

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action Environmental Indicator (EI) RCRIS code (CA 725) Current Human Exposures Under Control

Facility Name: Huntsman Corporation
Facility Address: Mantua Grove Road, West Deptford, New Jersey
Facility EPA ID#: NJD002482602

Definition of Environmental Indicators (for the RCRA Corrective Action)

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

Definition of "Current Human Exposures Under Control" EI

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

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the 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 are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action programs 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

Huntsman Corporation (Huntsman) is located on a 300-acre parcel of land in West Deptford Township, Gloucester County, New Jersey. The property consists of approximately 210 acres of woodland and pasture, and approximately 90 acres was formerly used for the production of polypropylene. From 1962 to 1987, Shell conducted polypropylene manufacturing on the site. In 1987, Huntsman purchased the site and continued operations until 1999. Beginning in 1987 at the time of the sale to Huntsman, Shell conducted an environmental evaluation under the New Jersey Department of Environmental Protection's (NJDEP's) Environmental Cleanup and Responsibility Act (ECRA). The ECRA activities included soil and groundwater sampling and hot-spot removal of impacted soils. The evaluation continued until 1992 when Shell received a no further action determination from NJDEP.

Three main processes were used during the production of polypropylene at the facility: 1) the Wet End Process; 2) the Dry End Process; and 3) the Utilities Process. Water was supplied to the site through four onsite wells. Three of the onsite wells were process water wells and one was a potable water well. All water obtained from these wells was treated onsite prior to its use. Currently, none of the four wells are being utilized. Process materials were stored in various quantities in tanks within the Boiler-Utilities area. Three boilers generated steam required for the process operations. Boiler #3 also burned waste oil. Burning of waste oil ceased in 1995 and the boiler was closed in 1998. The plant chemical and sanitary sewers drained to an onsite wastewater treatment facility. From 1962 to 1972 effluent from the onsite wastewater treatment system was discharged under a NJDEP permit directly to the Delaware River. From 1972 to 1975 treated wastewater was discharged to Mantua Creek. From 1975 until the cessation of manufacturing operations, all discharges went directly to the Gloucester County Utilities Authority (GCUA) treatment plant.

On March 4, 1999 Huntsman announced the cessation of operations at the facility. Thirty-one areas of concern (AOCs) (namely, AOCs A through FF, not including I and O, and Groundwater) were identified in the facility's Preliminary Assessment (PA) Report, dated January 19, 2000. The PA was conducted under the NJDEP Industrial Site Recovery Act (ISRA) the successor program to ECRA. Nine of those AOCs (identified as AOCs 1 through 9) warranted further investigation, according to the PA.

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

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

If no - re-evaluate existing data, or

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

Summary of Areas of Concern (AOCs): A facility groundwater contour map has been provided as Attachment 1. A facility AOC (both former and current) map has been provided as Attachment 1A.

AOC A (Catalyst Preparation Area): This area was used for the preparation and storage of catalysts used in the polypropylene manufacturing process. The catalyst mixing vessels were periodically cleaned with kerosene and steam, and the condensate from the cleaning process was flushed. During the Environmental Cleanup Responsibility Act (ECRA) investigations, several phases of excavation, post-excavation and additional delineation sampling were conducted. A no further action determination was granted by the NJDEP in December 1992. However, during the Preliminary Assessment (PA)/January 2000 site visit several small cracks were noted in a portion of the chemical sewer. In the Site Investigation/Remedial Investigation/Remedial Action Report (SI/RI/RAR), dated January 2000, this area was renamed AOC 1. Investigations were conducted in two downgradient monitoring wells (MW-9 and MW-10). In addition, localized oil staining was identified on the ground near a compressor in this area. The soils around the compressor pad were excavated and post-excavation samples were taken and analyzed for Total Petroleum Hydrocarbons (TPH). All samples were below the most stringent NJDEP Soil Cleanup Criteria (SCC) and the area excavated was backfilled with certified clean soil. The facility is awaiting a declaration of no further action for this AOC. NJDEP is concerned with the chemical sewer's integrity throughout the site, but once the integrity of the chemical sewer is further documented, a no further action determination will be issued for this AOC. However, since the area has been excavated and backfilled, manufacturing operations have ceased and the facility is fully-fenced with 24-hour security there is no current human exposure.

AOC B (Cooling Tower Pump Area): The tower was used to cool non-contact process water and the pumps were associated with the former onsite cooling tower. Soil samples were taken during the ECRA investigations and none of the samples exceeded the most stringent applicable SCC. This AOC received a no further action determination on December 16, 1992 from NJDEP. The cooling tower was decommissioned in 1999. However, during the PA/site visit oil-stained soils were identified surrounding several concrete pads associated with the cooling tower pumps. In the SI/RI/RAR, this AOC was renamed AOC 2. The oil-stained soils were excavated, 22 post-excavation samples were taken and analyzed for TPH and four of those were also analyzed

for Polycyclic Aromatic Hydrocarbons (PAH). All soil sample results were below the most stringent SCC. The excavated area was backfilled with certified clean soil. The facility is awaiting a declaration of no further action for this AOC pending resolution of a minor QA/QC issue. However, since the area has been excavated and backfilled, manufacturing operations have ceased and the facility is fully-fenced with 24-hour security there is no current human exposure.

AOC C (Maintenance/Fabrication Shop Area): The maintenance/fabrication shop was a steel structure that was used to store metal-working equipment, and it was used to maintain and steam clean equipment. A 275-gallon fuel oil aboveground storage tank (AST) was previously located in the southwest corner of the shop area. The AST replaced a former underground storage tank (UST) that had been removed. A diked concrete ditch was formerly used to drain waste to the chemical sewer, and the concrete ditch showed signs of cracking. Under the ECRA investigations, soils within this area were excavated, post-excavation samples were taken and the area was filled with clean backfill. This AOC received a no further action determination on December 16, 1992 from NJDEP. During the PA/site visit, oil-stained soils were observed. In the SI/RI/RAR, this AOC was renamed AOC 3. Stained soils were excavated and backfilled with clean soil, nine post-excavation samples were taken and analyzed for TPH, three of those were also analyzed for volatile organic compounds (VOC)s and base neutrals (BN)s, and one was also analyzed for chromium. All sample results were below the most stringent SCC. The facility is awaiting a declaration of no further action for this AOC pending resolution of a minor QA/QC issue. However, since the area has been excavated and backfilled, manufacturing operations have ceased and the facility is fully-fenced with 24-hour security there is no current human exposure.

AOC D (Scrap Yard Area): This site was used for the temporary storage of scrap metal, old machinery, piping and industrial equipment. All materials were removed from this area during the decommissioning activities for the site. A former building concrete foundation, an AST, and a septic system were located in this area. Under the ECRA investigation, 48 investigative samples were collected, excavations of soils were performed in two areas, and a no further action determination was issued by NJDEP on December 16, 1992. During the PA/site visit, oil-stained soils were observed on the ground near one of the compressors. In the SI/RI/RAR, this AOC was renamed AOC 4. Stained soils were excavated from nine locations, 24 post-excavation samples were taken and analyzed for TPH, and nine of those samples were also analyzed for VOCs, BNs, metals, and Polychlorinated Biphenyls (PCBs). All analytical results were below the most stringent SCC. The excavated areas were backfilled with certified clean fill. The facility is awaiting a declaration of no further action for this AOC pending resolution of three minor QA/QC issues. However, since the area has been excavated and backfilled, manufacturing operations have ceased and the facility is fully-fenced with 24-hour security there is no current human exposure.

AOC E (Empty Drum Storage Area): This area was formerly used to store cleaned drums inverted on wooden pallets which were located on a paved area of the AOC. The paved area is located adjacent to the drum storage building and to a gravel-covered area which was used for

the storage of equipment. During the earlier ECRA investigation samples were taken which revealed elevated levels of total petroleum hydrocarbons (TPH). The elevated areas were excavated, post-excavation samples were taken, and the areas were backfilled with clean soil. No spills or releases have been reported since the ECRA investigation. According to a letter from NJDEP to Huntsman, dated July 27, 2000, a no further action determination will be issued for this AOC.

AOC F (Extruder Building Drum Staging Area): This area was formerly used to stage drums of oil and it consisted of a gravel-covered area located west of the extruder building. During the previous ECRA investigation, 75 investigative samples were taken and elevated levels of TPH were detected. Soils were excavated, post-excavation samples were taken with the resulting TPH levels below standards, and the area was filled with clean backfill. According to a letter from NJDEP to Huntsman, dated July 27, 2000, a no further action determination will be issued for this AOC.

AOC G (Former Overflow Holding Ponds): Shell Company operated a holding pond from November 1972 to October 1974. The purpose of this pond was to hold process water when the isopropyl alcohol distillation column was being descaled. The pond was constructed of earthen walls lined with plastic. It was used approximately two times per year. In August 1979, the ponds were removed from service by pumping collected storm water to the pretreatment unit and cleaning the sludge from the bottom of the primary and secondary ponds. The plastic liner was then removed and disposed of, and the earthen walls were demolished and graded. The soils beneath the former impoundments were investigated and no exceedances of the NJDEP SCC were found. This area has been vacant since its closure and remediation under the ECRA investigation. According to a letter from NJDEP to Huntsman, dated July 27, 2000, a no further action determination will be issued for this AOC.

AOC H (Flare Stack Separator Basin Area): A separator stack is located directly beneath the flare stack. The flare was used to collect routine and emergency vents from various process sources. The separator basin, which consisted of a concrete vault, was used to reclaim polypropylene and oils which were flushed from the lines to the stack. The separated material was then pumped to the on-site wastewater treatment plant via the chemical sewer. Sludges were periodically removed from the concrete vault and during the removal, inspections of the integrity of the concrete were performed. No cracks or pitting was ever reported. During the ECRA investigation evidence of overflow and stained soil were observed. The area was investigated and 47 soil samples were taken downgradient from the vault. No exceedances of the NJDEP SCC were found. This AOC received a no further action determination on December 16, 1992 from NJDEP. This area was decommissioned in June 1999. The PA recommended no further action for this area. The NJDEP will not issue a no further action determination for this AOC until information on the integrity of the separator basin has been received. However, the surrounding area has been paved, manufacturing operations have ceased, and the facility has 24-hour security. Therefore, no exposure to workers or trespassers are expected, even if subsurface soil contamination exists.

AOC J (Former Discharge Pipe): A discharge pipe that drained water from the pretreatment unit from 1972 to 1975 was located to the southwest of the separator basin. The discharge pipe was sealed in 1975 when the wastewater treatment facility was connected to the public sewer. During the ECRA investigation, two soil samples and one soil boring for TPH were collected. In addition, one downgradient monitoring well was sampled. The soil sample results for TPH were all below the most stringent SCC. This AOC received a no further action determination on December 16, 1992 from NJDEP. This area has not been used for effluent drainage since 1975 and no spills or releases have been reported since then. The PA also recommended no further action for this area. The NJDEP will not issue a no further action determination for this AOC until information on the integrity of the drainage line is received. However, any contamination due to the drainage line would be to the subsurface. This area has not been used for effluent discharge since 1975, manufacturing operations have ceased and the facility is fully-fenced with 24-hour security. Therefore, no exposures to workers or trespassers are expected even if subsurface soil contamination is present.

AOC K (No. 6 Fuel Oil Tank Area): This area contained a No. 6 fuel oil aboveground storage tank (AST) within a secondary containment area, which consisted of a clay-base berm filled with gravel containment media. The area contained a culvert which was sealed, and a sump had been installed in the southeast corner that discharged accumulated stormwater to the chemical sewer. Adjacent to the secondary containment to the north was a loading and unloading area that drained to the chemical sewer. In addition, a waste oil AST was formerly located to the east of the diked area. The waste oil AST was removed in 1979. During the ECRA investigation, 58 soil samples were taken both inside the secondary containment area as well as in the surrounding area of the AOC. Soils were excavated northwest of the AST, within the dike, and east of the fuel unloading area, all to a depth of one foot below ground surface (BGS). Post-excavation samples were taken and two rounds of groundwater samples were collected from monitoring wells W-14 and W-15. No constituents were found above the most stringent criteria in either the soil or groundwater samples. This AOC received a no further action determination on December 16, 1992 from NJDEP. The PA also recommended no further action for this area. The waste oil AST and clay base have been remediated and a no further action determination will likely be issued for this AOC.

AOC L (Fire Training Area): This area consisted of a steel pan and a circular pit. The pit, and later the steel pan, was used to hold hydrocarbons which were ignited for fire suppression training. Waste oils were used as fuels and were stored in a 290-gallon AST located adjacent to the pit area. Under the ECRA investigation the AST was removed, and stained soil, stressed vegetation, and odors were observed. The area was sampled, excavated, post-sampled and backfilled with clean soil. The PA recommended no further action for this AOC. According to a letter from NJDEP to Huntsman, dated July 27, 2000, a no further action determination will be issued for this AOC.

AOC M (Drum Decontamination Area): This area is located in the central portion of the facility. The area previously consisted of a waste oil pad/sump and a Resource Conservation and Recovery Act (RCRA) drum decontamination pad with an oil/water separator. Both pads

included basins constructed of concrete. The waste oil pad included a sump that extended to 3.5 ft BGS. The drum decontamination pad included a separator that extended to 4.0 ft BGS. Cracks and stains were observed in the walls of the basins and staining was observed on the surrounding gravel during the ECRA investigations. 62 soil samples were collected and groundwater was sampled at two wells (W-28 and W-29) located downgradient of the AOC. The area was completely decommissioned and demolished during the ECRA investigation and a new RCRA-permitted drum decontamination unit and small accumulation tank were constructed near the former decontamination pads. This AOC received a no further action determination on December 16, 1992 from NJDEP. The new unit was decommissioned in June 1999, in accordance with the RCRA closure plan. During the PA/site visit, oil-stained soil was identified adjacent to the current drum decontamination unit. In the SI/RI/RAR, this AOC was renamed AOC 5. The stained soils were excavated and ten post-excavation samples were taken and analyzed for TPH. Three of those samples were also analyzed for VOCs, BNs, metals and PCBs. All samples were below the most stringent SCC. The excavated area was backfilled with certified clean soil. No additional actions have been specifically required by NJDEP for this AOC; but based on NJDEP's concerns regarding the chemical sewer's integrity throughout the site and its potential impact on soil and groundwater, a no further action determination has not been issued for this AOC. However, since the area has been excavated and backfilled, manufacturing operations have ceased and the facility is fully-fenced with 24-hour security there is no current human exposure.

AOC N (Chemical Storage Area): This area contained a 36,000-gallon sodium hydroxide AST, a 6,000-gallon sulfuric acid AST and a 12,000-gallon No. 2 fuel oil AST. A cement pad was located directly in front of the ASTs. Stained gravel was observed during the previous ECRA investigations. 34 soil samples were collected and TPH was found to exceed soil criteria. 70 cubic yards of soil were excavated, post-excavation samples were taken and the excavations were backfilled with clean soil. Two groundwater monitoring wells (W-7 and W-8) in the vicinity of the AOC were sampled and had no exceedances of NJDEP groundwater criteria. This AOC received a no further action determination on December 16, 1992 from NJDEP. All three ASTs were removed as part of the decommissioning activities in July 1999. The PA also recommended no further action for this AOC. The facility is awaiting a declaration of no further action for this AOC, but the NJDEP will not issue it until information on the integrity of the secondary containment unit and the drain leading to the chemical sewer is received. However, since the area has been excavated and backfilled, the manufacturing operations have ceased, and the facility is fully-fenced with 24-hour security there is no current human exposure.

AOC P (Tile Field): The tile field served as an emergency overflow for a pumping station, which connected the maintenance shop and stores building to the chemical sewer system. This area is approximately 40 x 40 feet and included the pumping station, a distribution box, and five effluent laterals located approximately 5 ft BGS. The pumping station was upgraded during the ECRA investigation and the overflow line to the tile field was sealed. Five soil borings were performed and there were no exceedances of the NJDEP SCC for TPHs in the area. The PA recommended no further action for this AOC. According to a letter from NJDEP to Huntsman on July 27, 2000, a no further action determination will be issued for this AOC.

AOC Q (Pump House): This structure is located adjacent to Mantua Creek. The pump house had floor drains that were used to drain creek water back to Mantua Creek during rain events. A 55-gallon drum of antifreeze and a drum containing oily water were located in this area. There was no evidence of staining or releases reported from this area. There was no ECRA investigation in this area. The drums were removed from the area. The PA recommended no further action for this AOC. According to a letter from NJDEP to Huntsman on July 27, 2000, a no further action determination will be issued for this AOC.

AOC R (Water Line Leak): During the original ECRA inspection, NJDEP identified a leaking aboveground pipe located in an overhead rack. The leaking pipe was determined to contain water and was repaired. The PA recommended no further action for this AOC. According to a letter from NJDEP to Huntsman, dated July 27, 2000, a no further action determination will be issued for this AOC.

AOC S (Sulfuric Acid Spill): Approximately 400 gallons of sulfuric acid were released to the ground surface from an overhead pipe. The area where the acid spilled is located in the south central portion of the site. Immediate response to the accident included stopping and repairing the leak and using soda ash to neutralize the acid. The PA recommended no further action for this AOC. According to a letter from NJDEP to Huntsman, dated July 27, 2000, a no further action determination will be issued for this AOC.

AOC T (Transformers): This area included soils surrounding eleven of the Tract-2 facility transformers that were grouped into four locations. Soil sampling was conducted during the previous ECRA investigation. Two areas were determined to be in need of remedial action (T-1 and T-2). Excavation of contaminated soils was performed, post-excavation samples were below the most stringent SCC and the excavation sites were filled with clean backfill. During the PA investigation, soils in the vicinity of two transformers were found to have PCBs in the soil above the current residential soil criteria. In the SI/RI/RAR this AOC was renamed AOC 6. Soils from the two areas were excavated, and samples were taken and analyzed for TPH and PCBs. All post-excavation soil samples were below the non-residential SCC. The excavated areas were backfilled with certified clean soil. The facility is awaiting a declaration of no further action for this AOC.

AOC U (Mantua Creek Wetland): The Huntsman facility is located adjacent to Mantua Creek, a tidally-influenced tributary of the Delaware River. Stormwater from the facility drains directly to the creek. However, any stormwater from production areas is diverted to the chemical sewer system. Pretreated facility effluent was discharged under permit to the Mantua Creek from 1972 to 1975. The effluent pipe was addressed previously as Area J. During the ECRA investigation, polypropylene pellets were observed within the wetland area bordering the facility and Mantua Creek. Shell Chemical Corporation petitioned NJDEP for a no further action determination for the area claiming that the pellets were inert, and that they degrade photochemically. The facility contended that removal of the pellets would cause ecological damage and that it was not worth the aesthetic benefit. This AOC received a no further action determination on December 16, 1992 from NJDEP. The PA also recommended no further action

for this AOC.

AOC V (Underground Fuel Storage Tank Area): A 1,000-gallon diesel fuel UST and a 2,000-gallon gasoline UST were located in this area. The USTs were removed in December of 1987 in accordance with a NJDEP closure plan. The tanks were located 3 feet below ground surface (BGS) and were covered by backfill and grass. Fill pipes associated with the tanks were located on a concrete pad above the tanks. Upon removal of the tanks, all visible stained soils were removed. Post-excavation sampling showed elevated levels of TPH, VOCs and BNs. Four phases of excavation were performed to adequately remove all contaminated soils. The PA recommended no further action for this AOC. According to a letter from NJDEP to Huntsman, dated July 27, 2000, a no further action determination will be issued for this AOC.

AOC W (Field West of Service Area): The field was a gravel-covered area located directly south of the extruder building drum staging area (Area F). Soil and groundwater sampling were performed under the ECRA investigation and none of the samples had any exceedances of the NJDEP SCC or NJDEP groundwater criteria. The PA recommended no further action for this AOC. According to a letter from NJDEP to Huntsman, dated July 27, 2000, a no further action determination will be issued for this AOC.

AOC X (Plant Laboratory Area): This area is a grassy area located south of the plant laboratory and west of the paved asphalt lot. Waste oil and laboratory chemicals were stored adjacent to the laboratory on a concrete covered pad. The storage area was constructed with concrete secondary containment and has been regulated under the facility's Spill Prevention Control and Counter Measure/Disaster Prevention Control and Counter Measure plan (SPCC/DPCC) since the completion of the ECRA investigation. Contaminated soils were identified, and five cubic yards of soil were excavated to a depth of one foot. Post-excavation samples were taken for TPH, BNs and PCBs and none of the constituents exceeded the NJDEP SCC standards. This AOC received a no further action determination on December 16, 1992 from NJDEP. The PA also recommended no further action for this AOC. The facility is awaiting a declaration of no further action for this AOC.

AOC Y (Field South of Maintenance Shop): The area consists of a grassy field south of the maintenance/fabrication shop (Area C) that extends from the gravel-covered area surrounding the maintenance shop south to Fourth Street. This area was added as an AOC based on sample results from Area C. According to a letter from NJDEP to Huntsman, dated July 27, 2000, a no further action determination will be issued for this AOC.

AOC Z (Background Sample): One sample was collected in the topographically high northeast corner of the site. The boring was completed to identify background conditions at the facility. No elevated targeted parameters were detected. The PA recommended no further action for this AOC. According to a letter from NJDEP, dated Huntsman on July 27, 2000, a no further action determination will be issued for this AOC.

AOC AA (Air Compressor Area): The compressor area consists of a gravel-covered area

surrounding the compressor building. According to plant personnel, temporary compressors were historically used in this area. During the ECRA investigation, this area was sampled and those areas that were found to have levels of TPH that exceeded the most stringent SCC were excavated during a five-phase excavation. Approximately 107 cubic yards of soil were removed, post-excavation samples were taken and the areas were filled with clean backfill. This AOC received a no further action determination on December 16, 1992 from NJDEP. During the PA/site walk, oil-stained soils were identified adjacent to the compressor building. In the SI/RI/RAR, this AOC was renamed AOC 7. Test pits were excavated and three samples were taken from the most visibly stained areas. The samples were analyzed for TPH and none of them exceeded the most stringent SCC. NJDEP will not issue a no further action determination for this AOC until the results from additional post-excavation samples are received to verify a clean zone in this area. However, the manufacturing operations have ceased and the facility is fully-fenced with 24-hour security. Therefore, even if the results indicate that there is contamination in the surface or subsurface soils above the SCC, no exposures to workers or trespassers are expected. If results indicate levels below the SCC, a no further action will be issued for this AOC.

AOC BB (Area East of Flare Gas Recovery): This area consists of a small gravel area located beneath a pipe rack in the central portion of the site. Stained surface soils were observed beneath the pipe rack in this area during previous ECRA activities. Soil investigations were conducted and 5 cubic feet of soil were removed from the area. This AOC received a no further action determination on December 16, 1992 from NJDEP. The PA also recommended no further action for this AOC. The facility is awaiting a declaration of no further action for this AOC.

AOC CC (EPON Resin Facility Area): This area consisted of a paved area and a gravel-covered area surrounded by a gravel berm. The area is bordered on the east by railroad siding. EPON resin, a viscous plastic-like substance, was transferred to and from railroad tank cars in this area. There was some evidence of cracking and spillage on the pavement in this area during the ECRA investigation. Following the ECRA investigation the area was repaved and all surface drains were diverted to the chemical sewer. This AOC received a no further action determination on December 16, 1992 from NJDEP. This area was taken out of service in 1994 and decommissioned by Huntsman in 1995. The PA also recommended no further action for this AOC. However, a no further action determination will not be issued until results of integrity testing of the paved area are received.

AOC DD (Boiler Area): This area consisted of three boilers which utilized No.6 fuel oil and natural gas. During the previous ECRA investigation staining of gravel and soil beneath a pipe rack was observed. The soil was sampled for TPH. None of the soil samples exceeded the NJDEP SCC. The three boilers were taken out of service in June 1999 and were cleaned as a part of the facility's decommissioning activities. During the PA site inspection, stained soils were observed surrounding a concrete pad associated with a fan motor. In the SI/RI/RAR this area was renamed AOC 8. The stained soils were excavated and four post-excavation samples were taken. According to a letter from NJDEP to Huntsman, dated July 27, 2000, a no further action

determination will be issued for this AOC.

AOC EE (Service Area): This area is located in the central portion of the facility. Surficial soil staining was observed during the previous ECRA investigations. The stained soils were sampled for TPH, and it was determined that no constituents of concern were present above the NJDEP SCC. This AOC received a no further action determination on December 16, 1992 from NJDEP. The PA also recommended no further action for this AOC. The facility is awaiting a declaration of no further action for this AOC.

AOC FF (Central Operations Area): In June 1988, while workers were excavating to uncover a leaking water line in the center of the production area, visibly impacted groundwater (sheen) was observed. Five monitoring wells were installed, but free product was not observed and sample constituents were not detected above the most stringent SCC. During the ECRA investigation, soils in this area were excavated to a depth of two feet due to elevated TPH levels. The soils in this area received a no further action determination from the NJDEP in December 1992. The PA also recommended no further action. The facility is awaiting a declaration of no further action for groundwater for this AOC.

Groundwater r: The groundwater immediately below the site has been classified as a NJDEP Class IIIA aquifer. Because NJDEP Class IIIA standards have not been established for the site yet, NJDEP Class IIA groundwater standards were utilized to prepare this report. Groundwater is contaminated with one VOC and total metals above the NJDEP Class IIA groundwater standards. The SI/RI/RAR noted that the following monitoring wells were sampled: W-5, W-7, W-8, W-9, W-10, W-14, W-16, W-17, W-18, W-31, W-32, and W-34. These wells were located within and downgradient of the main production area and chemical sewer system. The depth to groundwater is between 4.0 and 9.0 ft BGS. The groundwater flows south/southwest and discharges to Mantua Creek.

Chemical Sewer: NJDEP is concerned with the integrity of the chemical sewer which runs throughout the manufacturing and production area of the facility. Previous investigation was limited to groundwater sampling, which NJDEP has indicated is not adequate. Therefore, additional investigation of the chemical sewer has been required by the NJDEP.

References:

- (1) Final Groundwater Monitoring Report of Environmental Cleanup Responsibility Act Compliance Activities for Shell Chemical Company, March 1999, BCM Engineers, Planners, Scientists and Laboratory Services.
- (2) Preliminary Assessment for Huntsman Polypropylene Corporation, January 19, 2000, Roux Associates, Inc.
- (3) Site Investigation/Remedial Investigation/Remedial Action Report for Huntsman Polypropylene Corporation, January 19, 2000, Roux Associates, Inc.

- (4) Letter from NJDEP to Huntsman Corporation May 15, 2000, Subject: Inspection Results.
- (5) Letter from NJDEP to Huntsman Corporation July, 27, 2000, Subject: Preliminary Assessment Report (PAR), Site Investigation Report (SIR), Remedial Investigation Report (RIR), and Remedial Action Report (RAR) dated January 19, 2000.

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

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			1,1,2-Trichloroethane, Arsenic, Nickel
Air (indoors) ²		X		
Surface Soil (e.g., <2 ft)	X			TPH, PAH, PCBs
Surface Water		X		
Sediment		X		
Subsurface Soil (e.g., >2 ft)	X			TPH, PAH
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.

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

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

Ratio nale :

Groundwater: The groundwater beneath the site has been classified as a NJDEP Class IIIA aquifer due to the thickness and the aerial extent of the clay layer acting as an aquitard. Because NJDEP Class IIIA standards have not yet been established for the site, NJDEP Class IIA groundwater standards were utilized to prepare this checklist. The SI/RI/RAR noted that the following on-site monitoring wells were sampled: W-5, W-7, W-8, W-9, W-10, W-14, W-16, W-17, W-18, W-31, W-32, and W-34. The groundwater monitoring results for these wells are included in Attachment 2. These wells are located within and downgradient of the main production area and chemical sewer system. The depth to groundwater is between 4.0 and 9.0 ft BGS. Based on the first round of groundwater sampling, groundwater was contaminated above the Class IIA standards with 1,1,2-TCA (in one upgradient well) and metals. However, the most recent sampling using low flow of various wells indicates that there are no exceedances of Class IIA groundwater standards in most of the wells, especially including the downgradient wells (W-16, W-17 and W-18).

Air (Indoors): Nearly all of the buildings on the site are being demolished and there are no buildings within the vicinity of monitoring well W-5, which resulted in the only NJDEP Class IIA groundwater exceedance for a VOC. That one exceedance was only slightly above the NJDEP groundwater quality standards. Therefore, indoor air is not expected to be a concern.

Surface Soil (e.g., <2 ft.): NJDEP has requested additional data for four AOCs (AOC B, AOC C, AOC D and AOC AA). Three of these AOCs have minor, unresolved QA/QC issues and one is awaiting final post-excavation results to verify that the AOC has no remaining soil contamination above NJDEP SCC.

Subsurface Soil (e.g., > 2ft.): NJDEP has requested that additional data be collected for six AOCs (AOC A, AOC H, AOC J, AOC N, AOC AA, and AOC CC). The integrity of remaining units in these areas need to be documented to verify that they're not contaminating subsurface soils.

Surface Water: The primary groundwater contaminants are metals which are likely to be trapped in the sediments and soils prior to reaching the creek, and the Class IIA groundwater standards are being met at the furthest downgradient wells for all constituents. Shell Chemical Corporation performed an investigation of this area during ECRA and EPA performed an ecological evaluation showing no impacts to the creek or the surrounding wetlands. Therefore, NJDEP issued a no further action determination in 1992 for this area. Since Mantua Creek is 200-300 feet further downgradient from the above mentioned wells, and since no releases have occurred to this area since the ECRA investigation, it is not expected that the surface water has been impacted.

Sediment: During the ECRA investigation, polypropylene pellets were observed within the

wetland area bordering the facility and Mantua Creek. Shell Chemical Corporation petitioned NJDEP for a no further action determination for the area because the pellets were determined to be inert and because they would degrade photochemically. This AOC received a no further action determination on December 16, 1992 from NJDEP. The PA recommended no further action for this AOC. As a result, it is not expected that sediments have been impacted from facility operations.

Air (Outdoors): Based on the low levels of contaminants detected (only one of which was a VOC), the mixing that would occur due to normal air flow, and the fact that manufacturing operations have ceased, outdoor air is not expected to be a concern.

References:

- (1) Preliminary Assessment for Huntsman Polypropylene Corporation, January 19, 2000, Roux Associates, Inc.
- (2) Site Investigation/Remedial Investigation/Remedial Action Report for Huntsman Polypropylene Corporation, January 19, 2000, Roux Associates, Inc.
- (3) Letter from NJDEP to Huntsman Corporation July, 27, 2000, Subject: Preliminary Assessment Report (PAR), Site Investigation Report (SIR), Remedial Investigation Report (RIR), and Remedial Action Report (RAR) dated January 19, 2000.

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 ³
Groundwater	No	No	No	No	---	---	No
Air (indoor)							
Surface Soil (e.g. < 2 ft)	No	No	No	No	No	No	No
Surface Water							
Sediment							
Subsurface Soil (e.g., > 2	---	---	---	No	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) -

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

skip to #6 and enter "IN" status code

Ratio nale :

Surface Soil:

Minor QA/QC issues need to be resolved for three of the AOCs and one is just awaiting final post-excavation results, which once resolved, should result in no further action determinations. All surface soil contamination has been removed and the areas have been backfilled with clean soil. In addition, all manufacturing operations have ceased, the facility has a fence around the entire property with 24-hour security surveillance and any workers wear proper protective equipment. Therefore, it is not expected that any workers or trespassers will be exposed to any significant surface soil contamination.

Subs urface Soil:

Even using the most conservative assumption (that residual subsurface soil contamination is found above the SCC in the six AOCs where additional data has been requested by NJDEP), there is no potential for human exposure. This soil is greater than two feet below the surface and is not accessible for exposure to anyone other than a construction worker. Deed restrictions will be imposed for any areas in which residential soil standards are exceeded. In addition, manufacturing operations have ceased, the facility has a fence with 24-hour security, and any construction workers will utilize proper personal protection equipment. Therefore, it is not expected that any workers or trespassers will be exposed to any significant subsurface soil contamination.

Groundwater:

The site is now abandoned so there is no on-site groundwater use; but even while it was still operating the site was connected to public water. Only wells within the site boundary are contaminated above New Jersey Class IIA Standards and the furthest downgradient wells are not contaminated above standards. Also, there are no drinking water wells off-site within close proximity to the site, so there is no off-site human exposure potential.

Reference(s):

- (1) Site Investigation/Remedial Investigation/Remedial Action Report for Huntsman Polypropylene Corporation, January 19, 2000, Roux Associates, Inc.
- (2) Letter from NJDEP to Huntsman Corporation July, 27, 2000, Subject: Preliminary Assessment Report (PAR), Site Investigation Report (SIR), Remedial Investigation Report (RIR), and Remedial Action Report (RAR) dated January 19, 2000.

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

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

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

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

Rationale and Reference(s):

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

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

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

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

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

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

Rationale and Reference(s):

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):

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 Huntsman Polypropylene Corporation facility EPA ID# NJD002482602, located at Mantua Grove Road, West Deptford, 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.

Bureau of Environmental Evaluation and Cleanup Responsibility Assessment
Industrial Site Evaluation Element
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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 1/1A - Groundwater Elevation Contour Map/AOC Map/Facility Site Map

Attachment 2 -Huntsman Corporation Groundwater Sampling Results

Attachments truncated, see facility file (MSS, 06/13/02)