). The results of the soil samples did not warrant a groundwater investigation because all results were below the NJ IGWSCC. The current status of the no further action proposal was not found in the file materials.

Historic Fill: Based on historical information, the site was a sand mining pit prior to being purchased by Sandoz chemicals in 1946. Historic fill was reportedly placed at the site in the late 1940s. In 1996, NJDEP requested that the extent of the fill area be delineated. Results presented in the 1998 RAR indicate that the majority of the fill was placed in the northern portion of the property at thicknesses of up to 30 feet, with the southern portion of the site consisting of less than 5 feet of fill material. Soil sample data from the 1992 SI indicate that the historic fill has concentrations of metals (beryllium and lead), PAHs, and PCBs in excess of NJ RDCSCC

widely distributed throughout the site. Thus, a draft DER for the historic fill material has been submitted to include metals, PAHs, and PCBs.

Groundwater: Groundwater investigations were initially conducted at this site in March 1992 as part of the closure operations of the Former UST Farm (AEC A). Additional investigations, including the 1994 Phase II Groundwater Investigation, were performed to delineate the extent of the groundwater contamination and define the boundaries of the plume. Constituents detected during groundwater investigations consisted of components of ODCB-SM, VOCs (1,1-dichloroethene, 1,2,4-trichlorobenzene, PCE, trichloroethylene [TCE]), and metals (arsenic, chromium, lead, nickel, and selenium), as well as dense non-aqueous phase liquid (DNAPL) in excess of NJ GWQC for Class IIA aquifers. In addition, two off-site monitoring wells (MW-100 and MW-100R) were installed across the Passaic River from the site. Recent (First Quarter, 2001) monitoring results detected concentrations of methyl tert-butyl ether (MTBE), PCE, and TCE in excess of NJ GWQC. Additional hydrogeologic studies are currently being performed to determine whether contaminated groundwater is migrating beneath the Passaic River into off-site areas.

In August 1995 Clariant received a NJPDES discharge to groundwater (DGW) permit for effluent from the proposed GWTS. Construction of the GWTS, which includes an AS/SVE system, was completed in August 1995. The system became operational in September 1995. At that time NJDEP mandated a quarterly monitoring program consisting of routine monitoring of specific on- and off-site wells and surface water samples from the Passaic River. In September 1998, Clariant received approval to change the GWTS DGW permit to discharge to surface water (DSW). In addition, a proposal for a Classification Exception Area (CEA) to restrict groundwater use in the impacted areas was submitted by the facility in August 1996, and was conditionally accepted by NJDEP in December 1996 (Ref. 5). The duration of the CEA in its current form will be at least until cessation of active remediation (Ref. 7).

In summary, engineering and institutional controls to prevent exposures to elevated levels of PCBs, metals, and PAHs have been implemented at the Clariant facility. A site-wide DER has been submitted based on the consistent and randomly distributed contaminants across the site. Contaminants includes metals (beryllium and lead), PAHs, and PCBs, primarily due to the historic fill material, and volatile organics, primarily due to site activities at the former UST farm. In addition, a second affected DER area, which is included in the site-wide DER, has been identified in the central portion of the riverbank area. This area was delineated to define the area in which PCB levels exceed NJ NRDCSCC. This area maintains engineering controls (e.g., geotextile membrane, fencing). The specific AECs included in this area are: AEC D-001, AEC D-0002/003, AEC D-004, and AEC F-1. NJDEP has approved no further action for numerous AECs, including: AEC B (Section A), AEC D-005, AEC E, AEC F-5, AEC F-6, AEC F-8, AEC F-9, AEC F-10, AEC G, AEC H, AEC I/J, and AEC K. No further action has been proposed for AECs D-001, D-002/003, D-004, AEC F-1, AEC F-2, AEC F-3, AEC F-7, AEC L, and AEC M. Groundwater investigations, primarily in the area of AEC A, AEC B (Section B) and AEC C, as well as in off-site areas adjacent to the facility, remain ongoing.

References:

1. Site Investigation Plan and Results Report. Prepared by CDM. Dated September 1992.
2. Letter from CDM to NJDEP, re: Results - Surface Soils. Dated October 4, 1994.

3. Remedial Investigation Soil Delineation Report for Sandoz Chemicals Corporation. Prepared by CDM. Dated December 1994.
4. Letter from NJDEP to CDM, re: Clariant Corp. Remedial Action Work Plan. Dated August 1995.
5. Clariant Corporation Remedial Action Report. Prepared by CDM. Dated July 1998.
6. Letter from CDM to NJDEP, re: Remedial Investigation/Action Schedule - 2000 Revision. Dated December 12, 2000.
7. Personal communication from Clifford NG, USEPA to Kathy Rogovin, Booz Allen & Hamilton. Re: CEA status. Dated July 6, 2001.
8. Personal communication from Clifford NG, USEPA to Kathy Rogovin, Booz Allen & Hamilton. Re: AEC F-4 off-site PAH contamination. Dated July 20, 2001.

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be "**contaminated**"[3] 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			VOCs, Metals
Air (indoors)[4]		X		VOCs
Surface Soil (e.g., <2 ft)	X			VOCs, metals, PAHs, PCBs
Surface Water	X			VOCs
Sediment		X		
Subsurface Soil (e.g., >2 ft)	X			VOCs, metals, PAHs, PCBs
Air (Outdoor)		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:

Groundwater

The hydrogeologic setting in this region consists of surficial unconsolidated material and an underlying fractured bedrock system. The typical stratigraphy at the site is 20 to 40 feet of fill, 20 to 30 feet of glacial deposits, and then 5 to 10 feet of till overlying bedrock. For the unconsolidated materials, the surficial fill is typically unsaturated. Groundwater is found in both the unconsolidated deposits and the

3 "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).

4 Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest 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.

underlying bedrock and flows southwesterly, towards the Passaic River. Groundwater in the vicinity of the site is used for municipal water supply, industrial uses, and lawn-watering.

During the initial SI, groundwater contamination was detected in the Former UST Farm Area (AEC A). Additional investigations were performed in 1994 to delineate the nature extent of the groundwater contamination (Ref. 2). Contamination is located near the north corner of Building 306. The horizontal extent of the groundwater plume is approximately 350 feet x 500 feet (Ref. 6). Because the overlying till is not continuous across the site, some hydraulic interaction between the unconfined aquifer and the fractured bedrock aquifer is anticipated. Monitoring wells installed along the river bank have detected contaminants adjacent to the river with a vertical extent reaching into the bedrock. Historically, contaminants detected in groundwater have included ODCB-SM components, VOCs (1,1-dichloroethene, methylene chloride, MTBE, TCE, and PCE), and metals (arsenic, chromium, lead, nickel, and selenium). DNAPL has also been observed at MW-13R.

Since 1995, quarterly groundwater monitoring has been performed per NJDEP requirements. Contaminants detected in groundwater during the most recent documented sampling event (First Quarter, 2001) were compared to NJ GWQC for a Class II-A aquifer. During this event several VOCs and one metal (chromium) were detected at concentrations exceeding NJ GWQC. Table 1 presents the contaminants that exceeded the NJ GWQC during this sampling event (Ref. 11). Although 1,1-dichloroethene has historically been detected and was regulated under the DGW permit, it was not detected at concentrations in excess of NJ GWQC during this sampling event.

Table 1 - Hazardous Constituents Exceeding NJ GWQC during Sampling Event First Quarter, 2001 (µg/L)

Constituent	Maximum Detected Concentration (well) [1]	Well Locations with Concentrations Exceeding NJ GWQC	NJ GWQC [2]
1,2-Dichlorobenzene	64,700 (MW-28R)	MW-04, MW-12, MW-22, MW-24, MW-25, MW-26, MW-27, MW-102	600
1,3-Dichlorobenzene	1,180 J (MW-28R)	MW-28R	600
1,4-Dichlorobenzene	7,770 (MW-28R)	MW-04, MW-12, MW-13, MW-22, MW-24, MW-25, MW-26, MW-27, MW-102	75
Chlorobenzene	6,800 (MW-25)	MW-04, MW-10, MW-12, MW-13, MW-24, MW-26, MW-27, MW-28R, MW-102, MW-10	50
Chromium	375 (MW-9)	MW-9	100
Methylene Chloride	1,010 J (MW-27)	MW-24, MW-26, MW-28R	3
MTBE	941 (MW-100R)	MW-9RD, MW-102	70
PCE	24.6 (MW-9RS)	MW-02, MW-03R, MW-06, MW-07, MW-08, MW-09, MW-100, MW-100R, MW-10RD, MW-10RS, MW-11, MW-18, MW-20, MW-21, MW-23	1
TCE	25.4 (MW-9RS)	MW-02, MW-06, MW-07, MW-08, MW-09, MW-23, MW-100, MW-100R, MW-10RS, MW-11, MW-20, MW-21	1

J = Value is greater than the Method Detection Limit (MDL) but lower than the lowest standard.

[1] First Quarter 200l sampling was conducted on March 7-9, 2001.

[2] The higher of the NJ GWQC or the Practical Quantitation Limit (PQL).

It should be noted that several wells used in the quarterly groundwater monitoring program showed elevated MDLs during the First Quarter, 2001 event, exceeding NJ GWQC. These wells include MW-24, MW-25, MW-26, MW-27, and MW-28R, which are located in the source area.

Additionally, two off-site monitoring wells (MW-100 and MW-100R) were installed across the Passaic River from the site as part of the Bedrock/Memorial Park Well field Investigation. During the installation of MW-100R, samples were collected at three depth intervals. Results indicated PCE (1.79 µg/L) and TCE (1.23 µg/L) exceeded NJ GWQC at a depth interval of 38-58 feet. At the 62-82 foot depth, no VOCs exceeded NJ GWQC. At a depth interval of 84-104 feet, MTBE, (353 µg/L), PCE (7.02 µg/L), and TCE (4.78 µg/L), exceeded NJ GWQC. The following contaminants were also detected at the various depths, but at concentrations below NJ GWQC: chlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, and vinyl chloride (Ref. 9). It should be noted that recent sample results (First Quarter,

2001) indicate higher concentrations of MTBE (941 µg/L), PCE (17.8 µg/L), and TCE (11.9 µg/L) are present in MW-100R.

The potential for ODCB-SM components discharging from the unconsolidated aquifer to the Passaic River was evaluated in 1996. The modeled concentrations were evaluated using the New Jersey Surface Water Quality Criteria (NJ SWQC) and Federal Ambient Water Quality Criteria (AWQC). With the exception of benzene, the predicted concentrations in the Passaic River after dilution were less than the SWQC. The maximum detection limit was used for all constituents including benzene, although benzene has not been detected in surface water samples (Ref. 5).

Air (Indoors)

VOCs are the primary constituents of concern in groundwater at the site. Recently detected concentrations (First Quarter, 2001) of VOCs were compared to the State of Connecticut Groundwater Standards for Protection of Indoor Air under the Industrial/Commercial (CT I/C VC) scenario to identify constituents that may be a concern due to potential migration into indoor air. The I/C VC scenario was used because land use in the immediate area of the site is industrial. Table 2 identifies the monitoring well locations where constituent concentrations were detected above the CT IC/VC during the First Quarter, 2001 semi-annual groundwater sampling event (Ref. 9).

Table 2 - Groundwater Exceedences of the Connecticut Groundwater Standards for the Protection of Indoor Air - Industrial/Commercial Scenario First Quarter, 2001 (µg/L)

Constituent	CT I/C VC	Maximum Detected Concentration (Well)
1,2-Dichlorobenzene	50,000	64,700 (MW-28R)
Chlorobenzene	6,150	6,800 (MW-25)

Based on these exceedences, the Johnson-Ettinger Model was used to calculate the hazard quotients (HQ) associated with the potential migration of volatilization from these constituents into indoor air. The maximum detected concentrations were used in the model, as well as other site-specific input parameters, including soil type, soil temperature in the region, and depth to groundwater. Conservative default values were used for the remaining parameters for which site-specific values were not readily available. In addition, industrial exposure assumptions (i.e., averaging time, exposure duration, exposure frequency) were used in the calculations due to the current industrial nature of the property. Table 3 identifies the calculated HQ for each contaminant.

Table 3 - Calculated Hazard Quotients

Constituent	Calculated Hazard Quotient (HQ)
1,2-Dichlorobenzene	0.071
Chlorobenzene	0.13

The calculated HQ for both of these constituents are below USEPA's target HQ of 1.0. Based on these conservative estimates, volatilization of groundwater contaminants into indoor air at the Clariant facility does not appear to pose an unacceptable risk. See Attachment 2 for Johnson-Ettinger Model results for the two non-carcinogenic compounds.

Surface/Subsurface Soil

Numerous soil investigations have been conducted at the site. Concentrations of contaminants in surface soil were compared to NJ RDCSCC and/or NJ NRDCSCC. Concentrations in subsurface soil were compared to NJ IGWSCC. Concentrations of VOCs, PAHs, PCBs, and metals were detected throughout the site in both surface soil and subsurface soil above relevant criteria. Remedial actions have included excavation of soil at several AECs as well as the installation of engineering controls and/or implementation of institutional controls. Based on available documentation, soil contamination remains above NJ standards at the following AECs:

- **AEC A, Former UST Farm:** Orthodichlorobenzenes, chlorobenzene, and 1,2,4-trichlorobenzene in excess of NJ NRDCSCC.

- **AEC C, Former Lime Pit:** Chlorobenzene and PCE above NJ IGWSCC in the saturated zone.

- **AEC D-001, 002, 003, 004, and AEC F-1, Outfalls 001, 002, 003, 004 and the Northwest Plant Corner:** Various metals, PAHs, and PCBs above NJ RDCSCC and NJ NRDCSCC (Clariant has indicated that some of these contaminants are from the historic fill, rather than from site-related activities [Ref. 3]).

- **AEC F-4, Former Waste Oil Storage Area**: Lead, cadmium and PAHs (primarily benzo(a)pyrene) above NJ RDCSCC and NJ NRDCSCC.

- **AEC F-7, Solvent Shed:** Cadmium above NJ RDCSCC, but below the NJDEP approved site-specific alternate cleanup standard (39 mg/kg).

- **AEC I/J, Historic Fill**: The site resides on an estimated 191,000 cubic yards of historic fill, which primarily exists in the northern portion of the site. Historic fill is contaminated with PAHs, VOCs, and metals (beryllium and lead) at concentrations above NJ RDCSCC, and PCBs at concentrations exceeding NJ NRDCSCC. Although AECs I/J were identified as areas of historic fill, all soil sampling results in these AECs were below the NJ RDCSCC.

- **Historic Fill:** PAHs and metals (beryllium and lead) above NJ RDCSCC and PCBs above NJ NRDCSCC randomly distributed throughout the site.

Surface Water/Sediment

The Passaic River flows along the western border of the property and is classified as freshwater (FW-2) Non-Trout (NT) waterway. Clariant maintains a NJPDES DSW Permit for the discharge of non-contact cooling water and surface water runoff to the Passaic River.

Per NJDEP requirements, quarterly surface water sampling in three areas is required to determine the impact on the Passaic River (Ref. 3). Sample locations are upstream of the NJPDES discharge, at the discharge point itself, and downstream of the discharge point. One surface water sample, obtained in September 1999, detected chlorobenzene at 31.7 µg/L, which exceeded the NJ SWQC of 22 µg/L. However, there have been no exceedences of chlorobenzene in subsequent quarterly monitoring events. During the December 2000 sampling event, benzene was detected at 0.29 µg/L, exceeding the NJ SWQC of 0.15 µg/L, but only slightly exceeding the MDL of 0.28 µg/L (Ref. 10).

One Passaic River sediment sample, obtained in the vicinity of MW-13R, was collected in September 1999 as part of the Baseline Ecological Evaluation (BEE) at the site. Contaminant concentrations were compared to EPA Region 5 ecological screening values. The following contaminants of concern were identified: chlorobenzene (1,510 µg/L), 1,3-dichlorobenzene (118 µg/L), 1,4-dichlorobenzene (557 µg/L), and 1,2-dichlorobenzene (1,050 µg/L) (Refs. 7, 8). None of these sediment concentrations, however, exceeded their respective NJ RDCSCC.

Air (Outdoors)

No assessment of impacts to outdoor air has been conducted at this property. The majority of the Clariant site is covered by asphalt pavement. The hillside area is covered with a geotextile cap. A few small areas on site are covered with vegetation or grass. Based on the limited extent of exposed surface contamination and the depth to groundwater at the site, volatile emissions and/or the migration of particulates entrained on dust are not expected to be significant exposure pathways of concern at the Clariant site.

References:

1. Site Investigation Plan and Results Report. Prepared by CDM. Dated September 1992.
2. Phase II Groundwater Investigation Report. Prepared by (unknown - not designated). Dated January 1994.
3. Letter from NJDEP to Clariant, re: Reinjection Wells Report dated October 4, 1994. Dated March 14, 1995.
4. Letter from CDM to NJDEP, re: Classification Exception Area and Surface Water Impact Evaluation. Dated August 16, 1996.
5. Clariant Corporation Remedial Action Report. Prepared by CDM. Dated July 1998.
6. Letter from CDM to NJDEP, re: Bedrock/Free Product Remedial Investigation Report. Dated September 30, 1999.
7. Letter from CDM to NJDEP, re: Quarterly Monitoring Report - Third Quarter, 1999. Dated November 30, 1999.
8. Letter from NJDEP to CDM, re: Clariant Corp. Dated October 6, 2000.
9. Letter from CDM to NJDEP, re: Six-Month Remedial Progress/Summary Report-October 2000; Attachment C: Bedrock/Memorial Park Well field Investigation. Dated November 2000.
10. Letter from CDM to NJDEP, re: Quarterly Monitoring Report - Fourth Quarter, 2000. Dated March 2, 2001.
11. Letter from CDM to NJDEP, re: Quarterly Monitoring Report - First Quarter, 2001. Dated May 21, 2001.

3. 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	Day-Care	Construction	Trespasser	Recreation	Food[5]
Groundwater	No	No	No	No	–	–	No
Air (indoor)							
Surface Soil (e.g. < 2 ft)	No	No	No	No	No	No	No
Surface Water	No	No	No	No	No	No	No
Sediment							
Subsurface Soil (e.g., > 2 ft)	–	–	–	No	–	–	No
Air (outdoors)							

Instruction for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. Enter "yes" or "no" for potential "completeness" under each "Contaminated"Media — Human Receptor combination (Pathway).

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. These spaces instead have dashes ("--"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

__X__ 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.

____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code.

5 Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

Rationale:

Groundwater

There are no potable wells on site. Public water supply for the towns of Hawthorne, Glen Rock, and Fair Lawn is provided by wells located within a three mile radius of the site. These wells serve a population of approximately 62,000 people (Ref. 1). A well survey conducted in December 1999 documented numerous wells within a one mile radius of the site, including public supply and domestic wells (Ref. 6). However, no water withdrawal points were reported within one mile downgradient of the site, with the exception of the Fair Lawn Borough Memorial Park Well Field, which consists of four wells located approximately 2,000 feet south of the facility (Ref 1). These wells have an average depth of 400 feet and are utilized for potable supply. Clariant believes that the Fair Lawn Borough Memorial Park Well Field is the closest potable water source and in September 1999 submitted a request for information from the Borough of Fair Lawn regarding the Memorial Park Well Field (Ref. 6). Although the hydraulic gradient is west-southwest, the Memorial Park Well Field is within the predicted range of groundwater flow direction in bedrock. Clariant performed a Bedrock/Memorial Park Well Field investigation, which was submitted to NJDEP in November 2000 (Ref. 7), and installed two bedrock off-site wells across the Passaic River from the site. During the most recent round of groundwater monitoring (First Quarter, 2001) VOCs were detected in these wells in excess of the NJ GWQC. However, groundwater modeling for those contaminant concentrations in excess of the NJ GWQC predicted that site-related contamination is not expected to reach the Memorial Park Well Field (Ref. 7). Variables such as heavy pumping at the Memorial Park Well Field could result in a cone of depression which extends to capture contaminated groundwater emanating from the site. Because modeling did not account for an increased gradient due to this drawdown, it is possible that contamination could be pulled beyond the determined area of influence (Ref. 7). However, groundwater data obtained during the Memorial Park Well Field investigation in 1999 (Ref. 7) indicate that detected concentrations of VOCs in the Memorial Park wells currently do not exceed NJ GWQC. Thus, the exposure pathway for on and off-site receptors to contaminated groundwater is not considered currently complete.

Clariant has indicated that a revised and comprehensive well search was conducted within a half mile radius of the site. Several local health departments and municipal water supply companies were contacted for public and private potable well information. This information is to be presented in a report scheduled to be completed in Summer 2001 (Ref. 9).

Groundwater is currently being treated with a combined AS/SVE and a groundwater recovery/treatment system. The groundwater extraction system, implemented in September 1995, consists of nine water extraction wells. The AS/SVE system consists of 32 vapor extraction wells located in and around the contaminated area and has been in operation since September 1996. In 1998, Clariant installed an impermeable surface cover to improve the VOC extraction rate of the AS/SVE system. Soil contaminants that are removed from the AS/SVE system are collected in granular activated carbon vessels for off-site treatment and disposal. The intent of the system is to: (1) prevent further migration of the contaminated plume, (2) prevent/limit contaminant migration into the Passaic River, and (3) reduce the volume of contaminants present at the site. Based on the estimated volume of contaminants removed and a review of the potentiometric surface maps, the system appears to be effective. The active pumping system has produced an effective cone of influence, resulting in groundwater capture, and actually draws water into the aquifer from the Passaic River. This cone of influence represents a flow barrier which limits any further migration of contaminants from the current area of contamination.

In August 1996, Clariant submitted a request for a CEA due to the degree of groundwater contamination at the site. The CEA was conditionally accepted by NJDEP in December 1996. The CEA applies to approximately the southern 80 percent of the property, excluding the leased area located at the northern portion of the property, with the bank of the Passaic River being the downgradient limit of the CEA. The CEA includes the ODCB-SM plume and contaminants in both the unconsolidated aquifer and the bedrock aquifer. Specifically, contaminants included in the CEA are: ODCB-SM constituents, several other organics (TCE, PCE, chloroform, and MTBE), and metals (arsenic, chromium, nickel, and lead). The CEA was required for the duration of the NJPDES DGW permit, which expired on July 31, 2000 and was replaced with a DSW permit. The CEA will be in place in its current form at least until the cessation of active remediation (Ref. 10).

Surface/Subsurface Soil

PAHs, PCBs, VOCs, and some metals (beryllium and lead) are present in the historic fill located throughout the site at levels greater than NJ RDCSCC and/or NJ NRDCSCC. On the southern portion of the site, essentially all of the property is paved or built upon (Ref. 2). The site is also surrounded by a six foot, barbed wire, chain-link fence on three sides, with the Passaic River bordering the western edge of the site. In addition, the site is currently closed; the only on-site activities are remedial investigations and activities performed by skilled remedial workers. Exposures to remedial workers are not considered complete under current conditions because they are assumed to wear personal protective equipment and adhere to strict Occupational Safety and Health Administration (OSHA) guidelines. There is also a geotextile liner covering several AECs (D-001, D-002/003, D-004, and F-1) surrounded by a six foot, barbed wire, chain-link fence and secured access, to preclude exposures to on-site workers. Clariant also submitted a draft DER in March 1998 that restricts the site to non-residential use. Thus, exposures to on-site surface soil or subsurface soil contamination for on- or off-site receptors (e.g., trespassers) is unlikely[6].

Surface Water

VOCs have been sporadically detected in surface water sampling events over the past few years. Given the volatile nature of these constituents, it is expected that their duration in surface water in excess of relevant NJ criteria would be short-lived. In addition, during the most recent round of surface water sampling, only benzene was detected at a concentration slightly exceeding the MDL and the SWQC. Given the nature of the constituents detected in surface water and their relatively low detected concentrations, current human exposure to site-related contaminants in surface water is not considered of concern and thus the pathway is not considered complete.

References:

1. RCRA Facility Assessment. Prepared by USEPA. Dated September 1992.
2. Phase II Groundwater Investigation Report. Prepared by CDM. Dated January 1994.
3. Remedial Action Report. Prepared by CDM. Dated July, 1998.

6 As discussed in response to Question 1, NJDEP is currently evaluating the area outside the Clariant property line adjacent to AEC F-4 to determine whether the off-site area has been impacted by Fair Lawn Avenue road traffic or by past activity at the Clariant facility (Refs. 8 and 12).

4. Letter from NJDEP to CDM, re: July, 1998 RAR. Dated August 3, 1999.
5. Letter from CDM to NJDEP, re: Well Search. Dated December 29, 1999.
6. Letter from NJDEP to CDM, re: Clariant Corp. Dated October 6, 2000.
7. Letter from CDM to NJDEP, re: Six-Month Remedial Progress/Summary Report - October 2000. Dated November 3, 2000.
8. Letter from CDM to NJDEP, re: Remedial Investigation/Action Schedule - 2000 Revision. Dated December 12, 2000.
9. Letter from CDM to NJDEP, re: Six-Month Remedial Progress/Summary Report - April 2001. Dated May 1, 2001.
10. Personal communication from Clifford Ng, USEPA, to Kathy Rogovin, Booz Allen & Hamilton, re: CEA status. Dated July 6, 2001.
11. Personal communication from Clifford Ng, USEPA, to Kathy Rogovin, Booz Allen & Hamilton, re: AEC F-4 off-site PAH contamination. Dated July 20, 2001.
12. E-mail from Cliff Ng, USEPA, to Kathy Rogovin, Booz Allen & Hamilton, re: AEC F-4 off-site area. Dated July 25, 2001.

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **significant**[7] (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."

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

Rationale:

References:

This question is not applicable. See response to question #3.

7 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.

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:

This question is not applicable. See response to question #3.

6. Check the appropriate RCRIS 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):

X 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 Clariant Corporation Facility, EPA ID# NJD001213453, located at Fair Lawn Avenue and Third Street, in Fair Lawn, New Jersey, 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: _____ Date:_____

Kathy Rogovin
Risk Assessor
Booz·Allen & Hamilton

Reviewed by: _____ Date:_____

Kristin McKenney
Risk Assessor
Booz·Allen & Hamilton

_____ Date:_____

Cliff Ng, RPM
RCRA Programs Branch
EPA Region 2

_____ Date:_____

Barry Tornick, Section Chief
RCRA Programs Branch
EPA Region 2

Approved by: Original signed by:_____ Date: September 27, 2001

Raymond Basso, Chief
RCRA Programs Branch
EPA 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.

Contact telephone and e-mail numbers: Cliff Ng, EPA RPM
(212) 637-4113
ng.cliff@epamail.epa.gov

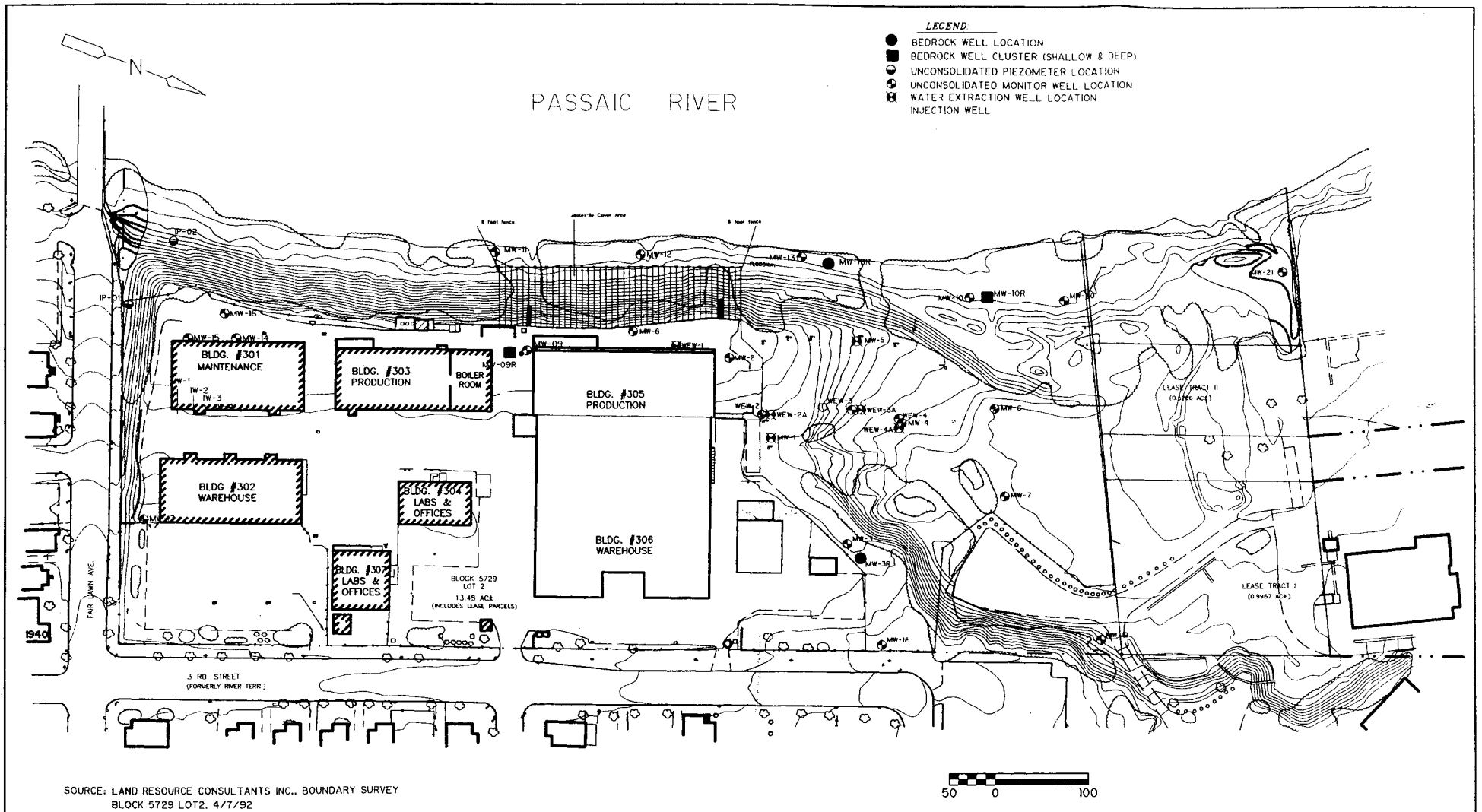
FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

Attachments

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

- Attachment 1 - Site Map
- Attachment 2 - Johnson-Ettinger Model Results
- Attachment 3 - Summary of Media Impacts Table

Attachment 1 - Site Map
(Source: Remedial Action Report. Prepared by CDM. July 1998)



SOURCE: LAND RESOURCE CONSULTANTS INC., BOUNDARY SURVEY
BLOCK 5729 LOT2, 4/7/92

CDM
environmental engineers, scientists,
planners, & management consultants

FIGURE 1-2
SITE MAP
CLARIANT CORPORATION
FAIR LAWN, NEW JERSEY

Attachment 2 - Johnson-Ettinger Model Results

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
108907	6800	Chlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)
15	800	S	11

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
S			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250
Used to calculate risk-based groundwater concentration.					

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	NA	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.3E-01

DATA ENTRY SHEET

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES	

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES	X

ENTER Chemical CAS No. (numbers only, no dashes)	**ENTER** Initial groundwater conc., C_W (µg/L)	Chemical
95501	64700	1,2-Dichlorobenzene

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	**ENTER** Depth below grade to water table, L_{WT} (cm)	**ENTER** SCS soil type directly above water table	**ENTER** Average soil/ groundwater temperature, T_S (°C)
15	585.6	S	11

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	**ENTER** User-defined vadose zone soil vapor permeability, k_v (cm^2)	**ENTER** Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	**ENTER** Vadose zone soil total porosity, n^V (unitless)	**ENTER** Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
S			1.5	0.43	0.3

ENTER Target risk for carcinogens, TR (unitless)	**ENTER** Target hazard quotient for noncarcinogens, THQ (unitless)	**ENTER** Averaging time for carcinogens, AT_C (yrs)	**ENTER** Averaging time for noncarcinogens, AT_{NC} (yrs)	**ENTER** Exposure duration, ED (yrs)	**ENTER** Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	25	250

Used to calculate risk-based groundwater concentration.

RESULTS SHEET

RISK-BASED GROUNDWATER CONCENTRATION CALCULATIONS:

Indoor exposure groundwater conc., carcinogen (µg/L)	Indoor exposure groundwater conc., noncarcinogen (µg/L)	Risk-based indoor exposure groundwater conc., (µg/L)	Pure component water solubility, S (µg/L)	Final indoor exposure groundwater conc., (µg/L)
NA	NA	NA	NA	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	7.1E-02

Attachment 3 - Summary of Media Impacts Table
Clariant Corporation

	GW	AIR (Indoors)	SURF SOIL	SURF WATER	SED	SUB SURF SOIL	AIR (Outdoors)	CORRECTIVE ACTION MEASURE	KEY CONTAMINANTS
AEC A. Former UST Farm	Yes	No	Yes	No	No	Yes	No	▸ GWTS ▸ AS/SVE ▸ DER	VOCs
AEC B - A/B. Window Well Area	Yes	No	Yes	No	No	Yes	No	▸ GWTS ▸ AS/SVE ▸ Soil excavation ▸ DER (Section B only)	VOCs, SVOCs metals, Aroclor 1260
AEC C. Former Lime Pit	Yes	No	No	No	No	Yes	No	▸ GWTS ▸ AS/SVE ▸ DER	VOCs
AEC D-001. NJPDES Outfall 001	No	No	Yes	No	No	No	No	▸ Capping* ▸ Fencing ▸ DER	PAHs, VOCs, cadmium, Aroclor 1260
AEC D-002/D-003. NJPDES Outfall 002 and 003	No	No	Yes	No	No	No	No	▸ Capping* ▸ Fencing ▸ DER	PAHs, cadmium, Aroclor 1260
AEC D-004. NJPDES Outfall 004	No	No	Yes	No	No	No	No	▸ Capping* ▸ Fencing ▸ DER	Lead, cadmium, Aroclor 1260
AEC D-005. NJPDES Outfall 005	No	No	No	No	No	No	No	▸ DER	NA
AEC E. AST Farm	No	No	Yes	No	No	No	No	No Further Action	NA
AEC F-1. Former Storage Area	No	No	Yes	No	No	No	No	▸ Capping* ▸ Fencing ▸ DER	PAHs, lead, cadmium, Aroclor 1260
AEC F-2. Former Storage Area at Garbage Shed	No	No	No	No	No	No	No	▸ Soil excavation	Contamination removed

	GW	AIR (Indoors)	SURF SOIL	SURF WATER	SED	SUB SURF SOIL	AIR (Outdoors)	CORRECTIVE ACTION MEASURE	KEY CONTAMINANTS
AEC F-3. Former Storage Area at Southwest Corner	No	No	No	No	No	No	No	▸ Soil excavation	Contamination removed
AEC F-4. Former Waste Oil Storage Area	No	No	Yes	No	No	No	No	▸ Soil excavation ▸ DER	PAHs, metals, Aroclor 1254
AEC F-5. Former ASTs	No	No	No	No	No	No	No	▸ Soil excavation	metals
AEC F-6. Former Drumming Station	No	No	No	No	No	No	No	No Further Action	contamination removed
AEC F-7. Solvent Shed and O/S Area	No	No	Yes	No	No	No	No	▸ Asphalt cap	Cadmium
AEC F-8. Leucophor Loading Dock Area	No	No	No	No	No	No	No	No Further Action	NA
AEC F-9. Main Loading Dock Area	No	No	No	No	No	No	No	No Further Action	NA
AEC F-10. Outside Drum Storage and Flammable Storage Shed Area	No	No	No	No	No	No	No	No Further Action	NA
AEC G. Existing and Former Heating Oil USTs	No	No	No	No	No	No	No	No Further Action	NA
AEC H. Transformer Pad	No	No	No	No	No	No	No	No Further Action	NA
AEC I/J. Fill Characterization	No	No	No	No	No	No	No	No Further Action	NA
AEC K. Gypsum Pile Characterization	No	No	No	No	No	No	No	No Further Action	NA
AEC L. Former Building 302 Dry Well	No	No	No	No	No	No	No	No Further Action	NA
AEC M. Former Building 302 Dry Well	No	No	No	No	No	No	No	No Further Action	NA
Historic Fill Material	No	No	Yes	No	No	Yes	No	▸ DER	PAHs, metals

	GW	AIR (Indoors)	SURF SOIL	SURF WATER	SED	SUB SURF SOIL	AIR (Outdoors)	CORRECTIVE ACTION MEASURE	KEY CONTAMINANTS
Groundwater	Yes	No	No	No	No	No	No	▸ GWTS ▸ AS/SVE ▸ CEA	VOCs, metals, DNAPL

* Capping includes a geotextile cover overlaid with soil and a vegetation layer.