DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

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

Facility Name: **Beazer East, Inc. Site (Formerly Koppers Company, Inc.)**
Facility Address: **Maritime and Tyler Streets, Port Newark, Essex County, New Jersey**
Facility EPA ID#: **NJD000542282**

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

Facility Information

The Beazer East, Inc. (Beazer) site, located in the city of Newark, New Jersey, is approximately eight acres in size. It is located between the Port Newark Channel to the north, and Elizabeth Channel to the south, both of which are connected to Newark Bay. The site is bounded by Maritime Street on the west and the former Weyerhauser facility to the north. An active rail line is located south of the site just north of Tyler Street. In addition, an inactive rail line, which is adjacent to the New Jersey Port Authority, is located east of the site. The land use in this area is primarily industrial with limited commercial use. The

American Lumber and Treating Company operated the facility from 1940 until 1954. In 1954, the wood treating facility was transferred to Koppers Company, Inc. (Koppers). The facility treated wood poles from 1940 until operations ceased in 1991. All former wood treating structures have been demolished and removed from the site. The site has also recently undergone remedial action including solidifying the top two feet of soil and covering the entire site with asphalt. The site is currently paved, fenced, and vacant. The site will be used for container (cargo) storage.

Koppers submitted a RCRA Part A (NJD000542282) application in 1980 for storing hazardous waste at its container (cargo) storage facility. In 1988, Koppers merged with BNS, Inc. (BNS), the parent company of Beazer. Due to the merger, the New Jersey Department of Environmental Protection (NJDEP) issued an administrative consent order (ACO) (ISRA Case #88286) to Koppers and BNS pursuant to the NJ Environmental Cleanup and Responsibility Act (ECRA). This ACO required the delineation and remediation of contamination related to facility activities. Investigations performed at the site include a Preliminary Assessment (PA) (July 1989), Remedial Investigation (RI) (May 1993), Phase III RI (May 1995), and Supplemental RI (January 1998). A Remedial Action Work Plan (RAWP) submitted to NJDEP in March 1999 was conditionally approved by NJDEP in July 1999. Subsequently, three addendums were submitted to amend the RAWP in order to address NJDEP and USEPA comments/concerns. The remedial activities were initiated in 2000. According to a January 10, 2002 letter from Beazer to USEPA, all actions have been completed. A Remedial Action Completion Report (RACR), which will document the remedial actions performed at the site, is expected to be submitted in Spring 2002. A Deed Notice outlining the residual soil contamination at the site above the New Jersey Residential Direct Contact Soil Cleanup Criteria (NJ RDCSCC) is also expected to be submitted in Spring 2002. A Classification Exception Area/Well Restriction Area (CEA/WRA) was established in 1999 to outline the area of groundwater impacted by site-related contamination.

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 Historical Operations and AOCs: The operational areas associated with the former wood treating facility included an office building, process treatment building, foam house, boiler house, lumber storage area, drip track, non-hazardous process waste containment area, non-hazardous storage pad, and aboveground creosote tank farm. The locations of these operational areas are shown in Figure 1-2 of the RAWP (Ref. 2). In addition to the operational areas, four waste management areas were identified in the Final Draft PA Report (Ref. 1). Former waste management areas included a container storage facility, truck unloading area, unlined dike, and copper chromium arsenate (CCA) Tank Farm. The former waste management areas are described below. Both the operational and waste management areas at the site are believed to have historically contributed to site-wide soil and groundwater contamination. Subsequent investigations at the site (e.g., RI, Phase III RI, and Supplemental RI) were not focused on historic operational or waste management areas, but were performed on a site-wide basis. Therefore, discussion of site-related contamination in available documentation is not easily associated with former operational or waste management areas. Hence, residual contamination will be discussed as either on-site or off-site contamination in this EI, and not discussed by operational or waste management area.

Container Storage Area (TSD Facility): The container storage area was located in the northern portion of the former wood treatment facility adjacent to the lumber storage area. This area was used to store K001, D004, and D007 hazardous waste in 55-gallon drums. A RCRA Part A permit application was initially submitted to USEPA on November 12, 1980 for this area, and resubmitted on March 9, 1981 (Ref. 1). A RCRA closure plan was submitted and approved by NJDEP for this area in 1988 and 1989, respectively. According the available file materials, this area was closed in 1991 (Ref. 2). Available documentation does not indicate when this area was clean closed or if the closure was approved. Despite the lack of historic information, any residual contamination in this area would have been addressed in subsequent site-wide investigations and remedial activities (e.g., surface soil solidification and asphalt capping).

Truck Unloading Area: The exact location of this area is not documented in the available file materials. The truck unloading area was used to unload wood poles. NJDEP noted spills in this area during a 1986 site inspection. The magnitude of spills are not documented, but the surrounding soil is suspected to have been contaminated with CCA and/or creosote (Ref. 1). Additional information regarding the truck unloading area was not available in the file materials. Despite the lack of historic information, any residual contamination in this area would have been addressed in subsequent site-wide investigations and remedial activities (e.g., surface soil solidification and asphalt capping).

Unlined Dike Area: The exact location of this area is not documented in available file materials. NJDEP gave a Notice of Violation to Koppers on September 29, 1986 for discharging creosote and/or CCA to the unlined dikes (Ref. 1). Additional historical information regarding the dikes is not available in the file materials. Despite the lack of historic information, any residual contamination in this area would have been addressed in subsequent site-wide investigations and remedial activities (e.g., surface soil solidification and asphalt capping).

CCA Tank Farm: This area was located in the southwestern portion of the former wood treatment facility adjacent to the former process treatment building. During a 1986 site inspection, NJDEP observed stained soil (Ref. 1), potentially due to operational losses and/or spills, in this area. Removal and remediation of the tank farm was initiated in 1986 (Ref. 1). Available file materials do not indicate when the cleanup activities were completed in this area. Despite the lack of historic information, any residual contamination in this area would have been addressed in subsequent site-wide investigations and remedial activities (e.g., surface soil solidification and asphalt capping).

Groundwater: Two water-bearing units are present beneath the site: the shallow fill unit and the glacial sand unit. These groundwater units are separated by a continuous organic clay and peat layer and are not hydraulically connected (Ref. 3). Groundwater in the shallow fill unit exists under unconfined conditions, with a depth to groundwater of approximately 8 to 15 feet below ground surface (bgs). As described in the Baseline Groundwater Sampling Report (see Figure 2, Ref. 5), there is potentiometric mound in the shallow fill unit trending from the southeast to the northwest across the site. Shallow groundwater flows radially from this mound, which indicates that shallow groundwater beneath the northern portion of the site generally flows north toward the Port Newark Channel, and groundwater beneath the southern portion of the site generally flows south-southwest toward the Elizabeth Channel. The depth to groundwater in the glacial sand unit, which generally flows north, is approximately 29 to 34 feet bgs. Arsenic, semi-volatile organic compounds (SVOCs), and volatile organic compounds (VOCs) have been detected in both groundwater units above the New Jersey Ground Water Quality Criteria (NJ GWQC) for Class II-A potable groundwater during the baseline groundwater sampling event for the newly installed monitoring well network (Ref. 5). In addition, free product creosote, a Dense Aqueous Phase Liquid (DNAPL), has been detected in the shallow fill and glacial sand units both on- and off-site. DNAPL in the shallow fill unit has been addressed in part by solidification of soil to the clay peat layer (approximately 10-15 feet bgs). In areas where solidification was not technically feasible (e.g., areas immediately surrounding the active railroad tracks), the facility has selected monitored natural attenuation as the remedy for the shallow fill unit (Ref. 3). A DNAPL extraction system has been recently initiated to monitor and recover DNAPL present in the glacial sand unit (Ref. 6).

In summary, there are several historical operational and waste management areas that likely contributed to the on- and off-site soil and groundwater contamination. However, contamination at site has been investigated on a site-wide basis and has not been correlated with specific AOC boundaries. All buildings and operational areas at the site have been demolished and the entire site is now paved with asphalt and will be utilized for container (cargo) storage. Thus, the operational and waste management areas are no longer present nor a concern.

References:

1. Final Draft Preliminary Assessment. Prepared by NUS Corporation. Dated July 21, 1989.
2. USEPA Fact Sheet. Dated October 1998.
3. Remedial Action Workplan. Prepared by Key Environmental, Inc. Dated March 1999.
4. DNAPL Delineation Report. Prepared by Key Environmental, Inc. Dated May 2000.
5. Baseline Groundwater Sampling Report. Prepared by Key Environmental, Inc. Dated April 27, 2001.
6. Letter from Mitchell Brourman, Beazer East, Inc. to Barry Tornick, USEPA, re: Beazer East, Inc. Dated January 10, 2002.

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			Arsenic, VOCs, SVOCs, DNAPL
Air (indoors)[2]		X		
Surface Soil (e.g., < 2 ft)	X			Metals, SVOCs, DNAPL
Surface Water			X	Arsenic
Sediment			X	Arsenic
Subsurface Soil (e.g., > 2 ft)	X			Metals, SVOCs, DNAPL
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

Arsenic, VOC, and SVOC contamination in excess of the NJ GWQC has been reported in the shallow fill and glacial sand units within the facility boundaries and in adjacent off-site areas. Maximum concentrations reported in the most recent sampling event for which data are available (September 2000), are summarized in Table 1 (Ref. 8). These data indicate that arsenic, acenaphthene, naphthalene, phenanthrene, and benzene are detected above the NJ GWQC in the shallow fill and/or glacial sand unit. The highest arsenic concentration occurs in well MW-10A (shallow fill unit well) and MW-10B (glacial

[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) 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.

sand unit well), located in the eastern portion of the site within approximately 40 feet of the railroad tracks. The highest acenaphthene, benzene, naphthalene, phenanthrene, and xylene concentrations are reported in MW-14A in the shallow fill unit. The maximum concentrations of benzene and phenanthrene in the glacial sand unit were detected in MW-6B and MW-9B, respectively.

Although the groundwater in the glacial sand unit is designated as a Class II-A aquifer, it mixes with estuarine water (i.e., salt water) from Newark Bay, making it non-potable due to elevated salinity (Ref. 2). The facility has not requested a change in the groundwater designation for this unit.

Table 1 - Maximum Concentrations of Contaminants Detected Above NJ GWQC during September 2000 Groundwater Sampling Event [1] (µg/L)

Contaminant	NJ GWQC[2]	Maximum Groundwater Concentration	Wells Exceeding NJ GWQC[3]
Shallow Fill Unit			
Acenaphthene	400	700	**MW-14A**
Arsenic	8	1,520	MWR-9A, **MW-10A**, MW-11A, MW-14A, MW-15A, MW-16A, MW-17A, MW-18A
Benzene	1	15	**MW-14A**
Naphthalene[4]	300	8,200	**MW-14A**
Phenanthrene[4]	100	260	**MW-14A**
Xylene	40	97	**MW-14A**
Glacial Sand Unit			
Arsenic	8	68.1	MW-5B, **MW-10B**, MW-11B
Benzene	1	3	**MW-6B**
Phenanthrene[4]	100	120	**MW-9B**

[1] The results of the September 2000 groundwater sampling event were presented in the April 2001 Baseline Groundwater Sampling Report (Ref. 8).

[2] NJ GWQC is the higher of the GWQC or the Practical Quantitation Level (PQL)

[3] Well locations where maximum detected concentrations were found are in **Bold**

[4] NJ GWQC are interim specific criteria (Ref. 10)

The use of creosote during former operational activities at the site has impacted both the shallow fill unit and the glacial sand unit with DNAPL. DNAPL has been detected in the shallow fill unit on site, primarily in the southwestern portion of the site, and off site to the south-southwest (Ref. 5). The presence of DNAPL within the glacial sand unit is restricted laterally to the southwestern and west-central portion of the property in an area that corresponds to the former wood treating process and storage tank farm area. Available data do not indicate any DNAPL in the peat silty clay layer that separates the shallow fill unit from the glacial sand unit. DNAPL has migrated from the shallow fill unit to the glacial sand unit via man-made conduits (i.e., monitoring wells, wood pilings) (Ref. 5).

Air (Indoors)

No volatile contaminants have been recently detected in groundwater beneath the site above NJ GWQC (Ref. 8). There are no buildings currently present on site, as the site is completely paved and utilized for container (cargo) storage. Thus, the potential migration of VOCs in groundwater into indoor air is not a concern at the Beazer site.

Benzene and xylene and have been detected in groundwater collected from MW-14A (Ref. 8), which is located adjacent to railroad tracks south of the Beazer site. There are no buildings in the vicinity of this well. VOCs have not been detected in MW-15A, located further off-site and somewhat downgradient of MW-14A. Regardless, the maximum detected VOC concentrations in the shallow fill unit were compared to the State of Connecticut Groundwater Standards for the Protection of Indoor Air under the Industrial/Commercial Scenario (CT I/C VC), if available, to determine whether migration of VOCs to indoor air may be of concern. Benzene (15 µg/L) and xylene (97 µg/L) were not detected above the CT I/C VC (530 and 50,000 µg/L, respectively). Thus, potential migration of VOCs in groundwater into indoor air is not a concern at this off site location.

Surface/Subsurface Soil (On Site)

Main Portion of the Site: Surface soil (< 2 feet bgs) and subsurface soil (> 2 feet bgs) have been impacted throughout the site by metals and SVOCs above the NJ RDCSCC, New Jersey Non-Residential Direct Contact Soil Cleanup Criteria (NJ NRDCSCC), and/or site-specific endpoint criteria. A Draft Deed Notice (Ref. 2) that outlines residual contamination present above the NJ RDCSCC was prepared for the site. Current use of the site and surrounding area is non-residential; therefore, only the contaminants exceeding the NJ NRDCSCC or site-specific endpoint criteria are of concern for current site conditions. The maximum detected concentrations of the following metals were above the NJ NRDCSCC or site-specific endpoint criteria in surface soil: arsenic (7,400 mg/kg), copper (9,300), iron (196,000 mg/kg), nickel (7,700 mg/kg), thallium (2.91 mg/kg), and zinc (7,070 mg/kg) (Refs. 2, 6). Arsenic was the only metal detected above NJ NRDCSCC or site-specific criteria in subsurface soil at the site. The maximum detected arsenic concentration in subsurface soil was 1,920 mg/kg. Twelve SVOCs (acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, carbazole, chrysene, dibenz(a,h)anthracene, dibenzofuran, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, and phenanthrene) were detected in surface soil above NJ NRDCSCC or site-specific endpoint criteria. In addition, 13 SVOCs (acenaphthylene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, carbazole, chrysene, dibenz(a,h)anthracene, dibenzofuran, indeno(1,2,3-cd)pyrene, 2-methylnaphthalene, and phenanthrene) were detected above NJ NRDCSCC or site-specific endpoint criteria in subsurface soil at the site. As previously mentioned, DNAPL is present in the southwestern portion of the site.

Eastern Portion of the Site: Lead (463 mg/kg) and nickel (983 mg/kg) were detected at one location (B-18) along the eastern property boundary at concentrations greater than the site-specific cleanup criteria (372 and 290 mg/kg, respectively), but below the NJ NRDCSCC (600 and 2,400 mg/kg, respectively). NJDEP requested further delineation of lead and nickel along the eastern property boundary in a letter dated December 3, 1999 (Ref. 4). The sampling was performed in Spring of 2000 and the results were provided in a letter report dated May 26, 2000 (Ref. 6). The sampling results in the vicinity (B-18-A) indicated that the lead and nickel concentrations were below the site-specific endpoint criterion and NJ NRDCSCC. Thus, the extent of the nickel and lead contamination does not extend off site in this area. NJDEP agreed that surface soil contamination in the vicinity of sampling location B-18 has been delineated in a letter dated July 20, 2000 (Ref. 7).

Northern Portion of the Site: Arsenic concentrations at some surface soil sampling locations (B-1, BG-2, BG-3, and BG-4) in the vicinity of the northern property boundary exceeded the site-specific

endpoint criterion (57.9 mg/kg). In December 1999, NJDEP requested further delineation of arsenic in surficial soil located along the northern property boundary (Ref. 4). Four samples, co-located with the initial sample locations, were collected south of the northern fence boundary. Five samples, including one off-site sample, were collected north of the northern fence boundary. Analysis results were provided in a letter report dated May 26, 2000 (Ref. 6). The arsenic sample concentrations from samples collected within the fence line exceeded the site-specific endpoint criterion. In addition, arsenic (206 mg/kg) was detected above the site-specific endpoint criterion in one on-site sample (BG-2-3-B) collected north of the fence line. The remaining arsenic samples results were below the site-specific cleanup criterion. Thus, the arsenic surface soil contamination does not extend beyond the northern property boundary. However, based on the results of this sampling, the area of remedial activities was expanded by 10 feet along the northern property boundary to include the sampling locations that exceeded the site-specific endpoint criterion (Ref. 6). NJDEP approved this remedy in a letter dated July 20, 2000 (Ref. 7).

Surface/Subsurface Soil (Off Site)

South-Southwest of the Site: During the delineation of off-site DNAPL south-southwest of the site, subsurface soil confirmation samples were collected and analyzed for SVOCs to determine if DNAPL was present. Although many of these confirmation samples indicated that DNAPL was not present, SVOCs were detected in some of these samples above NJ NRDCSCC. The maximum concentrations detected in these samples are presented in Table 2 (Ref. 5).

Table 2 - Contaminants Present in Off-Site Subsurface Soil Above NJ Soil Cleanup Criteria (mg/kg)

Contaminant	NJ NRDCSCC	NJDEP Approved Site-Specific Cleanup Criteria [1]	Subsurface Soil Maximum Detection
Soil Contamination beyond Southern Boundary of the Site			
Acenaphthylene	NA	2.7[1]	2.3 J (OBG-11-3-A)
Arsenic	20	57.9[2]	--
Benzo(a)anthracene	4	3.6	48 (OBG-23)
Benzo(a)pyrene	0.66	4.3	21 (OBG-23)
Benzo(b)fluoranthene	4	4.2	33 (OBG-23)
Benzo(k)fluoranthene	4	1.7	12 (OBG-23)
Benzo(g,h,i)perylene	NA	4	4.6 J (OBG-11-3-A)
Chrysene	40	18	93 J (OBG-11-A)
Dibenz(a,h)anthracene	0.66	0.72	1.3 (OBG-23)
Indeno(1,2,3-cd)pyrene	4	5.5	4.8 J (OBG-11-A)
Nickel	2,400	290[2]	412 (OBG-23)

-- indicates that the contaminant was not detected above NJ NRDCSCC.

[1] Because available documentation does not indicate whether NJDEP approves the use of the site-specific endpoint criteria for off-site contamination, off-site contaminant concentrations were compare to NJ NRDCSCC. For comparison purposes, the site-specific endpoint criteria are also provided.

[2] NJDEP approved site-specific cleanup criteria for these contaminants based on a metals background study.

NA - NJ NRDCSCC not available for this contaminant.

Directly South of the Site: Arsenic, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and dibenz(a,h)anthracene were detected above NJ NRDCSCC in surface soil samples (B-8 and B-13) south of the site and adjacent to active railroad tracks north of Tyler Street. Due to the historical topography of the area near the tracks, the facility maintains that the surface soil contamination was due to activities at the railroad tracks and not the former operational activities at Beazer (Ref. 2). Beazer did not propose remedial action in this area in the RAWP. NJDEP approved this approach in a comment letter dated July 30, 1999 (Ref. 3), concurring that the off-site arsenic and SVOC contamination was due to historic railroad activities and not Beazer activities. Therefore, Beazer is not responsible for the arsenic and SVOC impacts to surface soil in this area south of the railroad tracks and north of Tyler Street. It should be noted that these samples (B-8 and B-13) are adjacent to an active railroad track. Beazer has indicated, and NJDEP has concurred, that no excavation or intrusive activities can be performed within 25 feet of the railroad track (Refs. 2, 3). Thus, off-site construction workers are not expected to become exposed to elevated arsenic and SVOC concentrations in this area. Based upon visual observations (Ref. 9), the area surrounding the railroad track is covered by crushed gravel and stone. Surface soil in the area of the tracks is not exposed, thus exposure to off-site workers and trespassers is not expected to be of concern.

South-Southeast of the Site: Lead (1,770 mg/kg) was detected above the NJ RDCSCC (400 mg/kg) and NJ NRDCSCC (600 mg/kg) in a surface soil sample (B-15) collected at an off-site boring location southeast of the site. NJDEP requested further delineation of lead along the southeastern property boundary in a letter dated December 3, 1999 (Ref. 4). Three on-site samples and one off-site sample (east of Sample B-15) were collected to determine if the lead concentration at sampling location B-15 was attributable to on-site sources. The sampling was performed in Spring of 2000 and the results were provided in a letter report dated May 26, 2000 (Ref. 6). The lead concentrations in these samples were below the NJ RDCSCC and site-specific endpoint criterion. Thus, it was concluded that the lead concentration at B-15 was not due to an on-site source. NJDEP agreed that the facility was not responsible for the off-site lead contamination southeast of the site in a letter dated July 20, 2000 (Ref. 7).

Surface Water/Sediment

There are no surface water bodies located on site. The Port Newark Channel is approximately 1,000 feet north of the site and the Elizabeth Channel is less than 2,500 feet south of the site (Ref. 1). A potentiometric mound exists in the shallow fill unit trending from southeast to the northwest across the site. Groundwater flows radially from this mound, thus shallow groundwater beneath the northern portion of the site generally flows north towards the Port Newark Channel, and groundwater beneath the southern portion of the site generally flows south-southwest toward the Elizabeth Channel. Groundwater in the glacial sand unit flows to the north. There have been no documented impacts to off-site surface water or sediment due to historic activities at Beazer. However, arsenic was detected in groundwater (152 µg/L) at one northern site boundary well (MW-11A) at a concentration greater than ten times the corresponding NJ GWQC (8 µg/L) and New Jersey Surface Water Quality Criteria (NJ SWQC) for an SE3 waterway (0.136 µg/L). No additional contaminants were detected at the northern site boundary wells at levels greater than ten times the NJ GWQC or NJ SWQC. Because the groundwater monitoring network does not extend beyond the northern site boundary, the horizontal extent of arsenic contamination is not known. Therefore, based upon current available information, the potential impacts of arsenic contamination in groundwater on surface water and sediment in the Port Newark Channel are currently unknown. Benzene (15 µg/L) and naphthalene (8,200 µg/L) were detected in groundwater at levels greater than ten times the NJ GWQC in one off-site well (MW-14A), located just south of the site. The benzene concentration does not currently exceed the NJ SWQC by greater than ten times. A NJ SWQC

is not currently available for naphthalene. However, groundwater concentrations for benzene and naphthalene in MW-15A, located further off-site and somewhat downgradient of MW-14A, do not currently exceed the NJ criteria. Thus, contaminated groundwater discharge from groundwater migration at the southern portion of the site to the Elizabeth Channel is not expected to be a concern.

Potential migration of DNAPL to surface water and sediment in the Port Newark Channel and Elizabeth Channel is also not expected to be a concern. The DNAPL plume delineated in the shallow fill unit is present on site and extends just south-southwest of the site. The DNAPL has been addressed in part by solidifying the impacted soil to the clay peat layer (approximately 10-15 feet bgs) both on and off site (Ref. 2). In areas where solidification was not possible (i.e., railroad tracks), monitoring natural attenuation has been selected as the remedy. DNAPL was detected in MW-14A during a September 2000 sampling event. However, DNAPL was not detected in MW-15A, located further off-site and somewhat downgradient of MW-14A. Thus, DNAPL in the shallow fill unit is not expected to have impacted the Elizabeth Channel. In addition, a DNAPL extraction system has been initiated to monitor and recover DNAPL in the glacial sand unit. Migration of DNAPL from the shallow fill unit to the glacial sand unit has been limited to man-made conduits due to the presence of a confining clay layer (Ref. 2); hence, DNAPL is not expected to have significantly impacted the glacial sand unit. Also, the Elizabeth Channel is located upgradient of DNAPL in the glacial sand unit; thus, DNAPL in this unit is not expected to impact the Elizabeth Channel. Given the currently delineated extent of DNAPL in the shallow fill and glacial sand units, the actions taken to address DNAPL, and the distance to the channels, migration of DNAPL to the channels is not expected to be a concern.

Air (Outdoors)

No assessment of the impacts to outdoor air has been conducted at the site. Migration of VOCs in groundwater into outdoor air is not expected to be of concern due to the limited detections of VOCs in groundwater beneath the site and the natural dispersion of contaminants once they reach the surface. In addition, contaminated soil is beneath an asphalt cap, which prevents the dispersion of contaminated particulates. Thus, the migration of contaminated particulates and/or volatile emissions are not expected to be significant exposure pathways at the site.

References:

1. Final Draft Preliminary Assessment. Prepared by NUS Corporation. Dated July 21, 1989.
2. Remedial Action Workplan. Prepared by Key Environmental, Inc. Dated March 1999.
3. Letter from Wayne C. Howitz, NJDEP to Steven Radel, Beazer East, Inc. re: Koppers Company, Inc. Dated July 30, 1999.
4. Letter from Bryan Moore, NJDEP to Steven B. Radel, Beazer East, Inc., re: Koppers Company, Inc. Dated December 3, 1999.
5. DNAPL Delineation Report. Prepared by Key Environmental, Inc. Dated May 2000.
6. Letter from James Zubrow, Key Environmental, Inc., to John King, NJDEP, re: Letter Report - Results of Surface Soil Sampling. Dated May 26, 2000.
7. Letter from Bryan Moore, NJDEP to Mitchell Brourman, Beazer East, Inc., re: Koppers Company Inc. Dated July 20, 2000.
8. Baseline Groundwater Sampling Report. Prepared by Key Environmental, Inc. Dated April 27, 2001.
9. Electronic Message from Alan Straus, USEPA to Kristin McKenney, Booz Allen Hamilton, Inc., re: Beazer East, Inc. Dated February 5, 2002.

10. Letter from Bryan Moore, NJDEP to Mitchell Brourman, Beazer East, Inc., re: Koppers Company Inc. Dated February 07, 2002.

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	Yes	--	No	No
~~Air (indoor)~~							
Surface Soil (e.g., < 2 ft)	No	No	No	No	No	No	No
Surface Water	No	No	--	--	No	Yes	No
Sediment	No	No	--	--	No	No	No
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.

____ 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).

__X__ 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

Rationale:

Groundwater

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

A CEA/WRA has been established for the shallow fill and glacial sand unit at this site and immediate downgradient areas (Ref. 4). See Figure E-2 in the RAWP (Ref. 2) for a figure showing the boundaries of the CEA/WRA. There are no potable groundwater wells at the site, nor are there any buildings on site. Thus, groundwater ingestion is not considered a potentially complete pathway for on-site receptors.

A local groundwater well use search was conducted in 1989. Results indicated the presence of one industrial groundwater well within the three mile vicinity of the site (Ref. 1). The industrial groundwater well is located in Newark City at Ablon Finishes and was installed in the 1960s. The well is approximately 2.5 miles north of the site, on the other side of the Port Newark Channel. Thus, it is highly unlikely that this well would be impacted by groundwater migrating from the site. No other wells are located in this area. Also, considering that groundwater from glacial sand unit has elevated salinity, potable wells in the vicinity of the site are unlikely to be installed in the future. Thus, ingestion of contaminated groundwater is not considered a potentially complete pathway for off-site receptors (i.e., residents and/or off-site workers).

The groundwater depth at the site ranges from 8 to 15 feet bgs (Ref. 4). Because most intrusive activities occur at depths from zero to ten feet, it is possible that a construction worker could be exposed to contaminated groundwater during intrusive activities. However, due to recent remedial activities (e.g., solidification of surface soil and installation asphalt cap) and current site use (e.g., container [cargo] storage), on-site workers are unlikely to perform intrusive activities and come in direct contact with groundwater. In addition, the facility is currently finalizing a Deed Notice, which will restrict intrusive activities on site and in areas immediately off site to the south and southwest. Thus, direct contact with contaminated groundwater is not considered a potentially complete exposure pathway for on-site construction workers during intrusive activities.

The recent groundwater data indicate that arsenic, SVOCs, and/or VOCs were detected in the shallow fill unit at all wells within the property boundary (MWR-9A, MW-10A, MW-11A, and MW-18A), beyond the southern property boundary (MW-14A and MW-15A), and beyond the western property boundary (MW-16A and MW-17A). Considering the depth to groundwater (< 10 feet bgs) and the unknown extent of contamination downgradient of these wells, construction workers north, south, or west of the site could potentially come in contact with contaminated groundwater during intrusive activities. Therefore, direct contact with contaminated groundwater is considered a potentially complete exposure pathway for off-site construction workers.

Surface/Subsurface Soil

All impacted surface soil at the site has been solidified and a four-inch asphalt cap has been placed over the entire on-site area impacted by prior Beazer activities (Refs. 1, 5, 7). In areas where DNAPL has been identified on site, soil was solidified down to the clay peat layer (approximately 10-15 feet bgs). In addition, an off-site area south of Tyler Street impacted with DNAPL was also solidified down to the clay peat layer and paved with an asphalt cap (Ref. 5). A figure depicting the proposed areas for soil solidification and paving was presented in a November 1, 2000 letter to NJDEP (Ref. 3). Thus, there is no potential for either on- or off-site receptors to come into contact with contaminated soil within the site boundaries and in the area south of Tyler Street. A Deed Notice is also currently being finalized to restrict intrusive activities on site and in the area south of Tyler Street.

Off-site contamination related to prior site activities is limited to DNAPL and SVOCs detected in subsurface soil samples just south of and adjacent to the railroad tracks. Construction activities that include intrusive activities within 25 feet of the track are not allowed because significant excavation could jeopardize the integrity of the railroad track (Ref. 1). Thus, off-site construction workers are not expected

to perform intrusive activities and come in direct contact with contaminated subsurface soil. In addition, the Deed Notice, which is currently being finalized, will restrict intrusive activities.

Surface Water/Sediment

Currently, the impacts to surface water and sediment in the Port Newark Channel from potential discharge of arsenic-contaminated groundwater from the site is unknown. As mentioned previously, the Port Newark Channel is an industrial shipping channel in Newark Bay. Newark Bay is classified as an SE3 waterway and is maintained to support secondary contact recreation (i.e., boating). However, given that the channel is used for heavy industrial shipping purposes, it is highly unlikely that a recreational user would be present in the channel. Furthermore, the channel is dredged to a depth which accommodates large ships (> 45 feet), thus sediment would not be present at a depth of concern for recreational receptors. Although it is a highly unlikely scenario, a recreational user in the channel could potentially come in contact with surface water while engaged in secondary contact recreational activities. Given that the potential impacts from contaminated groundwater migrating from the Beazer site to the Port Newark Channel are unknown, this pathway is considered potentially complete.

Fish advisories have been posted for the Newark Bay Complex (Ref. 6); thus, fish in the bay are not harvested for human consumption. The potential uptake or bioaccumulation of contaminants migrating from the site in fish (e.g., shellfish uptake of arsenic) is not currently a concern with regards to human health because the potential food pathway is not considered complete.

References:

1. Final Draft Preliminary Assessment. Prepared by NUS Corporation. Dated July 21, 1989.
2. Remedial Action Workplan. Prepared by Key Environmental, Inc. Dated March 1999.
3. Letter from James Zubrow, Beazer East, Inc. to John King, NJDEP, re: Final Stabilization Limits. Dated November 1, 2000.
4. Baseline Groundwater Sampling Report. Prepared by Key Environmental, Inc. Dated April 27, 2001.
5. Letter from Mitchell Brourman, Beazer East, Inc. to Barry Tornick, USEPA, re: Beazer East, Inc. Dated January 10, 2002.
6. NJDEP Fish and Crab Consumption Advisories Based on PCBs, Dioxin or Chlordane Contamination. Dated January 30, 2002. http://www.state.nj.us/dep/dsr/fish-crab.htm.
7. Electronic Message from Alan Straus, USEPA to Kristin McKenney, Booz Allen Hamilton, Inc., re: Beazer East, Inc. Dated February 5, 2002.

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?

__X__ 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:

Groundwater

Because the extent of groundwater contamination off site is unknown, there is the potential for an off-site construction worker to come in direct contact (e.g., inhalation, incidental ingestion, dermal contact) with contaminated groundwater during intrusive activities. The majority of contaminants detected in groundwater above the NJ GWQC are arsenic, SVOCs, and VOCs (Ref. 2). Direct exposure to contaminated groundwater during off-site construction activities is not expected to pose significant exposure concerns for several reasons, discussed below.

Acenaphthene, benzene, naphthalene, phenanthrene, and xylene were only detected above NJ GWQC in one monitoring well (MW-14A) (700 µg/L, 15 µg/L, 8,200 µg/L, 260 µg/L, and 97 µg/L, respectively). In addition, arsenic (41 µg/L) was detected in this monitoring well (Ref. 2). This well is located south of the site adjacent to an active railroad track. Given that the railroad track is still active, construction activities that include intrusive activities within 25 feet of the track are not allowed because significant excavation could jeopardize the integrity of the railroad track (Ref. 1). Thus, construction activities are expected to be limited to above-ground activities (e.g., railroad track maintenance) and construction workers in this area are not anticipated to come in direct contact with contaminated groundwater. This well location is within the current CEA/WRA boundary (See Figure E-2, Ref. 1). It should also be noted that a Deed Notice will be put in place upon submittal of the RACR. The Deed Notice will extend south of the site in the area of the elevated arsenic, SVOCs, and VOCs in groundwater. Once the Deed Notice is implemented, no intrusive activities will be allowed in this area, further preventing exposure to groundwater.

[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.

Arsenic also has been detected above NJ GWQC in the shallow fill unit in multiple downgradient perimeter monitoring wells (MW-9A, 76.5 µg/L; MW-11A, 152 µg/L, and MW-18A, 16.4 µg/L) and wells immediately off site to the south and west (MW-15A, 24 µg/L; MW-16A, 23.2 µg/L; and MW-17A, 21.6 µg/L) (Ref. 2). Although there is the potential for an off-site construction worker to come into direct contact (e.g., incidental ingestion, dermal contact) with arsenic in groundwater, it is unlikely that the exposure to these contaminants would pose significant risk. Typically, groundwater encountered during intrusive activities is dewatered prior to or while performing any construction activities. Thus, dewatering activities significantly reduces the contact that a construction worker potentially has with contaminated groundwater during intrusive activities. Also, because the surrounding land use is highly industrial it seems reasonable that other facilities also may have impacted shallow groundwater beneath Port Newark. It is therefore likely that construction workers in the area would perform intrusive activities in accordance with a Health and Safety Plan, following Occupational Health and Safety Administration (OSHA) guidelines. Thus, exposure would be limited with the use of personal protective equipment (PPE) while performing excavation activities.

Surface Water

As discussed in Questions #2 and #3, the current impacts to surface water in the Port Newark Channel are unknown. The channel is used for heavy industrial shipping purposes. Although it is a highly unlikely scenario, a recreational user could potentially come into contact with potentially impacted surface water while engaged in secondary recreational activities in the channel. Potential exposure to arsenic in surface water is currently not expected to pose significant risk. Arsenic (152 µg/L) was recently detected at levels greater than 10 times the NJ GWQC (8 µg/L) and NJ SWQC (0.136 µg/L) at only one sample location (MW-11A) along the northern property boundary. Arsenic concentrations reported during the same sampling event in an on-site well (MW-10A) upgradient of the northern boundary well (MW-11A), were significantly higher (1,520 µg/L). Thus, it appears that arsenic concentrations are significantly reduced at the northern property boundary when compared to the upgradient on-site locations. The Port Newark Channel is located approximately 1,000 feet from the northern boundary of the site. Thus, it is appears unlikely that arsenic would migrate to the Port Newark Channel at significant levels. In addition, if arsenic contamination were to migrate from the site to the Port Newark Channel via groundwater, arsenic would generally be expected to be bound to sediments or fall to the bottom of the water column; thus, arsenic is not likely to be at elevated concentrations at the top of the surface water column. As mentioned previously, the Port Newark Channel is dredged to an approximate depth of 45 feet, making exposure to sediment for a recreational user extremely unlikely.

It should also be noted that the Newark Bay area, including the Port Newark and Elizabeth Channels, has been historically impacted by the heavy industrial activities in this area. The impacts to Newark Bay are well documented, thus rendering the SE3 classification and the posting of fish advisories in the area. Numerous heavy industrial sources have caused impact to the channel. If surface water samples were collected and detected elevated arsenic concentrations, it would be extremely difficult to determine if the elevated arsenic levels were due to impacted groundwater emanating from the Beazer site. Based upon the concentrations detected in groundwater at the site, and the minimal number of wells (MW-11A and MW-10A) containing contaminant concentrations in groundwater greater than 10 times the corresponding NJ GWQC and NJ SWQC, it does not appear that contamination at the Beazer site would pose significant concern for adverse impacts to the Port Newark Channel, Elizabeth Channel, or Newark Bay.

References:

1. Remedial Action Workplan. Prepared by Key Environmental, Inc. Dated March 1999.

2. Baseline Groundwater Sampling Report. Prepared by Key Environmental, Inc. Dated April 27, 2001.

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 #4.

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 Beazer East, Inc. Site, facility EPA ID# NJD000542282, located at Maritime and Tyler Streets in Port Newark, Essex County, 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:_____

Angela Sederquist
Risk Assessor
Booz Allen Hamilton

Reviewed by: _____ Date:_____

Kristin McKenney
Senior Risk Assessor
Booz Allen Hamilton

Also Reviewed by: _____ Date:_____

Alan Straus, Remedial Project Manager
RCRA Programs Branch
USEPA Region 2

_____ Date:_____

Barry Tornick, Section Chief
RCRA Programs Branch
USEPA Region 2

Approved by: ___original signed by:_____ Date:_8/1/2002_____

Raymond Basso, Chief
RCRA Programs Branch
USEPA Region 2

Locations where references may be found:

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

Contact telephone and e-mail numbers:

Alan Straus, USEPA RPM
212-637-4160
straus.alan@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 - Summary of Media Impacts Table

Attachment 1 - Summary of Media Impacts Table

Beazer East, Inc., Port Newark, Essex County, New Jersey

AOC [1]	GW	AIR (Indoors)	SURFACE SOIL	SURFACE WATER	SEDIMENT	SUBSURFACE SOIL	AIR (Outdoors)	CORRECTIVE ACTION MEASURE	KEY CONTAMINANTS
On Site	NA	No	Yes	No	No	Yes	No	▸ Solidification of surface soil (0-2 ft. bgs) ▸ Four-inch asphalt cap ▸ Deed Notice	DNAPL, metals, SVOCs, VOCs
Off site	NA	No	No	Unknown	Unknown	Yes	No	▸ Solidification of surface soil (0-2 ft. bgs) ▸ Four-inch asphalt cap ▸ Deed Notice	DNAPL, metals, SVOCs
Site-Wide Groundwater	Yes							▸ Monitored natural attenuation for shallow fill unit ▸ DNAPL extraction system for glacial sand unit ▸ CEA ▸ Solidification of surface soil (0-2 ft. bgs) ▸ Four-inch asphalt cap ▸ Deed Notice	DNAPL, arsenic, SVOCs, VOCs

[1]Soil and groundwater have been investigated on a site-wide basis, not on an AOC basis.