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2006

EPA Superfund
Record of Decision:

ICELAND COIN LAUNDRY AREA GW PLUME
EPA ID: NJ0001360882
OU 01
VINELAND, NJ
09/27/2006

DECLARATION STATEMENT

RECORD OF DECISION

SITE NAME AND LOCATION

Iceland Coin Laundry Superfund Site
(EPA ID #NJD0001360882)
City of Vineland, New Jersey

STATEMENT OF BASIS AND PURPOSE

This decision document presents the Selected Remedy to address contaminated groundwater at the Iceland Coin Laundry Superfund Site (Site) (also known as the Garrison Road Well Contamination Site) in the City of Vineland, New Jersey. The remedy was selected in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The decision is based on the Administrative Record file for the Site.

The State of New Jersey concurs with the selected remedy.

ASSESSMENT OF THE SITE

The response action selected in this Record of Decision (ROD) is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances from the Site into the environment.

DESCRIPTION OF THE SELECTED REMEDY

The Selected Remedy addresses contaminated groundwater emanating from the Site and moving approximately 4700 feet to the southwest. The primary groundwater contaminants are tetrachloroethene (PCE), and its breakdown products, trichloroethene (TCE) and cis-1,2 dichloroethylene (cis-1,2 DCE). In-situ biological treatment would be used to remediate the groundwater plume that contains. PCE at levels above 10 parts per billion (ppb). For the area outside the 10 ppb isoconcentration contour, natural attenuation would be monitored to ensure the remediation goal is achieved. After some pilot tests are conducted, nutrient amendments would be injected into the groundwater and then monitored. Additional injection events would occur, if required, followed by monitoring. Monitoring would continue until cleanup objectives are met. The major components of the Selected Remedy include:

- In-situ biological treatment for cleanup of the groundwater at the Iceland Coin Laundry Site. The in-situ treatment will be an enhanced anaerobic bioremediation (EAB) system.

- In addition, enhanced anaerobic biological treatment at the facility area, if necessary. If the design investigation indicates significant soil contamination adjacent to the source area, EAB will also be performed in this area.

- EAB performance monitoring - Monitoring wells would be sampled to ensure that the conditions inside and along the edges of the contaminated area are conducive to biodegradation.

- Institutional controls - Institutional controls for groundwater would include a Classification Exception Area (CEA) and well drilling restrictions to eliminate human exposure pathways to contaminated groundwater.

- Long-term groundwater monitoring - The long-term monitoring program would track contaminant concentration changes and migration outside the treatment area. The monitoring will be conducted to establish whether contaminants are meeting the appropriate New Jersey Ground Water Quality Standards (NJGWQSs) or Maximum Contaminant Levels (MCLs), whichever are lower.

- If during implementation, residences or businesses within the aerial extent of the Site plume are found to have not yet been connected to public water, EPA would consider connecting them to the public water. supply.

DECLARATION OF STATUTORY DETERMINATIONS

Part 1: Statutory Requirements

The Selected Remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

Part 2: Statutory Preference for Treatment

The Selected Remedy for groundwater will meet the statutory preference for the use of remedies that employ treatment that reduces the toxicity, mobility or volume as a principal element.

Part 3: Five-Year Review Requirements

Because this remedy will not result in hazardous substances, pollutants or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure after implementation of the remedy, a statutory five-year review is not required. Although five-year reviews are not required by statute in connection with this alternative, it is EPA's policy to conduct five-year reviews until cleanup goals have been achieved to ensure that the remedy is, or will be, protective of human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this Record of Decision. Additional information can be found in the Administrative Record file for the Site.

- Chemicals of concern and their respective concentrations may be found in the "Site Characteristics" section.
- Baseline risk represented by the chemicals of concern may be found in the "Summary of Site Risks" section.
- A discussion of cleanup levels for chemicals of concern may be found in the "Remedial Action Objectives" section.
- A discussion of source materials constituting principal threats may be found in the "Principal Threat Waste" section.
- Current and reasonably anticipated future land use assumptions are discussed in the "Current and Potential Future Site and Resource Uses" section.
- A discussion of potential land uses that will be available at the Site as a result of the Selected Remedy is found in the "Current and Potential Future Site and Resource Uses" section.
- Estimated capital, annual operation and maintenance (O&M), and total present worth costs are discussed in the "Description of Alternatives" section.
- Key factor(s) that led to selecting the remedy (i.e., how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision) may be found in the "Comparative Analysis of Alternatives" and "Statutory Determinations" sections.

George Pavlou, Director — Date
Emergency and Remedial Response Division
U.S. Environmental Protection Agency, Region II

RECORD OF DECISION

Iceland Coin Laundry Superfund Site
1888 South Delsea Drive Vineland,
Cumberland County, New Jersey

United States Environmental Protection Agency
Region II
September 2006

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SITE NAME, LOCATION AND BRIEF DESCRIPTION

The Iceland Coin Laundry Superfund site (Site) is located at the former Iceland Coin Laundry and Dry Cleaning facility, at 1888 South Delsea Drive (Block 911, Lot 2) in the City of Vineland, Cumberland County, New Jersey. The study area which covers about 15 acres, consists of the former facility and the associated groundwater plume to the south/southwest. The contaminated groundwater plume area. encompasses South Delsea Drive, Dirk Drive, Garrison Road, Lois Lane, South Orchard Road, West Elmer Road and West Korff Drive (Figure 1).

The former Iceland Coin Laundry and Dry Cleaning facility consists of a 13,000 square foot, one-story building and adjacent parking areas on approximately 1.4 acres (Figure 2). A concrete pad is located in the northwest corner of the property, behind the building. The property is currently owned by Nicholas and Katherine Mainiero, who began operating a retail appliance and jewelry store in October, 1997. To the west of the Site is a mobile home park, to the south are houses and some small commercial buildings. There is a used car sale lot to the north and a vacant property once used as an automobile repair shop across Delsea Drive to the east. Adjacent to the vacant property on the east side of Delsea Drive is a New Jersey Department of Transportation (NJDOT) facility.

The Site was placed on the U.S. Environmental Protection Agency's (EPA's) National Priorities List in October 1999. EPA is the lead agency, and the New Jersey Department of Environmental Protection (NJDEP) is the support agency.

SITE HISTORY

The former Iceland Coin Laundry and Dry Cleaning facility has been utilized for numerous purposes beginning with the Vineland Fruit and Poultry Farms Association prior to 1930 through 1953. From 1953 to 1971, Iceland Coin Laundry operated at the site. According to Anthony Chinnici, former owner of the property, an ice skating rink was present in the building from 1955 until 1965. The building was then leased, in succession, to an unknown party for teenage dances, to Royal Crown Beverages for storage, and to Owens-Illinois for storage. Mr. Chinnici sold the building in 1972.

Since 1972 the building was occupied by Anastasi Carpets (carpet sales), South Jersey Paper Company (Party favor sales), Buena Plumbing (pipe storage), and Kelly Carpet (carpet sales). No manufacturing operations were conducted on the property. On July 11, 1997 Donald Barton sold the property to the Mainieros, who began operating a retail appliance and jewelry store in October 1997.

The former Iceland Coin Laundry and Dry Cleaning facility operated from approximately 1953 until at least 1971. Limited information is available regarding waste disposal areas and systems. The City of Vineland Department of Health plumbing records from 1962 and 1963 illustrate septic system designs for the Iceland Skating Rink and Iceland Laundry facilities.

Four coin-operated dry cleaning units of eight-pound capacity were present in the Laundromat, each using four gallons of tetrachloroethene (PCE). It is not known how often the PCE was refilled. No waste/sludge was reportedly generated, since the PCE evaporated. The lint filters from the dry cleaning units were allegedly burned outside in the back of the building.

Two 14-foot deep seepage pits/cesspools with a 40-foot drain field between the pits were used beginning in 1962. According to the former owner, the cesspools were located in the front of the building. Septic system design drawings from 1963 indicate effluent from 10 washers discharged to a septic tank, continued through a 100-foot field drain, and terminated at a 4-foot diameter receptor vessel. The property was connected to the sanitary sewer in 1986.

Anastasi Carpets renovated the building when they began operations in 1972. Additionally, according to the owners of Euena Plumbing, the only septic system utilized on the property prior to their connection to the sanitary sewer in 1986 was a septic tank (not the same tank described above) for the disposal of sanitary waste. The septic tank was located partially under the south side of the building in the same area where the current sewer line exits the building.

On September 3, 1987, the City of Vineland Health Department collected a potable well sample from 1276 Garrison Road, in which trichloroethene (TCE) was detected at a level of 8 parts per billion (ppb). A second sample was collected in August 1990, in which both TCE and PCE were detected at levels of 14 ppb and 37 ppb, respectively. A third sample in October 1990 confirmed the presence of TCE (6.8 ppb) and PCE (25 ppb). The levels in this well exceeded both the State and Federal maximum contaminant levels (MCLs). Based on the analytical results, the homeowner was advised to discontinue using the well water for cooking and drinking purposes.

From December 1990 to September 1991, the City of Vineland Health Department collected potable well samples from 55 residences located in the area of Garrison Road and West Korff Drive. Analytical results from these sampling activities revealed levels of VOCs (volatile organic compounds) and mercury above Federal and State MCLs in 21 of the 55 water well samples. The primary contaminants were PCE, TCE, 1,2-dichloroethene (1,2-DCE), and mercury. The well with the detected concentration of mercury was subsequently resampled and mercury was not detected.

In November 1991, as a result of the private well contamination, NJDEP installed point-of-entry treatment (POET) units at the affected residences as a temporary remedial measure. In July 1994, the Vineland City Water Department extended public water hook-ups to the affected residences. In December 2003, four residential wells were still in use; three were used for irrigation only and one was still used for drinking water. The owner refused to be connected to public water and had a Point of Entry Treatment system installed.

In November 1991 the NJDEP Bureau of Environmental Measurements and Quality Assurance (BEMQA) conducted a. soil gas survey 6 to 9 feet beneath the surface at the Site. PCE was detected at a maximum level of 40,675 ppb in the northwest corner of the property and 2,419 ppb in the west central part of the property. TCE was also detected at a level of 116.6 ppb in the northwest corner soils. PCE (1,233 ppb) and TCE (548 ppb) were also found on south Delsea Drive in front of the used car lot. BEMQA concluded that a potential source of contamination was located in the northwest corner of the property and possibly in front of the used car lot on South Delsea Drive.

In the NJDEP's November 1991 Investigation, soil gas samples and groundwater samples were collected from Greg's Automotive World property at 1903 South Delsea Drive (Block 914, Lot 15) which is across Delsea Drive to the east of the Iceland Coin Laundry facility. Results of the soil gas survey did not suggest this Site was the source of the volatile organics impacting the down-gradient wells. Groundwater. samples collected in 1995 and 1996 from the monitoring well on the property and additional Geo-Probe direct push samples did not exhibit any detectable concentrations of PCE, TCE or 1,2 DCE.

Soil gas and groundwater samples were also collected from Fred Bianco's Auto Collision shop at 1791 South Delsea Drive (Block 914, Lot 20) which is across South Delsea Drive and to the northeast of the Site. A septic system was used from 1961 until city sewer lines were installed in 1975. Fred Bianco's Right To Know survey listed a number of chemicals used in the auto body repair and painting operations which included PCE and 1,1,1-trichloroethane. On November 1, 1995 NJDEP collected two soil samples from the area below the exhaust fans. The samples exhibited detectable levels of toluene and xylenes. In November 1995 NJDEP collected four groundwater samples from Geo-Probe borings and one monitoring well. No PCE, TCE or 1,2 dichloroethylene was detected in the groundwater or soil samples, but they did find toluene at 1 to 2 ppb, which is below the NJDEP Groundwater Quality Standard of 1,000 ppb.

Shaud's Auto Sales (aka Valentine Auto, Kemp's Auto Sales) at 1874 South Delsea Drive (Block 911, Lot 1) is directly north of the Iceland Coin Laundry facility. In November 1991, NJDEP collected soil gas samples from this property. PCE was found at a level of 548.3 ppb in front of the facility on Delsea Drive. The highest concentration of PCE (40,675 ppb) was found near the southwest corner of the property along the fence line between them and the Iceland Coin Laundry property. NJDEP, BEMQA did not observe any signs of a potential source for the contamination on the used car lot property. Documentation reveals that the lint filters from the Iceland Coin Laundry facility were burned in the northwest corner of the Iceland property.

On August 31, 1993, NJDEP Bureau of Field Operations, Site Assessment section collected soil samples from eight locations identified in the soil gas survey on the White Swan Site. The results showed no volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) or pesticides above the NJ Soil Cleanup Criteria.

A January 25, 1994 New Jersey Department of Law and Public Safety, Division of Law memorandum indicates that a diesel and/or gasoline pump may have been located near the southwest corner of the building. However no records were found to confirm the presence of a pump and no evidence of an underground storage tank (UST) was observed during the New Jersey Department of Environmental Protection (NJDEP) investigations.

In 1995 and 1996 NJDEP conducted an expanded site investigation at the Site which included soil and groundwater sampling. The soil sample results were below the NJ Soil Cleanup Criteria. The groundwater results from the first sampling in 1995 showed PCE at a maximum level of 140 ppb south of the Iceland Coin Laundry building with only 19 ppb in the northwest corner. No PCE or TCE was detected in groundwater samples from east and north (upgradient) of the Iceland facility property. A second groundwater sampling event occurred in May 1996 which showed PCE at a level of 91 ppb south of the building. The third groundwater sampling event in November 1996 showed PCE at only 17.5 ppb and TCE at 1.7 ppb in the northwest corner of the Iceland property but PCE was found at 489 ppb and TCE at 294 ppb in an adjacent residential property to the southwest. The PCE and TCE plumes were moving to the southwest.

The Site was placed on the U.S. Environmental Protection Agency's (EPA's) National Priorities List in October 1999. CDM Federal Programs was given the work assignment to conduct a Remedial Investigation and Feasibility Study and they started their field activities in June 2002.

ENFORCEMENT

In response to an NJDEP information request letter in March 2000, Anthony and Dorothy Chinnici admitted to using PCE in their dry cleaning process from approximately 1963 through 1972 but did not maintain records of usage or disposal.

In a letter dated December 27, 2001 EPA notified Anthony and Dorothy Chinnici of their liability for costs incurred by EPA with respect to the Site. In January 2002, the Chinnici's attorney, James Gruccio, informed EPA that the Chinnici's had no ability to pay the claims. EPA then requested additional documentation in the form of tax returns through the year 2002 and any other asset information. In addition, EPA asked for documentation regarding the Chinnici's insurance company, Traveler's Insurance. Finally, EPA asked to be included in any settlement negotiations with the state of New Jersey. EPA is still evaluating the Chinnici's ability to pay.

In September 2005, EPA sent an Information Request Letter to Nicholas and Catherine Mainiero of 1888 South Delsea Drive, the current owners of the Iceland Coin Laundry building. In response Mr. Mainiero indicated he operated a retail appliance store and did not store or use any hazardous chemicals.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

On August 5, 2006 EPA released the. Proposed Plan and supporting documentation for the groundwater remedy to the public for comment. EPA made documents available to the public in the Administrative Repositories maintained at the EPA Records Center, 18th floor, 290 Broadway, New York, N. Y. and the City of Vineland Health Department, 640 East Wood Street, City of Vineland, New Jersey. EPA published a notice of availability for the documents in the Vineland's *The Daily Journal* and opened a public comment period from August 5, 2006 to September 5, 2006. On August 10th EPA and a representative from NJDEP conducted a public meeting in the Council Chambers room of the Vineland City Hall to inform local officials and interested citizens about the Superfund process, to review the planned remedial activities at the Site, and to respond to any questions from residents and other attendees. There were no comments received at the public meeting or received in writing during the public comment period. If there were, they would have been included in the Responsiveness Summary (See Appendix V) which is part of the Record of Decision.

SCOPE AND ROLE OF RESPONSE ACTION

For the purposes of planning response actions, EPA will address the Site in a single remedial phase or operable unit (OU). This ROD address contaminated groundwater within the City of Vineland associated with the Site. This action is considered the final remedy for the groundwater and the soils at the Site.

SUMMARY OF SITE CHARACTERISTICS

Conceptual Site Model

The Conceptual Site Model (CSM) for the Iceland Coin Laundry Superfund Site organizes existing information on physical (soils, stratigraphy, hydrology, hydrogeology, and climate) and contaminant (vertical and lateral plume extent) properties to preliminarily characterize contaminant migration in environmental media at the Site.

Iceland Coin Laundry operated as a conventional dry cleaning establishment during the 1960s and 1970s and utilized PCE as a product in the cleaning process. Spent product may have been dumped on the ground surface or routed to a septic tank and septic leach field. Saturated lint filters were burned on the sandy, porous ground surface. Soil gas samples and groundwater containing elevated concentrations of PCE have been encountered at the Site.

Iceland Coin Laundry is underlain by relatively permeable Cohansey Sand Formation in hydraulic connection with the Kirkwood/Cohansey Aquifer System. A moderately thin unsaturated zone underlies the Site with the water table occurring at depths ranging from 15 to 20 feet below grade. This permeable substrate facilitates rapid infiltration of precipitation and liquids, including chemicals, discharged onto the ground surface.

Contamination emanating from the Iceland Coin Site consists of PCE and its breakdown products TCE, and cis-1, 2-DCE. PCE has migrated into the subsurface, through the vadose zone and to the water table. In the vadose zone, contaminant migration is controlled by sorption to framework minerals or organic materials, volatilization as. a gas in pore spaces, or dissolution in pore water.

In groundwater, VOCs also migrate as free product or dense, nonaqueous phase liquids (DNAPL). DNAPL typically migrates vertically downward or at an angle until encountering an impermeable boundary such as a. clay lens. Upon encountering a boundary, DNAPL spreads laterally and migrates with flowing groundwater. The presence of DNAPL is expected with VOC compounds like PCE if concentrations approach one percent of the compound's solubility limits. The concentrations of VOCs in groundwater sampled at the Site do not approach one percent of PCE's solubility limit.

The PCE/TCE plume has traveled to the southwest and downward such that the high concentration "core" of the plume has moved approximately 2,000 feet from the source area and is about 70 feet beneath the ground surface. There is clean water above the plume all the way up to the top of the unconfined aquifer. (See Figure 5).

Volatilization of VOCs located in subsurface soils or in groundwater, and the subsequent transport of these vapors into indoor spaces where they are subject to inhalation, constitutes a potential exposure pathway at the Site. VOCs in soil gas could migrate by vapor diffusion up and into the buildings in the vicinity of the source area where the contamination was introduced into the sub-surface.

Site Description

The Site is located at the former Iceland Coin Laundry and Dry Cleaning facility, at 1888 South Delsea Drive, in the City of Vineland, Cumberland County, New Jersey. The study area, which covers approximately 15 acres, consists of the former Iceland Coin Laundry and Dry Cleaning facility and the associated contaminated groundwater plume to the south/southwest of the former facility. The Iceland Coin Laundry and Dry Cleaning facility consists of a 13,000 square-foot, cinder-block commercial building and adjacent parking areas on approximately 1.4 acres. A concrete pad is located in the northwest corner of the property, behind the building. The Site building is a standard cinder block construction commercial building, rectangular in shape and one story high. The main entrance is on east side, facing Delsea Drive. There are large garage doors for truck loading in the back (west side) of the building. There is an asphalt covered parking lot on the east, south and south west parts of the property. The parking lot is fenced along the south, west and north property lines. To the west of the Site is a mobile home park, to the south is a home, adjacent to the north is a used auto lot, and to the east is vacant property once used as an automotive repair shop, and a New Jersey Department of Transportation (NJDOT) facility. The former Iceland Coin Laundry and Dry Cleaning facility is currently owned by Nicholas and Katherine Mainiero, who began operating a retail appliance and jewelry store in early October 1997.

Site Topography and Surface Water

The Site is relatively flat; the elevation is just under 70 feet above mean sea level (amsl) at the former Iceland Coin Laundry and Dry Cleaning facility and rises to just above 100 feet amsl 4,000 feet to the south. It is located in a mixed residential, light industrial-commercial part of the City of Vineland. There is an intermittent stream, the Parvin Branch, that flows from east to west just to the north of the Site. There are no surface water pathways from the Site to the Parvin Branch. The Parvin Branch flows west about one and a half miles into the Maurice River, which then flows south into Union Lake and then south into the Delaware Bay. Union Lake is an 800 acre man-made impoundment that is approximately two miles long and one mile wide. There are very wide floodplains associated with the Maurice River, about one and one half miles from the Site. The Maurice River and its floodplains are designated as the Union Lake Wildlife Management Area/Sherman Avenue National Heritage Priority Site, approximately 7,000 feet southeast of the Site.

Site Soils

The soil in the eastern portion of the Site is composed of Hammonton loamy sand, 0 to 5 percent slopes, which has a 10-inch thick surface layer of loamy sand. The upper part of the subsoil is mottled yellowish-brown, sandy loam that extends to a depth of 16 inches below which is yellowish-brown, sandy loam to 24 inches. The upper part of the substratum is mottled yellow, loamy sand to a depth of 42 inches with yellowish-brown, gravelly sand to a depth of 60 inches.

The soil in the western portion of the Site is composed of Sassafras sandy loam, 2 to 5 percent slopes, which has a 10-inch thick plow layer of dark yellowish-brown, sandy loam. This is underlain by yellowish-brown, sandy clay loam to a depth of 30 inches. The lower part of the subsoil is yellowish-brown, sandy loam to a depth of 40 inches. The substratum is brownish-yellow, loamy sand to a depth of 60 inches.

Site Geology

As described by the New Jersey Geological Survey, the formation exposed at the surface on and around the Site is the Cohansey Sand Formation. The upper unit consists of a complex succession of inter-bedded and inter-fingered unconsolidated lithologic units deposited in a variety of coastal/marginal marine deposition environments which shifted seawards and landwards through time. The Cohansey Sand consists of medium- to coarse-grained, light-colored, pebbly sand and gravel, with lenses of silt and clay of varying lateral extent. Although the intermittent clay lenses may act as local confining units, it is not likely that they have a significant impact on the migration pathway for the contaminant plume in the shallow, intermediate and deep zones.

The Kirkwood/Cohansey Aquifer system is a major aquifer system in the eastern and coastal areas of the New Jersey Coastal Plain province. The aquifer system consists of the Miocene-age Kirkwood Formation and the overlying Pliocene-age Cohansey Formation. Sand units from both formations form a system of layered aquifers separated by clay beds of varying lateral continuity. Numerous domestic, agricultural, and municipal wells are installed in the Kirkwood/Cohansey Aquifer, which in places can support production capacities up to 1,500 gallons per minute from a single well. In most areas, the Kirkwood/Cohansey Aquifer System is unconfined, and thus recharged directly from the ground surface. Hydraulic gradients are generally downward across the Site with the largest gradient between the shallow and intermediate monitoring wells. The gradients between the intermediate and deep wells across the Site are very small and in some cases, almost zero. Mean annual precipitation in the south Jersey area is about 40 inches per year.

No federal or state listed threatened and endangered species were observed during the Site visit conducted, in July 2002.

No wetlands were identified in the vicinity of the Site.

Sampling Strategy

From June 2002 through December 2003, CDM conducted RI field investigations at the Site, including a source area investigation, a geologic and hydrogeologic investigation, and an ecological investigation. A topographic and a cultural resources survey were also conducted. The source area and geological/hydrogeological investigations were each designed as a phased approach, using both screening-level and definitive-level data, to efficiently characterize the nature and extent of potential on-Site source areas and the contaminant plume migrating from the Site. Each phase of the investigations was designed to refine locations for subsequent phases of the investigation.

Source Area Investigation

Soils Characterization

On September 5, 2002 and June 2, 2003, topographic surveys were performed after the completion of field activities using a Global Positioning System (GPS) to produce a Site base map and a study area location map. A topographic base map was created for the Site and illustrates both the Site and the study area for a minimum of two miles to the southwest and a minimum of one mile to the northeast. A geophysical survey was conducted using the electromagnetic induction terrain conductivity (commonly called EM-31) and ground penetrating radar (GPR). The subcontractor detected two low amplitude apparent conductivity anomalies, indicating the presence of conductive soil south of the on-Site building. Two trenches were excavated in these areas down to a level of six feet beneath the ground surface in the anomaly areas. No contaminant sources were identified.

A Membrane Interface Probe (MIP)/Electrical Conductivity (EC) Soil Characterization study was conducted. The MIP obtains qualitative (i.e., screening-level data), depth-continuous, total VOC concentrations in the unsaturated zone by collecting depth-continuous flame ionization detector (FID), photoionization detector (PID), and electron capture detector (BCD) data in real time as the probe is advanced into the subsurface. The BCD is particularly sensitive to the chlorinated solvents. The EC data, collected simultaneously, were used to determine the electrical conductivity profile of the lithology. A total of 16 shallow MIP/EC pushes were advanced through the overburden material, around the former Iceland Coin Laundry and Dry Cleaning facility, to a depth of approximately 15 feet below ground surface (bgs). The results of the MIP/EC soil characterization were used to determine contaminated areas in which to focus the subsurface soil sampling program.

Surface Soil Sampling

Surface soil samples were also collected from 10 on-Site locations (Figure 2) to assess potential contamination from surface disposal of wastes associated with the former dry cleaning operations. All surface soil samples were collected from 0 to 6 inches except for three samples collected at the Site's asphalt parking area. Due to the asphalt covering, soil from these locations was sampled from 3 to 9 inches bgs. The surface soil sample results, which are considered definitive-level data, were used to characterize potential surficial source areas.

Subsurface Soil Sampling

Subsurface soil samples were collected from three soil borings on former Iceland Coin Laundry and Dry Cleaning property based upon VOC detection responses from the MIP survey.. The total depth of the subsurface soil samples collected were from 1 to 11 feet bgs. The subsurface soil sample results, which are considered definitive-level data, were used to characterize potential subsurface source areas.

Soil Contamination

MIP/EC readings indicated elevated levels of VOCs in two areas: in the northeast corner of the Site, in front of the building (former cesspool and leakage pit area), and in the northwest corner, behind the building (former burn pit area). PCE was detected in five surface and one subsurface soil sample locations at levels below screening criteria in these same areas. 4-Methyl-2-pentanone was also detected in one surface soil location (SS-03) below screening criteria but above background levels.

It should also be noted that Semi-Volatile Organic Compounds (SVOCs), mainly Polynuclear Aromatic Hydrocarbons (PAHs), were detected in three on-Site surface soil samples located in the eastern area of the Site (SS-01, SS-02, and SS-10) (Figure 2). PAHs exceeded screening criteria in two of these locations. Although PAHs are not considered contaminants of potential concern (COPCs) for the Site, it is possible that these areas may indicate areas of unidentified past disposal. Three pesticides and 22 metals were also detected, but at levels below screening criteria. These contaminants are not considered to be Site-related.

Groundwater Characterization

MIP/EC Groundwater Characterization

The geologic and hydrogeologic investigation utilized the MIP and EC to obtain qualitative (i.e., screening-level data), depth-continuous readings of total VOCs in the saturated zone. Ten locations, located upgradient, on, and downgradient of the former facility, were advanced to a depth of 120 feet bgs. The MIP/EC survey provided instantaneous, depth continuous graphical readouts of electrical conductivity (EC), flame ionization, photoionization, and electron capture (BCD). The results of the MIP/EC groundwater characterization were used to determine contaminated areas in which to focus the locations and depths of discrete-depth direct push technology (DPT) groundwater samples.

Discrete-Depth, Direct Push Technology (DPT) Groundwater Sampling

A total of 62 groundwater samples were collected from 16 locations upgradient, on, and downgradient of the former facility. The results of the discrete-depth groundwater samples, which are also considered screening-level data, were used to determine locations and screen intervals for permanent monitoring wells.

Monitoring Well and Piezometer Installation

Twelve monitoring well clusters, with a total of 27 shallow, intermediate, and deep monitoring wells, were installed in areas upgradient, on, and downgradient of the former facility, to obtain analytical, water quality, water table elevation, and groundwater flow data. Lithologic data obtained during well installation was used to determine the geometry and lithology of the aquifer, and to determine the location and extent of potential confining units. For each cluster, well screen intervals were generally based on the discrete-depth DPT results, with shallow well screens just above the contaminant plume, intermediate well screens set within the plume, deep well screens set below the plume (Figure 5).

Monitoring Well and Residential Well Sampling

Two rounds of groundwater samples were collected and analyzed from the 27 monitoring wells using low-flow sampling techniques, and from two residential wells using tap water sampling techniques, in order to define the current nature and the vertical and horizontal extent of the contaminant plume.

Groundwater Contamination

Site-related contaminant concentrations that exceed the screening criteria are PCE, TCE, and cis-1, 2-DCE. During the DPT screening program, PCE was detected at concentrations that exceeded its regulatory standard in 15 of 62 samples collected from 9 locations. The highest PCE concentration of 230 parts per billion (ppb) was detected in sample GS-05-047 (depth is 47 feet bgs) at 12.9 feet above mean sea level (amsl), collected about 1,300 feet hydraulically downgradient (southwest) of the former facility. The concentration of PCE in this sample exceeds the New Jersey Ground Water Quality Standard (NJGWQS) of 1 ppb. The subsurface distribution of PCE indicates that the core of the plume has migrated hydraulically downgradient from the source area over time and that residual contamination remains at a lower concentration in and around the source area (See Figure 3).

The groundwater screening sample collected farthest hydraulically downgradient that exceeds screening criteria is GS-09-091 (-12.7 feet amsl), collected along South Orchard Road. The 6 ppb concentration of PCE in this sample exceeds the NJGWQS of 1 ppb. Although regulatory standards were not exceeded in the most downgradient location, GS-13, PCE was detected at 0.46 ppb in the deepest sample, collected at about 100 feet bgs.

PCE also extends to a greater depth than was sampled during the DPT screening program. Sample location GS-06 had a PCE concentration of 6.7 ppb at the maximum sample depth of 90 feet bgs, and sample location GS-07 had a PCE concentration of 0.68 ppb at the maximum sample depth of 120 feet bgs. Both of these locations are along the axis within the region of the groundwater contaminant plume that has migrated to the deepest extent in the aquifer.

During the DPT screening program, TCE was detected at concentrations that exceeded its regulatory standard in 4 of 62 samples collected from 4 locations. The TCE plume is similar in shape but smaller than the PCE plume. The highest PCE (230 ppb) and TCE concentrations (74 ppb) were detected in sample GS-05-047 at an elevation of 12.9 feet amsl. This sample was collected at the water table near the southeast corner of the former Iceland Coin Laundry and Dry Cleaning facility.

The chemical cis-1,2-DCE was detected at 76 ppb, a concentration that exceeded its regulatory standard of 70 ppb, in only 1 of 62 samples. The exceedance was detected in sample GS-02-018 collected at 49.5 feet amsl, at the water table near the southeast corner in front of the former Iceland Coin Laundry and Dry Cleaning facility. As with the TCE groundwater contaminant plume, the cis-l, 2-DCE plume is a geometric subset of the PCE plume.

The discrete-depth groundwater sample data indicates the contaminant plume dives deeper as it progresses hydraulically downgradient, indicating the presence of both a lateral and a downward-directed groundwater gradient in the vicinity of the Site and downgradient areas.

During the monitoring well sampling program, round 1 and round 2, TCE and PCE were detected in monitoring wells at levels above screening criteria during both sampling rounds. All TCE and PCE exceedances occurred in 5 of the 12 monitoring well clusters. These clusters (MW-2, MW-3, MW-4, MW-7, and MW-11) are generally situated along the axis of the plume, with well cluster identification numbers increasing to the southwest, away from the source area (MW-2 is within the source area whereas MW-11 is the furthest downgradient well cluster). Within these well clusters, exceedances were detected in shallow wells closer to the source area and in intermediate wells further downgradient. No exceedances were detected in wells completed in the deep zone of the aquifer (Figure 4).

Concentrations in individual clusters tended to change from the first sampling round in June 2003 to the second sampling round in December 2003. Concentrations in shallow wells in the northeast half of the plume tended to decrease whereas concentrations in , intermediate wells in the southwest (downgradient) half of the plume tended to increase slightly or remain the same. June 2003 samples detected PCE in shallow monitoring wells MW-02S (5 ppb), MW-03S (5.3 ppb), and MW-07S (21 ppb). TCE was detected in MW-07S at 1.6 ppb. Round 2 sampling results in December 2003 indicate that PCE concentrations decreased in MW-02S and MW-07S and concentrations in MW-03S were similar. TCE concentrations in MW-07S decreased from

1.6 ppb to below detection limits. In contrast, concentrations generally increased slightly in intermediate wells MW-03I, MW-04I, MW-07I, and MW-11I from June to December 2003. Of particular note are concentrations within MW-11I, which is in the most downgradient well cluster. TCE levels in MW-11I rose slightly from 1.7 ppb to 2.6 ppb and PCE levels rose from 10 ppb to 14 ppb.

One Site-related VOC was present in the residential well on South Orchard Road, situated near the northern boundary of the plume, north of the MW-06 cluster. PCE was detected at 4.9 ppb during Round 1; levels dropped to 3.4 ppb during Round 2. These levels are below the Federal MCL of 5 ppb but above the NJDEP MCL of 1 ppb. This resident stopped using this well for drinking and only uses the water for irrigation. No VOCs were detected above screening criteria in the residential well on Garrison Road, located east of the MW-08 cluster, south of the plume.

Source of Contamination

The only known source of contamination was the Iceland Coin Laundry facility.

Contaminant Fate and Transport

The potential for environmental transport was examined by reviewing the topographic and hydrogeologic characteristics of the Site and by reviewing the available physical constants and chemical characteristics of each constituent. The most significant fate and transport processes for the Site are summarized below.

- Chlorinated VOCs were introduced to the groundwater from discharge to ground surface at the facility in the areas of MW-02. VOCs have low adsorption to the materials in the groundwater and are mobile and biodegradable. As they move with the groundwater away from the source areas, the concentrations are expected to decrease mainly from dispersion and dilution effects.

- The presence of PCE biodegradation products such as TCE and cis-1, 2-DCE along with the chemical characteristics of the groundwater at the Site indicate that natural attenuation may be occurring. Another suggestion of natural attenuation occurring at the source after contaminant disposal is the presence and. concentrations of chloride and cis-1, 2-DCE.

- The contaminant data indicate that the plume is migrating vertically downward and horizontally to the southwest and south. In all instances, levels of PCE were greater than TCE levels.

CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

The former Iceland Coin Laundry and Dry Cleaning facility is located in a commercial/ residential area of the City of Vineland, Cumberland County, New Jersey. Since 1997, the facility has been solely utilized as a retail appliance and jewelry store. To the west of the Site is a mobile home park, to the south is a residential lot, adjacent to the north is a used auto lot, and to the east is vacant property once used as an automotive repair shop, and a NJDOT facility. Future use of the facility will likely remain commercial/residential, based on historical land use, surrounding property use, current zoning, and future plans for redevelopment.

Groundwater within the Site area is classified by NJDEP as a Class IIA resource, a current source of drinking water, and it is expected to remain a source of drinking water in the future. A residential community is located southwest of the Site. In the past, most of the houses had their own drinking water wells. Within this community, PCE contamination in groundwater was documented in 16 residential wells, which served approximately 44 people. During 1994, the City of Vineland Water Department extended public water throughout the affected area. By early 1996, 91 homes were connected to public water.

SUMMARY OF SITE RISKS

Based upon the results of the RI, a baseline risk assessment was conducted to estimate the risks associated with current and future Site conditions. The baseline risk assessment estimates the human health and environmental risk that could result from the contamination at the Site if no remedial action were taken.

Human Health Risk Assessment

A four-step process is used for assessing Site-related human health risks for a reasonable maximum exposure (RME) scenario: *Hazard Identification* - identifies the contaminants of concern at the Site based on several factors such as toxicity, frequency of occurrence, and concentration. *Exposure Assessment* - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water) by which humans are potentially exposed. *Toxicity Assessment* - determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of effect (response). *Risk Characterization* - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of Site-related risks.

Hazard Identification

EPA conducted a baseline risk assessment to evaluate the potential risks to human health associated with the Site in its current state. Although the risk assessment evaluated many contaminants identified in the groundwater and soils, the conclusions of the risk assessment indicate that the significant risks are limited to tetrachloroethene (PCE) and trichloroethene (TCE) in the groundwater at the Site, primarily through the ingestion by current off-Site and future on-Site residents. This section of the decision summary will focus on the risks associated with these contaminants in the groundwater. A summary of the concentrations of the contaminants of concern in the groundwater is provided in Table 1.

Exposure Assessment

EPA's baseline risk assessment addressed the potential risks to human health by identifying several potential exposure pathways by which the public may be exposed to contaminant releases at the Site under current and future land use and groundwater use conditions. The Site is currently an active commercial establishment with adjacent residential properties. Future use of the Site will likely remain commercial/residential, based on historical land use, surrounding property use, current zoning, and future plans for redevelopment. Therefore, the baseline risk assessment focused on health effects for populations typically associated with this type of commercial facility, as well as off-Site and potential on-Site future residents. Although most residents living near the Site were connected to the public water supply several years ago, a few residents continue to use private wells for either drinking or irrigation. The groundwater at the Site is also designated by the State as a potable water supply, meaning it could be available for drinking in the future. Exposure to groundwater and soil on the Iceland Coin Laundry Company property was evaluated for current and future workers and potential future on-Site residents (adults and children). Exposure to groundwater was evaluated for current and future off-Site residents. Additionally, exposure to Site soil was evaluated for the future construction worker.

A comparison of concentrations of PCE and TCE in groundwater to conservative health-based screening values found in the 2002 EPA Draft Guidance for Evaluation the Vapor Intrusion to Indoor Air Pathway from Groundwater to Soil indicates that there is the potential for vapor intrusion into on-site buildings. Therefore, additional investigation of the vapor intrusion pathway at the Site is necessary and will occur during the remedial phase.

For all media, the reasonable maximum exposure, which is the greatest exposure that is likely to occur at the Site, was evaluated. Table 2 presents all exposure pathways considered in the risk assessment, and the rationale for the inclusion of each pathway. Exposure media, exposure points, and characteristics of receptor populations are also included.

Toxicity Assessment

Under current EPA guidelines, the likelihood of carcinogenic (cancer-causing) and noncarcinogenic (systemic) effects due to exposure to Site chemicals are considered separately. Consistent with EPA guidance, it was assumed that the toxic effects of the Site-related chemicals would be additive. Thus, carcinogenic and noncarcinogenic risks associated with exposures to individual contaminants of concern were summed to indicate the potential risks associated with mixtures.

Noncarcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intake and safe levels of intake (reference doses and inhalation reference doses). Reference doses (RfDs) and inhalation reference doses (RfDis) have been developed by EPA for indicating the potential for adverse health effects. RfDs and RfDis, which are expressed in units of milligrams per kilogram per day (mg/kg-day), are estimates of daily exposure levels for humans thought to be safe over a lifetime (including sensitive individuals).

Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical vapor inhaled) are compared with the RfD or RfDi to derive the hazard quotient for the contaminant in the particular medium. The HI is derived by adding the hazard quotients for all compounds within a particular medium that impact a particular receptor population.

An HI greater than 1 indicates that the potential exists for noncarcinogenic health effects to occur because of Site-related exposures. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. The toxicity values, including reference doses and inhalation reference doses for the contaminants of potential concern at the Site, are presented in Table 3.

Potential carcinogenic risks were evaluated using the cancer slope factors developed by EPA for the contaminants of potential concern. Cancer slope factors (SFs) and inhalation cancer slope factors (SFis) have been developed for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. SFs and SFis, which are expressed in units of $(mg/kg\text{-}day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF or SFi. Use of this approach makes the underestimation of the risk highly unlikely. The SF and SFi values used in this risk assessment for PCE and TCE are presented in Table 4.

<u>Risk Characterization</u>

The quantitative hazard and risk calculations were based on reasonable maximum exposure scenarios. These estimates were developed by taking into account various conservative assumptions about the likelihood of a person being exposed to these media. Risk characterization involved integrating the exposure and toxicity assessments into quantitative expressions of carcinogenic risks and noncarcinogenic health effects. Specifically, chronic daily intakes were compared with concentrations known or suspected to present carcinogenic risks or noncarcinogenic health hazards.

For known or suspected carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen. These risks are probabilities that usually are expressed in scientific notation (such as 1×10^{-4}). An excess lifetime cancer risk of 1×10^{-4} indicates that one additional incidence of cancer may occur in a population of 10,000 people who are exposed under the exposure conditions identified in the BHHRA. As stated in the NCP, the acceptable risk range for site-related exposure is 10^{-4} to 10^{-6} (or approximately one in 10,000 to one in one million).

Excess lifetime cancer risks estimated at the Site are presented in Table 5. At the Iceland Coin Laundry Site, the excess lifetime cancer risk for the current/future off-Site adult resident is 7×10^{-4}, for the current/future off-Site resident child it is 5×10^{-4}, for the current/future Site worker it is 2×10^{-4}, for the future on-Site adult resident it is 1×10^{-3}, for the future on-Site child resident it is 8 x 10^{-4} 4. Ingestion of groundwater is the primary pathway of concern, and PCE and TCE are driving the risk.

The noncarcinogenic HIs for PCE and TCE are presented in Table 6. At the Iceland Coin Laundry Site, HI values are 1 for the current/future off-Site adult resident, 3 for the current/future off-Site child resident, 1 for the future on-Site adult resident, and 4 for the future on-Site child resident. Ingestion of groundwater is the primary pathway of concern, and PCE and TCE are responsible for driving the HIs above 1.

Based on the HHRA, PCE and TCE in groundwater are the major chemicals of concern for human health associated with the Iceland Site. These quantitative estimates of risk and hazard exceed EPA's acceptable cancer risk range and the HI threshold of 1, indicating that there is significant potential risk to populations from direct exposure to groundwater.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is uncertainty as to the actual levels present. Environmental chemistry-analysis error can stem from several sources, including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Fate and transport modeling is also associated with a certain level of uncertainty. Factors such as the concentrations in the primary medium, rates of transport, ease of transport, and environmental fate all contribute to the inherent uncertainty in fate and transport modeling.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, and from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the risk assessment provides upper-bound estimates of the risks to populations near the Site, and is highly unlikely to underestimate actual risks related to the Site.

More specific information concerning public health and environmental risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the risk assessment report.

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in the ROD, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

Ecological Risk Assessment

The potential exposure to chemicals in surface soil by small mammals, through ingestion of vegetation, was considered in the screening-level ecological risk assessment. The Site consists of an area of mowed grass and a driveway with no vegetation. There are no exposure pathways between the Site and the Parvin Branch, approximately 1,000 feet northwest of the Site or the wetlands of the Maurice River approximately 7,000 feet from the Site. The leading edge of the groundwater plume is approximately 90 feet beneath the ground surface so it is unlikely that the Site-related contaminants will migrate up into wetlands and floodplains of the Maurice River. Long term ground water monitoring would be conducted to confirm that the plume does not impact the Maurice River and its floodplains. The potential for risks to small mammals was identified for PCE and TCE at the maximum concentrations. These risks; however, were deemed to be insignificant given the following Site-specific conditions and assessment uncertainties:

- Lack of a significant habitat on or next to the Site,
- High degree of human activity in the Site vicinity,
- Impermeable surfaces, buildings, etc. covering surface soils, and
- Conservative exposure assumptions related to diet, home range, and exposure point concentrations.

The Site offers limited habitat value to wildlife since it is within a highly urbanized location and contains very little vegetation or open space. This is also likely to be the case under the future scenario. Therefore, no further action is recommended regarding ecological receptors at the Site

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are specific goals to protect human health and the environment. These objectives are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs) and risk-based levels established in the risk assessment.

The overall remediation goal for the Site is to protect human health and the environment. Several RAOs were identified to mitigate the potential risks associated with the Site.

Basis and Rationale for RAOs

The risk assessment identified COPCs for both soil and groundwater, however the soil COPCs were not related to on-Site processes and did not contribute significantly to Site risk levels. Additionally, no COPCs occurred above screening criteria in soils. The risk assessment concluded that nearly all of the Site risk is currently driven by the presence of PCE and TCE in groundwater, indicating the most significant Site impact has been to groundwater. As a result, soil RAOs were not developed for the Site.

The groundwater at the Site is designated as Class II-A, which at the current water quality is potable groundwater with conventional water supply treatment. The RAOs for groundwater at the Site are as follows:

- Prevent ingestion of, and dermal contact with, contaminated groundwater having concentrations in excess of cleanup criteria

- Restore the groundwater aquifer system to the cleanup criteria within a reasonable timeframe

- Prevent vapor intrusion of the VOCs into the Facility or buildings at the source area.

Groundwater Cleanup Criteria

The following cleanup criteria were selected based on federal or state promulgated regulations, including:

- PCE	1 ppb
- TCE	1 ppb
- cis-l, 2-DCE	70 ppb

Cleanup criteria were derived from the Applicable or Relevant and Appropriate Requirements (ARARs) identified for the Site and the list of Site-specific COPCs. New Jersey groundwater quality standards, which are applicable for the Site, were used to develop the cleanup criteria. Other COPCs, such as bromodichloromethane, and chloroform, are not Site related. PCE and TCE in groundwater are the primary risk drivers at the Site and TCE and cis-DCE are degradation products of PCE.

Six metals were also defined as groundwater COPCs in the risk assessment and exceeded ARAR concentrations, however, because they are not related to past Site activities and their presence does not contribute significantly to Site risk, the remedial alternatives to be developed and evaluated for the Site do not address metals in groundwater for the purpose of achieving cleanup criteria. Additional VOCs and metals were identified in the risk assessment as COPCs based on concentrations that exceeded screening criteria; however, their concentrations did not exceed ARAR levels, and they are not significant contributors to risk levels at the Site.

Aluminum, iron, and manganese are common metals in groundwater and their concentrations vary depending on the aquifer formation. The sample results for these three metals vary significantly between round I and round 2 sampling, reflecting the natural variation of metal concentrations in groundwater. Mercury concentrations exceeded the NJGQC in both the upgradient well and a well several thousand feet downgradient from the laundry facility. Analytical results suggest that the contamination is localized. The cause of these elevated concentrations is not known, yet the contamination is not related to past Site activities. Metals concentrations can be monitored during the remedial action period. If monitoring results indicate that metals contamination poses an unacceptable risk to human health, remediation of metals can be evaluated.

Area of Contamination To Be Remediated

As described earlier, contamination originating from the Facility has formed a PCE plume more than 4000 feet long, more than 2000 feet wide, and as deep as 110 feet bgs at MW-11I. The center of the plume has separated from the source area (the Facility) and was. detected near monitoring well MW-07. Contaminant concentrations, in most portions of the plume are very low, at concentrations below 10 ppb. Based on the information collected during the RI, PCE and TCE concentration contours have been developed. The 10 ppb PCE contour, is approximately 1800 feet long and 500 feet wide. The vertical extent of the plume within this contour is about 40 feet. A design investigation could be performed to fully delineate the horizontal and vertical boundaries of the groundwater with PCE concentrations exceeding 10 ppb.

During the RI, relatively high concentrations of PCE, TCE and cis-1,2 DCE were detected in a grab sample (GS-02-18) near the former cesspool area. This area will be investigated during the design investigation. If contamination significantly higher than the cleanup criteria is detected, the cesspool area will be included in the remedial design and will be remediated.

DESCRIPTION OF ALTERNATIVES

CERCLA and the NCP require that each remedial alternative be protective of human health and the environment, be cost effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery technologies to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility or volume of hazardous substances.

Common Elements

With the exception of the No Action Alternative the four remaining alternatives include the following components:

Groundwater Sampling and design investigation
As discussed in previous sections, the contaminant plume is relatively mobile at the Site.

Groundwater sampling will be necessary to define the most current plume conditions and collect groundwater and treatment data necessary to support the design and implementation of the remedial action.

<u>Institutional Controls</u>
Institutional controls would use groundwater Classification Exception Area and well drilling restrictions to eliminate human exposure pathways to contaminated groundwater. NJDEP would be responsible for the enforcement of the institutional controls.

Long-term Groundwater Monitoring A long-term groundwater monitoring program would be implemented, including annual groundwater sample collection from existing monitoring wells.

<u>Potable Water Supply</u>
If during implementation, residences or businesses within the aerial extent of the Site plume are found to have not yet been connected to public water, EPA would consider connecting them to the public water supply.

<u>Vapor intrusion pathway evaluation</u>
The evaluation of the potential risk from vapor intrusion pathway will be evaluated in buildings at and near the former source area.

Remedial Alternatives

The "construction time" for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy. It generally takes 1-2 years for planning, design and procurement before subsequent construction of the remedial alternative. The "construction time" for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy.

Alternative 1 - No Action

Estimated Capital Cost:	$0
Estimated Annual Operation & Maintenance Cost:	$0
Estimated Present Worth Cost:	$0
Estimated construction Time:	None

The No Action alternative was retained for comparison purposes as required by CERCLA and the National Contingency Plan. It will act as a baseline to which other alternatives are compared. No remedial action would be implemented as part of this alternative. It does not include any institutional control or monitoring program.

Because this alternative would result in hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure of groundwater, EPA would review such action at least every five years. Costs for five-year reviews are not included in the present worth evaluation.

Alternative 2 - Institutional Controls and Long-term Monitoring

Estimated Capital Cost:	$ 38,700
Estimated Annual Operation & Maintenance Cost:	$ 120,000
Estimated Present Worth Cost:	$1,770,000
Estimated construction Time:	0 years

Institutional controls, long term monitoring, five-year reviews, and vapor intrusion evaluation would be implemented as described under Common Elements (located above).

This alternative would continue as long as contaminant concentrations in groundwater are above the cleanup criteria. The groundwater at the Site is under aerobic conditions. PCE would not biodegrade under aerobic conditions. Therefore, it relies on natural processes such as diffusion, dispersion, and dilution to reduce contaminant concentrations. If contaminant concentrations remain greater than the cleanup criteria during migration, they are expected to be reduced to below the cleanup criteria through dilution once the contaminant plume enters the river.

Because this alternative would result in hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure of groundwater, EPA would review such action at least every five years. Costs for five-year reviews are not included in the present worth evaluation.

Alternative 3 - In-Situ Physical/Chemical Treatment/In-Situ Biological Treatment

Estimated Capital Cost:	$ 5,500,000
Estimated Annual Operation & Maintenance Cost:	$ 520,000
Estimated Present Worth Cost:	$10,740,000
Estimated Construction Time:	2 years

In-situ treatment allows the treatment of contaminated groundwater in the subsurface, thereby generally avoiding technical and regulatory considerations related to groundwater effluent discharge requirements. For this alternative, groundwater circulation well (GCW) technology would be used to treat the area represented by the PCE 10 ppb contour at the Site, and Enhanced Anaerobic Biological (EAB) treatment would be used at the Facility if localized contamination is confirmed. For areas outside of the 10 ppb contour line, contaminants would be allowed to attenuate through monitored natural attenuation.

Institutional controls and long-term monitoring, as described above, would also be implemented to track the migration and concentration changes of contaminants and to ensure protection of human health.

GCW, alternatively known as in-well vapor-stripping, is an in-situ remediation technology that integrates the principles of groundwater re-circulation with air stripping of volatile organic compounds. Groundwater is extracted from the deep screen interval of the well, treated by air stripping or carbon adsorption within the well, and then discharged at the shallow screen interval of the well back to the formation. This technology induces vertical flow within the aquifer, and potentially increases the transport of contaminants from low permeable zones into relatively high permeable zones, subsequently increasing the pumping efficiency compared to traditional pump-and-treat systems and reduces the clean up time.

If the presence of possible very small and localized groundwater and/or soil contamination at the southeast corner of the Facility is confirmed, EAB treatment would be applied to only this area to treat the contamination. Depending on the area that requires treatment, electron donors and nutrient amendments could be injected into the subsurface from a few injection wells. These injection wells would be screened within the zone of contamination. Since the treatment area is small and no high soil residual contamination is expected, it is estimated that two applications of nutrient amendments would destroy all contaminants in the treatment zone. The specific nutrient amendments to be used in the remedial action would be determined during remedial design.

The treatment zone is expected to be 60 feet long, 20 feet wide, and 18 feet bgs. The vertical extent of the treatment zone is estimated to be 20 feet. Four injection wells spaced 15 feet apart are assumed. After the remedial action is complete, a round of soil and groundwater sampling would be performed to verify the effectiveness of the in-situ biological treatment approach.

Institutional controls, long term monitoring, and vapor intrusion evaluation would be implemented as described under Common Elements (located above).

The duration of. this alternative would depend on the actual performance of the GCWs. If the GCWs perform as designed, the contaminant concentrations within the 10 ppb plume contour line may be reduced to below cleanup criteria in approximately 10 years. The duration of in-situ enhanced biodegradation near the source area would likely be completed in a year. The remaining contamination in the aquifer outside the treatment area would be continuously monitored until the contaminant concentrations are reduced to cleanup criteria although the necessity for monitoring will be evaluated over time. The long-term monitoring program is assumed to continue for 30 years.

Because this remedy will not result in hazardous substances, pollutants or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure after implementation of the remedy, a statutory five-year review is not required. Although five-year reviews are not required by statute in connection with this alternative, it is EPA's policy to conduct five-year reviews until cleanup goals have been achieved.

Alternative 4 - In-Situ Biological Treatment

Estimated Capital Cost:	$4,970,000
Estimated Annual Operation & Maintenance Cost:	$ 220,000
Estimated Present Worth Cost:	$8,130,000
Estimated Construction Time:	2 years

This alternative consists of in-situ treatment of contaminated groundwater through enhanced anaerobic biological (EAB) treatment. PCE and TCE could be effectively biodegraded through reductive dechlorination under anaerobic conditions. The RI results indicate that the groundwater is under aerobic conditions, which is not suitable for naturally occurring biodegradation of PCE. However, the groundwater velocity at the Site is very slow. Nutrient amendments would be injected into the area with relatively high contaminant concentrations and alter the conditions to promote anaerobic degradation of PCE to cis-DCE and/or methane, ethane and ethene. The break down products, cis-DCE and vinyl chloride (VC), can also be degraded under aerobic conditions. No VC was detected at the Site during the RI, and cis-DCE was exhibited at a concentration greater than the PRG at only one location. In-situ biological treatment would be effective for contamination remediation both within the plume area and at the Facility area.

The primary objective of this alternative is to deliver bioremediation nutrient amendments to the subsurface in the most cost effective and efficient configuration in order to stimulate in-situ degradation of contaminants. The biological treatment would be implemented to treat the area represented by the PCE 10 ppb contour at the Site. For areas outside of the 10 ppb contour line, contaminants would be allowed to attenuate through monitored natural attenuation.

Delivery of nutrient amendments to the subsurface can be accomplished in a variety of ways and a delivery strategy will be developed during design. Commercially available electron donors come in both solid and liquid forms and vary considerably with respect to longevity.

Temporary aboveground piping and hoses would be used to distribute the amendment to the injection wells. A trailer mounted distribution system would be used for injection to all the wells in a given row simultaneously, and two water trucks would be used to transport potable water from a metered hydrant.

Once injection to all seven rows of injection wells has been completed (Figure 7), the temporary injection equipment would be removed and no activity would be required other than periodic groundwater monitoring for 3 years. It is assumed that an additional full-scale injection event would take place at the end of year three.

If the design investigation confirms that contamination adjacent to the Facility requires treatment, EAB would also be performed in this area.

Chlorinated solvents have successfully been degraded by the addition of an electron donor at many Sites. At Sites similar to this one, the degradation has been observed to "stall" at cis-DCE instead of proceeding all the way to ethene. If this occurs, one mitigation strategy that has been used at other Sites is to perform bioaugmentation, which is the addition of exogenous bacteria that are capable of complete dechlorination of contaminants.

Unlike PCE, cis-DCE is susceptible to multiple degradation pathways, including direct and co-metabolic oxidation, and abiotic reduction. Accordingly, the cis-DCE produced from PCE degradation would be expected to decrease below the PRG under intrinsic conditions and bioaugmentation would not be required.

Once the desired endpoint has been achieved the Injection well network will be abandoned in accordance with state guidelines.

Institutional controls, long term monitoring, and vapor intrusion evaluation would be. implemented as described under Common Elements (located above).

The estimated duration for active remedial action using EAB is up to nine years based on the injection point spacings, the groundwater flow estimates, and experiences at other Sites. However, the long-term monitoring program is expected to be carried out until year 30 at this Site, because the treatment zone is bounded by the 10 ppb PCE contour line; groundwater outside the treatment area could persist above the cleanup criteria for longer than 9 years. The periodic reviews are assumed to continue for 30 years although the necessity for monitoring will be evaluated over time.

Because this remedy will not result in hazardous substances, pollutants or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure after implementation of the remedy, a statutory five-year review is not required. Although five-year reviews are not required by statute in connection with this alternative, it is EPA's policy to conduct five-year reviews until cleanup goals have been achieved.

Alternative 5 - Pump-and-Treat

Estimated Capital Cost:	$ 4,630,000
Estimated Annual Operation & Maintenance Cost:	$ 560,000
Estimated Present Worth Cost:	$13,160,000
Estimated Construction Time:	2 years

Alternative 5 consists of pumping groundwater via extraction wells to a groundwater treatment system, with subsequent recharge of treated water through surface recharge structures. Pumping may be continuous or pulsed to allow equilibration of contaminants within the groundwater.

One row of groundwater extraction wells would be located downgradient of the 10 ppb contaminant contour to intercept the plume. A second row of extraction wells would be located near the center of the plume to collect currently impacted groundwater from within the 10 ppb contaminant contour, thereby accelerating the cleanup process. Extracted groundwater would be treated through liquid phase carbon adsorption. Air-stripper and vapor phase carbon adsorption should also be considered during remedial design. Treated groundwater would be discharged back to the subsurface through surface recharge structures, such as an infiltration gallery. A pump and treat system would be effective in remediating the contamination plume.

If the presence of possible very small and localized groundwater and/or soil contamination at the southeast corner of the Facility is confirmed, EAB treatment would be applied to only this area to treat the contamination. Depending on the area that requires treatment, electron donors and nutrient amendments could be injected into the subsurface from a few injection wells. These injection wells would be screened within the zone of contamination. Since the treatment area is small and no high soil residual contamination is expected, it is estimated that two applications of nutrient amendments would destroy all contaminants in the treatment zone. The specific nutrient amendments to be used in the remedial action would be determined during remedial design.

Two rows of groundwater extraction wells are proposed to contain downgradient migration of contaminants and accelerate the remediation of the plume. The first row of five groundwater extraction wells are located downgradient of the 10 ppb PCE contour line (Figure 7). The second row of six groundwater extraction wells is located in the center of the 10 ppb PCE contour line. For areas outside the 10 ppb contour line, contaminants would be allowed to attenuate through the natural process.

It was assumed that the groundwater treatment system would consist of bag filtration and liquid phase carbon adsorption.

Two treatment systems, one for each row of extraction wells, would be used. Leasing of private land would be necessary for these two treatment plants. Treated water would be discharged through an infiltration gallery located side-gradient of the plume. Effluent of the treatment system would be sampled and analyzed periodically to verify compliance with the NJDEP groundwater discharge requirements. Results from long-term groundwater monitoring would be used to evaluate the performance and to adjust operating parameters for the pump-and-treat system, as necessary.

Institutional controls, long term monitoring, and vapor intrusion evaluation would be implemented as described under Common Elements (located above).

The pump and treat system is designed to extract the contaminated groundwater with contaminant concentrations greater than 10 ppb and treat the groundwater ex situ. The groundwater velocity is slow at the Site; it would take a long time to flush one pore volume within the 10 ppb PCE contour line. To remediate the contamination, several pore volumes would be needed. Based on experience from other Sites, the pump-and-treat system would likely be operated for greater than 30 years.

Because this remedy will not result in hazardous substances, pollutants or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure after implementation of the remedy, a statutory five-year review is not required. Although five-year reviews are not required by statute in connection with this alternative, it is EPA's policy to conduct five-year reviews until cleanup goals have been achieved.

COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy, EPA considered the factors set out in CERCLA § 121, 42 U.S.C. § 9621, by conducting a detailed analysis of the viable remedial response measures pursuant to the NCP, 40 CFR § 300.430 (e) (9) and OSWER Directive 9355.3-01. The detailed analysis consisted of an assessment of the individual response measures against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each response measure against the criteria.

THRESHOLD CRITERIA

The first two criteria are known as "threshold criteria" because they are the minimum requirements that each response measure must meet to be eligible for selection as a remedy

1. Overall Protection of Human Health and the Environment

Alternative 1 would not be protective of human health and the environment. Alternative 2 would be protective of human health through institutional controls but would not be protective of the environment. Alternatives 3, 4 and 5 would be equally protective of human health and the environment and would achieve the RAOs. Alternative 4 is expected to achieve RAOs in the shortest time, followed by Alternative 3. Alternative 5 would require the longest time of operations among these three alternatives.

For Alternative 4, the biodegradation process would be closely monitored to ensure complete breakdown of biodegradation byproducts occurs. Accumulation of byproducts is very rare and not anticipated. If the reductive dechlorination stalls, the treatment can be augmented.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARS)

Alternatives 1 and 2 would not attain the ARARs in a reasonable time frame. Alternatives 3, 4, and 5 would attain the ARARs within the treatment areas through active treatment, while the contamination outside of the treatment zones would be attenuated by natural mechanisms. All alternatives would comply with location- and action-specific ARARs.

PRIMARY BALANCING CRITERIA

The next five criteria are known as "primary balancing criteria". These criteria are factors with which tradeoffs between response measures are assessed so that the best option will be chosen, given Site-specific data and conditions.

3. Long-term effectiveness and performance

Alternatives 1 and 2 would not have long-term effectiveness and permanence, since contaminants would remain in the subsurface and pose potential risks to human health and the environment. Alternatives 3, 4, and 5 would have long-term effectiveness and permanence through either in-situ or ex-situ treatment. The treatment processes are not reversible.

If pilot testing demonstrates the technologies in Alternatives 3 and 4 are suitable for the Site conditions, these technologies are considered adequate and reliable processes to treat the contamination, since they have been demonstrated successfully at other sites.

4. Reduction of toxicity, mobility or volume (T/M/V).

Alternatives 1 and 2 would not reduce the Toxicity/Mobility/Volume (T/M/V), since no active in-situ or ex-situ treatment would be implemented. The total volume of contaminated groundwater would increase as contaminants migrate downgradient. Alternatives 3, 4, and 5 would reduce the T/M/V through physical, chemical or biological processes.

5. Short Term Effectiveness

For Alternative I, protection of the community and workers would not be applicable, as no remedial action would occur. For Alternative 2, there would be minimum short-term inconveniences to the residents. For Alternatives 3, 4, and 5, there would be some short-term inconveniences due to the scope of the field operations. Alternative 5, Pump and Treat, would require significant land acquisition, and disturbance of private and public properties as collection wells and their associated pumping units, electrical controls, clean-outs, valves, vaults, lateral double-walled piping are installed above and below the ground surface in a residential area. However, no major adverse impacts would be expected.. Air monitoring, engineering controls, and appropriate worker personal protective equipment(PPE) would be used to protect the community and workers for Alternatives 2 through 5.

For Alternatives 3 and 4, tree removal would be required to access well locations. Consent from property owners would be obtained prior to any field work.

The timeframe to accomplish the active remediation for Alternative 4 is anticipated to be shorter than for Alternative 3 based on experience at other sites. Alternative 5 would be operated for a long time due to relatively slow groundwater velocity at the Site. In the absence of groundwater modeling, it would be difficult to configure the optimal layout of groundwater extraction wells within the treatment area and predict the operational timeframe.

For Alternative 4, in-situ bioremediation, the selected amendment would be injected into the subsurface and exist in the groundwater for more than 6 years. Although this amendment is food grade, it may still not be desirable to use this groundwater as drinking water. Currently, only one residence is using groundwater as drinking water. This house is located outside of the treatment area and the PCE level is below the federal drinking water standard. If it is impacted, EPA would consider connecting them to public water.

6. Implementability

Technical Feasibility

Alternative 1 would be easiest to implement since no action would be taken. Alternative 2 would be the second easiest to implement. Alternatives 3 and 4 would require a pilot study since both involve innovative technologies. Both Alternatives 3 and 5 are technically more difficult to implement than the other alternatives. Optimum groundwater extraction rates would need to be determined during design and a higher volume of groundwater pumping may be required to attain goals.

Groundwater treatment, operation and maintenance and discharge requirements for Alternatives 3 and 5 are technically more difficult to implement than other alternatives especially in a residential area.

Administrative Feasibility

Alternatives 3, 4, and 5 may be administratively difficult to implement because leasing or purchasing of private land would be necessary, and community acceptance of the treatment methodologies and locations of the treatment systems would likely be more difficult than the limited action or no action alternatives. Installation of underground piping, pumps, and groundwater extraction/injection wells would be difficult in a residential area.

Availability of Services and Materials

Alternative 1 would not require any services or materials. Alternatives 2-5 would require common construction services and materials for implementation of the remedy.

7. Cost

The present worth for Alternative 5 ($13.11 million) is the highest, followed by Alternative 3 ($10.69 million), and then Alternative 4 ($8.13 million). Alternative 2 ($1.77 million) has the lowest present worth since it involves no treatment. The costs associated with Alternative 5 are based on a total pumping rate of 110 gallons per minute which could increase significantly when design engineering studies are completed. Alternative 1 has no cost since it involves no action.

MODIFYING CRITERIA

The final two evaluation criteria are called "modifying criteria" because new information or comments from the state or the community on the Proposed Plan may modify the preferred response measure or cause another response measure to be considered.

8. State Acceptance

The State of New Jersey concurs with Alternative 4.

9. Community Acceptance

The Responsiveness Summary details the public's general response to the response measures described in the Proposed Plan and the RI/FS report. This assessment includes determining which of the response measures the community supports, opposes, and/or has reservations about. EPA solicited input from the community on the remedial response measures proposed for the Site. No comments were received from the public during the public meeting or the 30-day public comment period.

PRINCIPAL THREAT WASTES

Principal threat wastes are considered source materials, i.e., materials that include or contain hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or as a source for direct exposure. No principal threat wastes were identified during the RI.

SELECTED REMEDY

Based upon consideration of the results of the Site Investigation, the requirements of CERCLA, a detailed evaluation of the various alternatives, EPA recommends Alternative 4, In-Situ Biological Treatment (Preferred Alternative) for cleanup of the groundwater at the Iceland Coin Laundry Site. Alternative 4 satisfies the requirements of CERCLA section 121 and the National Contingency Plan's nine evaluation criteria for remedial alternatives, 40 CFR section 300.430 (e) (9).

In the selected alternative, amendments such as electron donors and nutrients will be injected into the targeted groundwater plume area to alter the groundwater conditions to promote anaerobic degradation (reductive dechlorination) of PCE, TCE to cis-1, 2-DCE and/or methane, ethane and ethene. The breakdown products, cis-1,2-DCE and vinyl chloride can easily be degraded under existing Site conditions. In-situ biological treatment would be used to remediate the groundwater plume that contains PCE at levels above 10 ppb. For the area outside the 10 ppb isoconcentration contour, natural attenuation would be monitored to ensure the remediation goal is achieved. After some pilot tests are conducted, nutrient amendments would be injected into the groundwater and then monitored, and if required another injection event would occur followed by additional monitoring. Once cleanup objectives are achieved, the wells would be abandoned and sealed when the groundwater has achieved the remediation goals.

Alternative 4, In-Situ Enhanced Biological Treatment is comprised of the following major components:

- In-situ Biological Treatment for cleanup of the groundwater at the Iceland Coin Laundry Site. The in-situ treatment will be an enhanced anaerobic bioremediation (EAB) system.

- In addition, enhanced anaerobic biological treatment at the facility area, if necessary. If the design investigation indicates significant soil contamination adjacent to the source area, EAB will also be performed in this area.

- EAB performance monitoring - Monitoring wells would be sampled to ensure that the conditions inside and along the edges of the contaminated area are conducive to biodegradation.

- Institutional controls - Institutional controls for groundwater would include a Classification Exception Area (CEA) and well drilling restrictions to eliminate human exposure pathways to contaminated groundwater.

- Long-term groundwater monitoring - The long-term monitoring program would track contaminant concentration changes and migration outside the treatment area. The monitoring will be conducted to establish whether contaminants are meeting the appropriate New Jersey Ground Water Quality Standards (NJGWQSs) or Maximum Contaminant Levels (MCLs), whichever is lower.

- If during implementation, residences or businesses within the aerial extent of the Site plume are found to have not yet been connected to public water, EPA would consider connecting them to the public water supply.

Summary of the Rationale for the Selected Remedy

The estimated cost of Alternative 4 is $8.1 million. The information in the cost estimate summary table is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost.

The selection of Alternative 4 provides the best balance of tradeoffs among response measures with respect to the nine evaluation criteria. EPA believes that Alternative 4 will be protective of human health and the environment, will be cost effective, and will utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

STATUTORY DETERMINATIONS

As was previously noted, CERCLA § 121(b)(1) mandates that a remedial action must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity or mobility of the hazardous substances, pollutants, or contaminants at a Site. CERCLA § 121(d) further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA § 121(d)(4).

Protection of Human Health and the Environment

The Selected Remedy, Alternative 4, will adequately protect human health and the environment through treatment of the contaminated groundwater and, as needed, natural attenuation and deed restrictions. The Selected Remedy will eliminate all significant direct-contact risks to human health and the environment associated with the groundwater. In addition, this action will eliminate and/or reduce any substantial sources of contamination to the groundwater.. This action will result in the reduction of exposure levels to acceptable risk levels within EPA's generally acceptable risk range of 10^{-4} to 10^{-6} for carcinogens and below an HI of 1 for non-carcinogens. Implementation of the Selected Remedy will not pose unacceptable short-term risks or adverse cross-media impacts.

Compliance with ARARs

Section 121(d) of CERCLA and the NCP Section 300.430 (f) (1) (ii) (B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations which are collectively referred to as "ARARs", unless such ARARs are waived under CERCLA section 121(d)(4). During and at the completion of the response action for the contaminated groundwater, the Selected Remedy will meet action-specific, chemical-specific, and location-specific ARARs.

Cost Effectiveness

In the lead agency's judgment, the Selected Remedy is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness." (NCP § 300.430 (f) (1) (ii) (D)). This was accomplished by evaluating the "overall effectiveness" of those alternatives that satisfied the threshold criteria (i.e., were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness). Overall effectiveness was then compared with costs to determine cost-effectiveness. The relationship of the overall effectiveness of this remedial alternative was determined to be proportional to its costs and therefore this alternative represents a reasonable value for the money to be spent.

The total present worth for Alternative 4 is estimated to be $8.1 million. Alternative 1 was determined not to be an acceptable alternative. Alternative 2 is estimated to cost $1,770,000, and does not provide any treatment of contaminated groundwater. Alternative 3 is estimated to cost $10,690,000, and Alternative 5 is estimated to cost $13.1 million. Although these alternatives are as protective of human health as the selected alternative, the selected alternative is cost effective as it has been determined to provide the greatest overall protectiveness for its present worth costs.

Utilization of Permanent Solutions and Alternative Treatment Technologies

EPA has determined that the Selected Remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the Selected Remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element and bias against off-Site treatment and disposal and considering State and community acceptance. The Selected Remedy satisfies the criteria for long-term effectiveness and permanence by removing all contaminants from the groundwater. The selected remedy does not present short-term risks different from the other alternatives. There are no special implementability issues since the remedy employs standard technologies.

Preference for Treatment as a Principal Element

Through the use of in-situ biological treatment to treat the contaminated groundwater source of contamination, the Selected Remedy meets the statutory preference for the use of remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

Five-Year Review Requirements

Because this remedy will not result in hazardous substances, pollutants or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure after implementation of the remedy, a statutory five-year review is not required. Although five-year reviews are not required by statute in connection with this alternative, it is EPA's policy to conduct five-year reviews until cleanup goals have been achieved to ensure that the remedy is, or will be, protective of human health and the environment.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Iceland Coin Laundry Site was released for public comment on August 5, 2006. The Proposed Plan identified Alternative 4, In-Situ Biological Treatment as EPA's preferred alternative. EPA received no written or verbal comments submitted during the public comment period. It was determined that no significant changes to the remedy, as originally identified in the Proposed Plan, were necessary or appropriate.

APPENDIX I

FIGURES

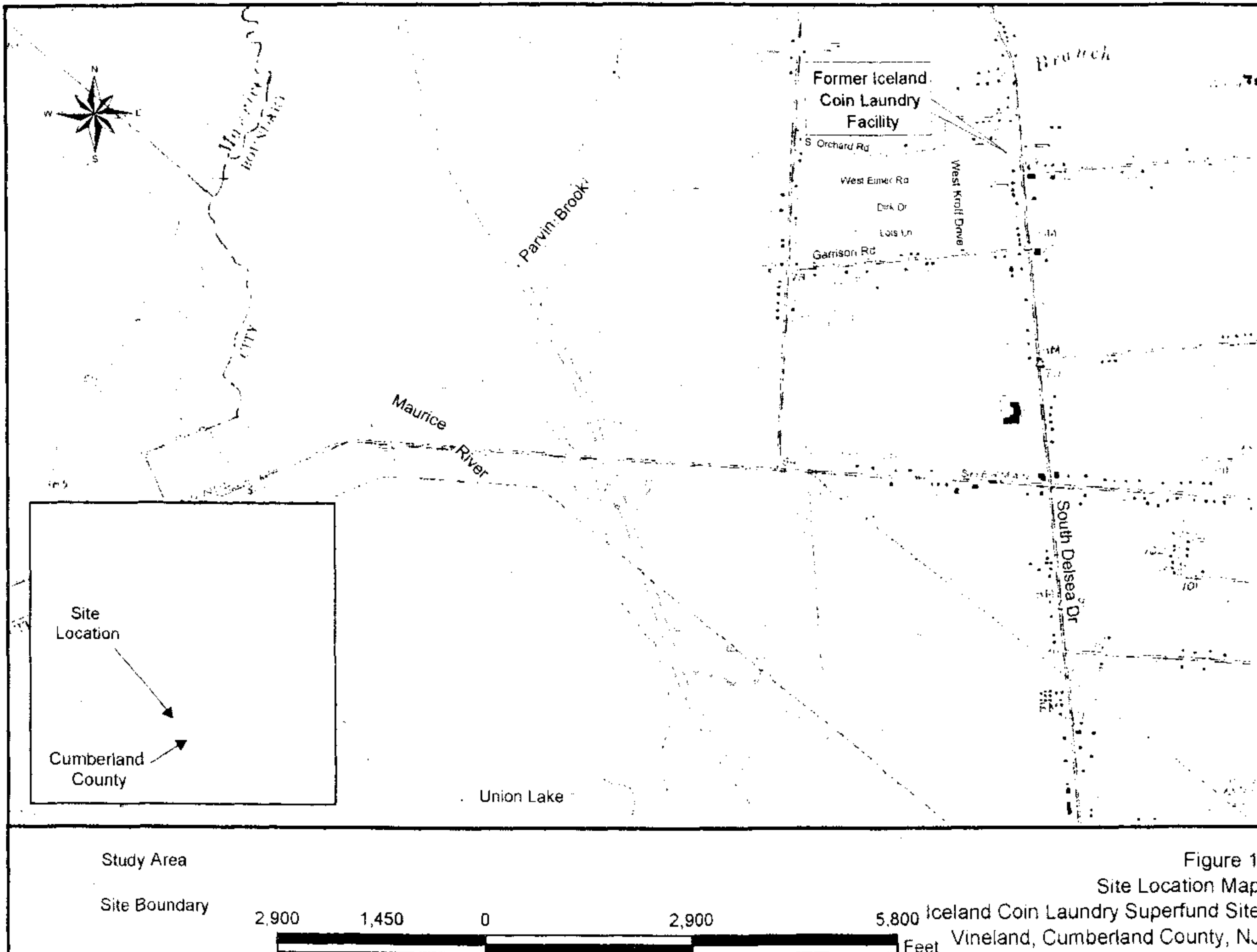
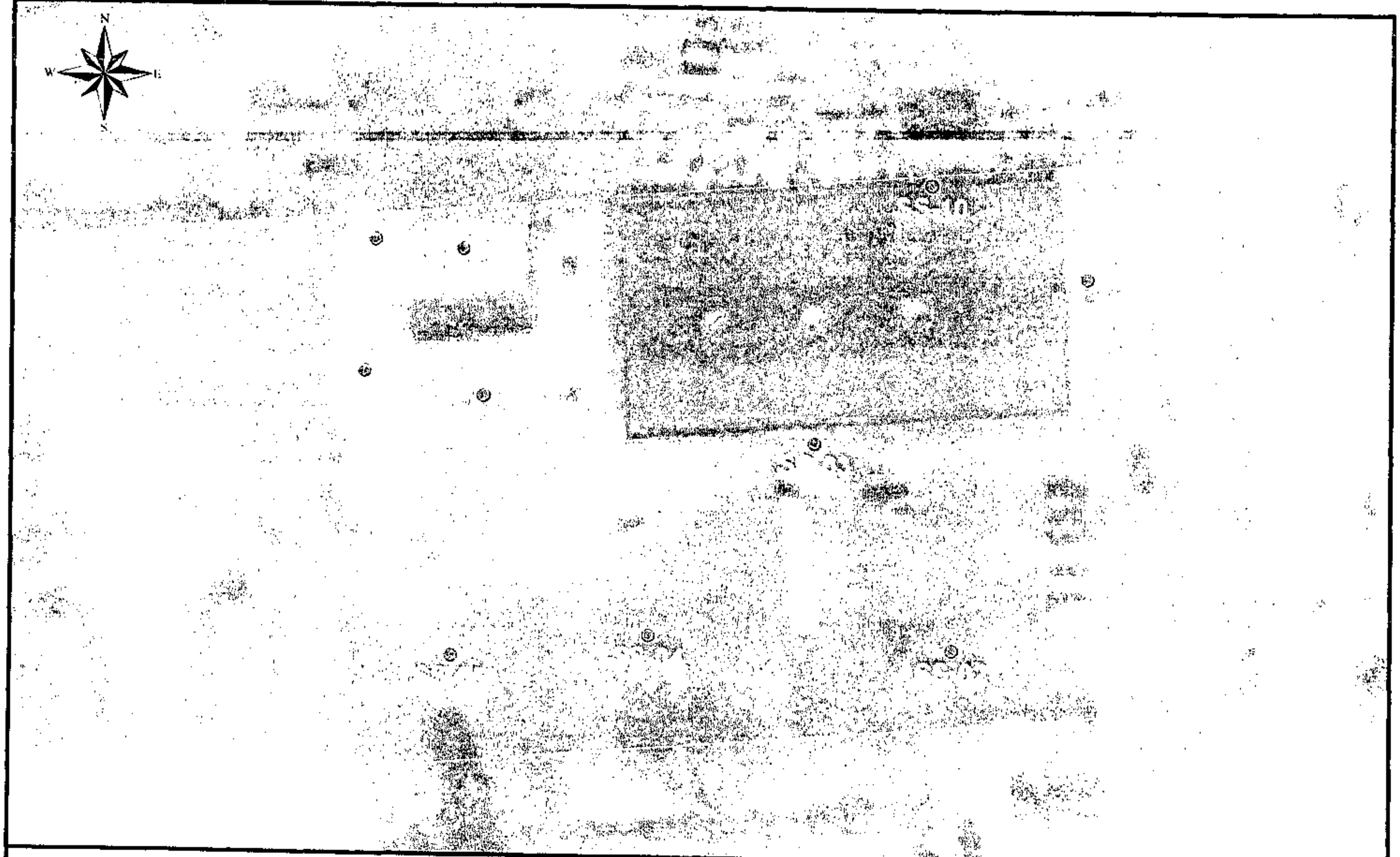


Figure 1
Site Location Map
Iceland Coin Laundry Superfund Site
Vineland, Cumberland County, NJ

C:\IMS\GIS\Iceland\GIS_projects\RI\Figure_2_1_surface_soil.mxd

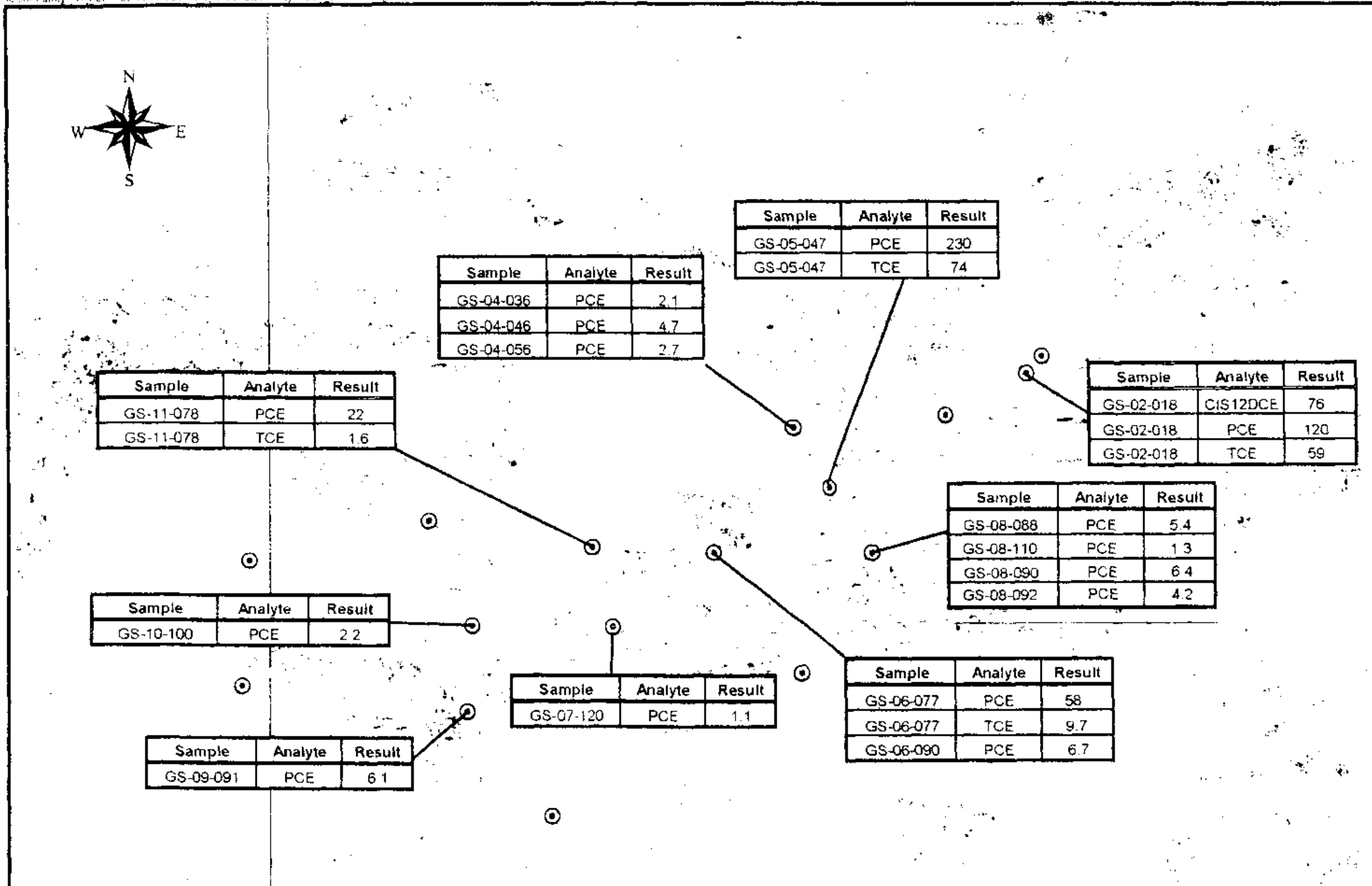


○ Surface Soil Sample Locations

Mainiero's Building

0 50 100 Feet

Figure 2
Surface Soil Sample Locations
Iceland Coin Laundry Superfund Site
Vineland, Cumberland County, NJ



Sample	Analyte	Result
GS-05-047	PCE	230
GS-05-047	TCE	74

Sample	Analyte	Result
GS-04-036	PCE	2.1
GS-04-046	PCE	4.7
GS-04-056	PCE	2.7

Sample	Analyte	Result
GS-11-078	PCE	22
GS-11-078	TCE	1.6

Sample	Analyte	Result
GS-02-018	CIS12DCE	76
GS-02-018	PCE	120
GS-02-018	TCE	59

Sample	Analyte	Result
GS-08-088	PCE	5.4
GS-08-110	PCE	1.3
GS-08-090	PCE	6.4
GS-08-092	PCE	4.2

Sample	Analyte	Result
GS-10-100	PCE	2.2

Sample	Analyte	Result
GS-07-120	PCE	1.1

Sample	Analyte	Result
GS-06-077	PCE	58
GS-06-077	TCE	9.7
GS-06-090	PCE	6.7

Sample	Analyte	Result
GS-09-091	PCE	6.1

⊙ Discrete - Depth Groundwater Sample Locations

Mainiero's Building

All results in ug/L *(micrograms per liter)*

CIS12DCE - cis-1,2-Dichloroethene

PCE - Tetrachloroethene

TCE - Trichloroethene

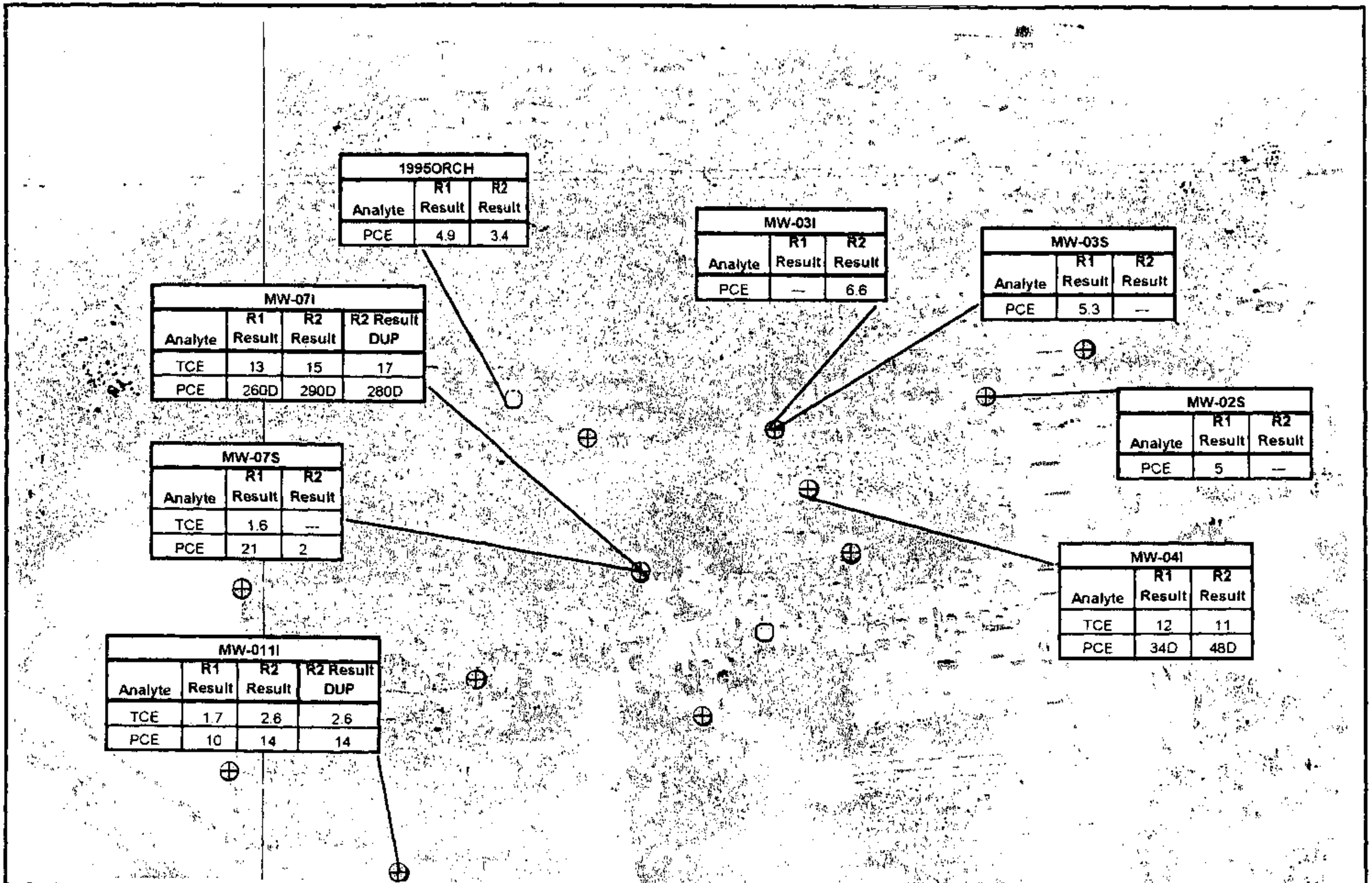
900 0 900 Feet

Figure 3

Discrete - Depth Groundwater VOC Sample Results Above Screening Criteria

Iceland Coin Laundry Superfund Site

Vineland, Cumberland County, NJ



1995ORCH		
Analyte	R1 Result	R2 Result
PCE	4.9	3.4

MW-03I		
Analyte	R1 Result	R2 Result
PCE	---	6.6

MW-03S		
Analyte	R1 Result	R2 Result
PCE	5.3	---

MW-07I			
Analyte	R1 Result	R2 Result	R2 Result DUP
TCE	13	15	17
PCE	260D	290D	280D

MW-02S		
Analyte	R1 Result	R2 Result
PCE	5	---

MW-07S		
Analyte	R1 Result	R2 Result
TCE	1.6	---
PCE	21	2

MW-04I		
Analyte	R1 Result	R2 Result
TCE	12	11
PCE	34D	48D

MW-011I			
Analyte	R1 Result	R2 Result	R2 Result DUP
TCE	1.7	2.6	2.6
PCE	10	14	14

⊕ Monitoring Well Sample Locations

▢ Residential Well Sample Locations

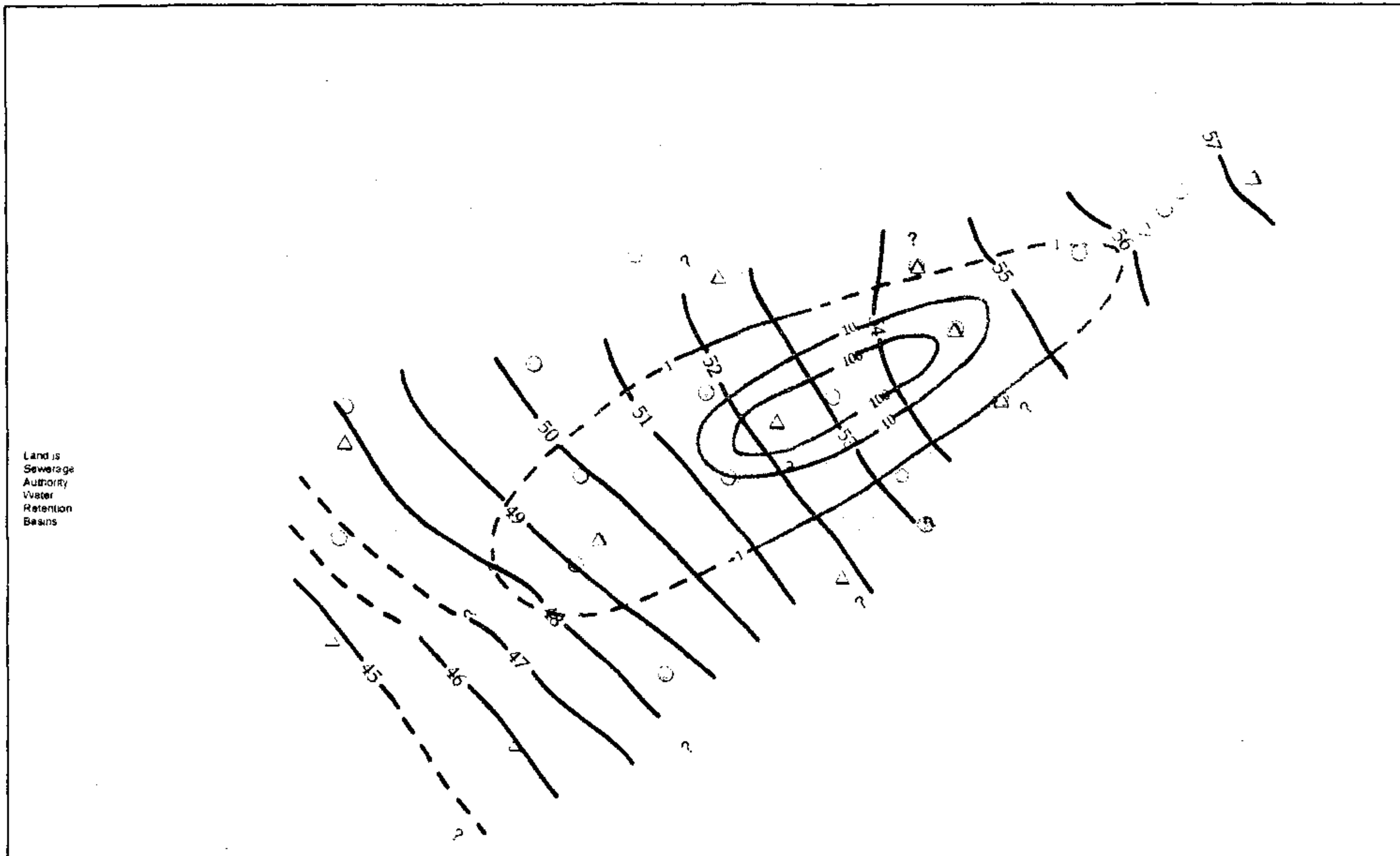
Mainiero's Building

R1 - Round 1 sampling event, June 2003
R2 - Round 2 sampling event, December 2003
DUP - Duplicate sample
--- - Not detected above screening criteria levels

PZ - Piezometer
S - Shallow Well
I - Intermediate Well
D - Deep Well
PCE - Tetrachloroethene
TCE - Trichloroethene
All results in ug/L

900 0 900 Feet

Figure 4
Monitoring Well and Residential Well VOC Sample Results Above Screening Criteria
Iceland Coin Laundry Superfund Site
Vineland, Cumberland County, NJ



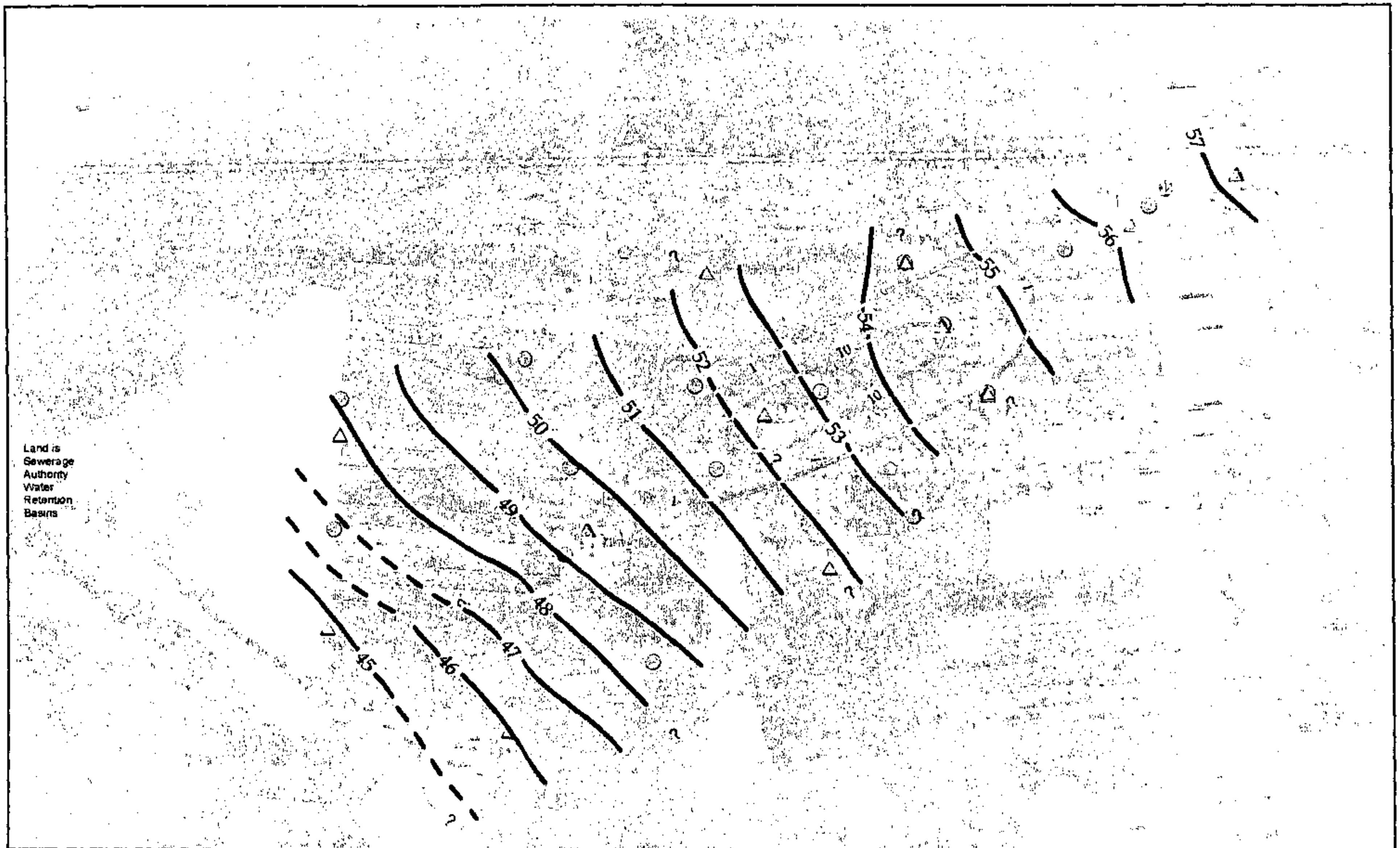
Former Iceland Coin Laundry Facility
Discrete Depth Groundwater Sample Locations
Monitoring Well Sample Locations
Residential Well Sample Locations
Potentiometric Surface Elevation Contour (feet msl)
PCE Isoconcentration Contour (ug/L)
Estimated Extent of Groundwater Contamination above 1 ug/L of PCE or TCE

PZ - Piezometer
S - Shallow Well
D - Deep Well
I - Intermediate Well
? - uncertain

0 500 1,000 Feet

Figure 5
Tetrachloroethene (PCE) Groundwater Plume Map, December 8, 2003
Zero Foot Elevation

Iceland Coin Laundry Superfund Site
Vineland, Cumberland County, NJ

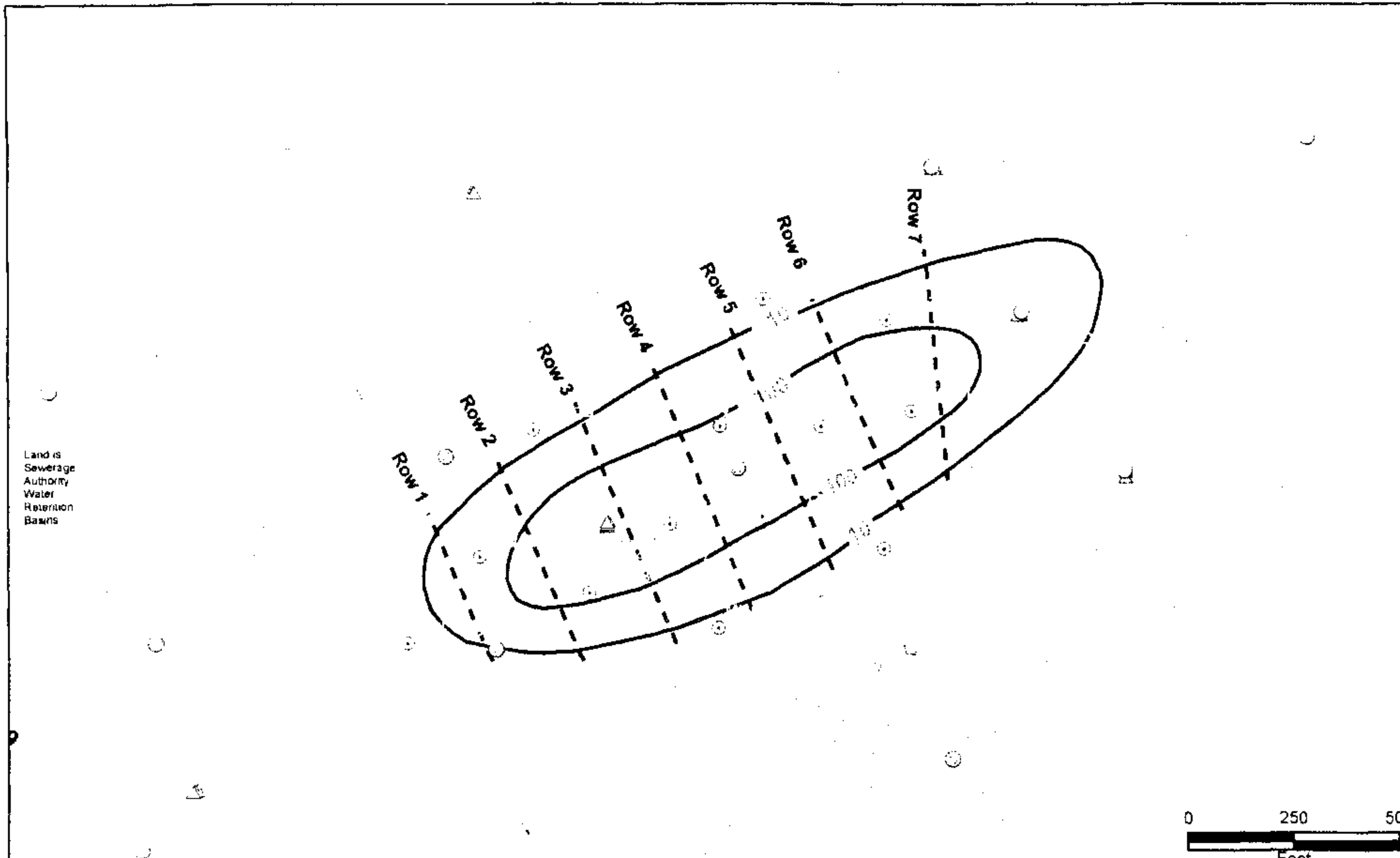


Former Iceland Coin Laundry Facility
Discrete Depth Groundwater Sample Locations
Monitoring Well Sample Locations
Residential Well Sample Locations
Potentiometric Surface Elevation Contour (feet msl)
TCE Isoconcentration Contour (ug/L)
Estimated Extent of Groundwater Contamination above 1 ug/L of PCE or TCE

PZ - Piezometer
S - Shallow Well
D - Deep Well
I - Intermediate Well
? - uncertain

0 250 500 1,000 Feet

Figure 6
Trichloroethene (TCE) Groundwater Plume Map, December 8, 2003
Zero Foot Elevation
Iceland Coin Laundry Superfund Site
Vineland, Cumberland County, NJ



Discrete Depth Groundwater Sample Locations

Monitoring Well Sample Locations

Residential Well Sample Locations

PCE Isoconcentration Contour (ug/L)

Estimated Extent of Groundwater Contamination above 1 ug/L of PCE or TCE

PZ - Piezometer
S - Shallow Well
D - Deep Well
I - Intermediate Well
? - uncertain
Row of Injection Wells
New Monitoring Well

Figure 7
In Situ Bioremediation Layout

Iceland Coin Laundry Superfund Site
Vineland, Cumberland County, NJ

APPENDIX II

TABLES

TABLE 1

Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

Scenario Time frame: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Concern	Concentration Detected		Concen-tration Units	Frequency of Detection	Exposure Point Concen-tration	Exposure Point Concen-tration Units	Statistical Measure
		Min	Max					
Tap Water	Tetrachloroethene	0.19	285	ug/L	19/40	112	ug/L	99% Cheb.
	Trichloroethene	0.19	16	ug/L	11/40	8	ug/L	99% Cheb.

Key

mg/kg: milligram per kilogram; parts per million
ug/L: micrograms per liter; part per billion
99% Cheb.: 99% Chebyshev (mean, STD) upper-confidence limit
MAX: Maximum value detected

Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

The tables present the chemicals of concern (COCs) and exposure point concentration for each of the COCs detected in the groundwater (*i.e.*, the concentrations that will be used to estimate the exposure and risk from each COC in each media). The tables include the range of concentrations detected for each COC, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the Site), the exposure point concentration (EPC), and how the EPC was calculated.

TABLE 2								
Selection of Exposure Pathways								
Scenario Time frame	**Medium**	**Exposure Medium**	**Exposure Point**	**Receptor Population**	**Receptor Age**	**Exposure Route**	**On-site/ Off-site**	**Rationale for Selection/Exclusion of Exposure Pathway**
Current/ Future	Surface Soil	Surface Soil	Surface Soil	Site worker	Adult	Ingestion Dermal	Onsite	Site workers are exposed to on-Site surface soil.
					Adolescent (12-18 yrs)	Ingestion Dermal	On-Site	Visitors are exposed to on-Site surface soil.
		Air	Air	Site visitor	Adult	Ingestion Dermal	On-Site	Site workers may inhale fugitive dust from surface soil.
					Adolescent (12-18 yrs)	Ingestion Dermal	On-Site	Visitors may inhale fugitive dust from surface soil.
	Groundwater	Groundwater	Tap Water	Off-Site resident	Adult	Ingestion Dermal	Off-Site	Most of the off-Site residents in the area are connected to the municipal water supply, although a few residents have private wells.
					Child (0-6 yrs)	Ingestion Dermal	Off-Site	
		Air	Water Vapors at Showerhead	Off-Site resident	Adult	Inhalation	Off-Site	
					Child (0-6 yrs)	Inhalation	Off-Site	
			Vapors from Subsurface Intrusion	Off-Site resident	Adult	Inhalation	Off-Site	Off-Site residents will not be exposed to inhalation of vapors from subsurface intrusion because there is a large quantity of clean water between groundwater contamination and the top of the water table.
					Child (0-6 yrs)	Inhalation	Off-Site	
				Site worker	Adult	Inhalation	On-Site	Site workers may be exposed to inhalation of vapors from subsurface intrusion. This pathway was qualitatively discussed in relation to residential screening levels. Additional investigation of this pathway will occur during remedial design.
Future	Surface	Surface Soil	Surface Soil	On-Site	Adult	Ingestion	On-Site	Future on-Site residents may be exposed to on-Site surface soil.

	Soil			Resident		Dermal		
					Child (0-6 yrs)	Ingestion Dermal	On-Site	
				Site Worker	Adult	Ingestion Dermal	On-Site	Future site workers may be exposed to on-Site surface soil.
		Air	Air	On-Site resident	Adult	Inhalation	On-Site	Future on-Site residents may inhale fugitive dust from surface soil.
					Child (0-6 yrs)	Inhalation	On-Site	
				Site worker	Adult	Inhalation	On-Site	Site workers may inhale fugitive dust from surface soil.
		Surface/ Subsurface Soil	Surface/ Subsurface Soil	Construction Worker	Adult	Ingestion Dermal	On-Site	Construction workers may be exposed to on-Site soil.
			Air	Construction Worker	Adult	Inhalation	On-Site	Construction workers may inhale fugitive dust from surface and subsurface soil.
	Groundwater	Groundwater	Tap Water	On-Site Resident	Adult	Ingestion Dermal	On-Site	Although the site is connected to the municipal water supply, private wells could be installed in the future for the use of residents.
					Child (0-6 yrs)	Ingestion Dermal	On-Site	
				Site Worker	Adult	Ingestion Dermal	On-Site	Site workers may be exposed to groundwater from future on-Site private wells while washing hands or using an emergency shower.
		Air	Water Vapors at Showerhead	On-Site Resident	Adult	Inhalation	On-Site	Although the site is connected to the municipal water supply, private wells could be installed in the future for the use of residents.
					Child (0-6 yrs)	Inhalation	On-Site	
				On-Site Resident	Adult	Inhalation	On-Site	Residents may be exposed via inhalation of vapors from subsurface intrusion
					Child (0-6 yrs)	Inhalation	On-Site	
				Site Worker	Adult	Inhalation	On-Site	Site workers may be exposed via inhalation of vapors from subsurface intrusion.
Summary of Selection of Exposure Pathways								

The table presents all exposure pathways considered for the risk assessment, and the rationale for the inclusion of each pathway. Exposure media, exposure points, and characteristics of receptor populations are included.

TABLE 3

Non-Cancer Toxicity Data Summary

Pathway: Ingestion/Dermal

Chemical of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Dermal RfD	Dermal RfD units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD: Target Organ	Dates of RfD:
Tetrachloroethene	Chronic	1.0e-02	mg/kg-day	1.0e-02	mg/kg-day	Liver	1000	IRIS	7/11/2005
Trichloroethene	Chronic	3.0e-04	mg/kg-day	3.0e-04	mg/kg-day	Liver, kidney, fetus	3000	NCEA	4/15/2003

Pathway: Inhalation

Chemical of Concern	Chronic/ Subchronic	Inhalation RfC Value	Inhalation RfC Units	Inhalation RfD	Inhalation RfD units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfC/RfD : Target Organ	Dates:
Tetrachloroethene	Chronic	6.0e-01	mg/m^3	1.7e-01	mg/kg-day	Liver	30	NCEA	4/15/2003
Trichloroethene	Chronic	4.0e-02	mg/m^3	1.0e-02	mg/kg-day	Central Nervous System	1000	NCEA	4/15/2003

Key

IRIS: Integrated Risk Information System, U.S. EPA
NCEA: National Center for Environmental Assessment, U.S. EPA

Summary of Toxicity Assessment

This table provides non-carcinogenic risk information which is relevant to the contaminants of concern. When available, the chronic toxicity data have been used to develop oral reference doses (RfDs).

TABLE 4

Cancer Toxicity Data Summary

Pathway: Ingestion, Dermal

Chemical of Concern	Oral Cancer Slope Factor	Units	Adjusted Cancer Slope Factor (for Dermal)	Slope Factor Units	Weight of Evidence/ Cancer Guideline Description	Source	Date
Tetrachloroethene	5.4e-01	1/(mg/kg-day)	5.4e-01	1/(mg/kg-day)	--	CalEPA	1/22/2003
Trichloroethene	4.0e-01	1/(mg/kg-day)	4.0e-01	1/(mg/kg-day)	B1	NCEA	1/22/2003

Pathway: Inhalation

Chemical of Concern	Unit Risk	Units	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline Description	Source	Date
Tetrachloroethene	5.9e-06	1/(ug/m^3)	2.1e-02	1/(mg/kg-day)	--	CalEPA	12/13/2003
Trichloroethene	1.1e-04	1/(ug/m^3)	4.0e-01	1/(mg/kg-day)	B1	NCEA	8/1/01

Key **EPA Group:**

CalEPA: California EPA A - Human carcinogen
IRIS: Integrated Risk Information System. U.S. EPA B1 - Probable Human Carcinogen-Indicates that NCEA:
National Center for Environmental Assessment, U.S. EPA limited human data are available B2 - Probable Human Carcinogen-
Indicates sufficient evidence in
NCEA: National Center for Environmental Assessment, U S. EPA animals associated with the site and inadequate
or no evidence in humans

C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

Summary of Toxicity Assessment

This table provides carcinogenic risk information which is relevant to the contaminants of concern. Toxicity data are provided for both the oral and inhalation routes of exposure.

TABLE 5

Risk Characterization Summary - Carcinogens

Scenario Time frame: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	Tetrachloroethene Trichloroethene	5.7e-04 3.0e-05	2.9e-05 4.2e-05	4.2e-05 8.0e-07	6.4e-04 7.5e-05
						Total Risk =	7.0e-04

Scenario Time frame: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child (0-6 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	Tetrachloroethene Trichloroethene	3.3e-04 1.7e-05	6.3e-05 9.1e-05	3.3e-05 6.1e-07	4.3e-04 1.1e-04
						Total Risk =	5.0e-04

Scenario Time frame: Current/Future
Receptor Population: Site Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	Tetrachloroethene Trichloroethene	2.1e-04 1.1e-05	– –	– –	2.1e-04 1.1e-05
						Total Risk =	2.0e-04

Scenario Time frame: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation *	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	Tetrachloroethene Trichloroethene	5.7e-04 3.0e-05	8.2e-05 3.7e-05	4.2e-05 8.0e-07	6.9e-04 4.0e-04
						Total Risk =	1.0e-03

Scenario Time frame: Future
Receptor Population: On-Site Resident

Receptor Age: Child (0-6 yrs)							
Medium	**Exposure Medium**	**Exposure Point**	**Chemical of Concern**	**Carcinogenic Risk**			
				Ingestion	**Inhalation** *	**Dermal**	**Exposure Routes Total**
Groundwater	Groundwater	Tap Water	Tetrachloroethene Trichloroethene	3.3e-04 1.7e-05	1.4e-04 3.2e-04	3.3e-05 6.1e-07	4.6e-04 3.4e-04
						Total Risk =	8.0e-04

Key

- : Route of exposure is not applicable to this medium or was not quantitatively evaluated.
* : The inhalation risk for the future on-Site resident includes both inhalation of vapors while showering and from subsurface vapor intrusion.

Summary of Risk Characterization - Carcinogens

The table presents risk estimates for the significant routes of exposure. These risk estimates are based on a reasonable maximum exposure and were developed by taking into account various conservative assumptions about the frequency and duration of the receptors exposure to soil and groundwater, as well as the toxicity of the COCs.

TABLE 6

Risk Characterization Summary - Non-Carcinogens

Scenario Time frame: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Ground-water	Ground-water	Tap Water	Tetrachloroethene	Liver/Kidney	3.1e-01	2.4e-02	2.3e-02	3.5e-01
			Trichloroethene	Liver/Kidney/ Fetus/CNS	7.2e-01	2.7e-02	1.9e-02	7.6e-01
							Total Receptor Hazard Index =	1.0e+00

Scenario Time frame: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child (0-6 yrs)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Ground-water	Ground-water	Tap Water	Tetrachloroethene	Liver/Kidney	7.2e-01	2.1e-01	7.0e-02	9.9e-01
			Trichloroethene	Liver/Kidney/ Fetus/CNS	1.7e+00	2.3e-01	6.0e-02	2.0e+00
							Total Receptor Hazard Index =	3.0e+00
							Total Liver HI =	3.0e+00
							Total Fetus HI =	2.0e+00
							Total Kidney HI =	3.0e+00
							Total CNS HI =	2.0e+00

Scenario Time frame: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation*	Dermal	Exposure Routes Total
Ground-water	Ground-water	Tap Water	Tetrachloroethene	Liver/Kidney	3.1e-01	6.8e-02	2.3e-02	4.0e-01
			Trichloroethene	Liver/Kidney/ Fetus/CNS	7.2e-01	2.4e-01	1.9e-02	9.7e-01
							Total Receptor Hazard Index =	1.0e+00
							Total Liver HI =	1.0e+00
							Total Fetus HI =	1.0e+00
							Total Kidney HI =	1.0e+00
							Total CNS HI =	1.0e+00

Scenario Time frame: Future Receptor Population: On-Site Resident Receptor Age: Child (0-6 yrs)								
Medium	**Exposure Medium**	**Exposure Point**	**Chemical of Concern**	**Primary Target Organ**	**Non-Carcinogenic Hazard Quotient**			
					Ingestion	**Inhalation***	**Dermal**	**Exposure Routes Total**
Ground-water	Ground-water	Tap Water	Tetrachloroethene	Liver/Kidney	7.2e-01	3.3e-01	7.0e-02	1.1e+00
			Trichloroethene	Liver/Kidney/ Fetus/CNS	1.7e+00	8.2e-01	6.0e-02	2.6e+00
							Total Receptor Hazard Index =	4.0e+00
							Total Liver HI =	4.0e+00
							Total Fetus HI =	3.0e+00
							Total Kidney HI =	4.0e+00
							Total CNS HI =	3.0e+00

Key

CNS: Central Nervous System

* : The inhalation hazard for the future on-Site resident includes both inhalation of vapors while showering and from subsurface vapor intrusion.

Summary of Risk Characterization - Non-Carcinogens

The table presents hazard quotients (HQs) for each route of exposure and the hazard index (sum of hazard quotients) for all routes of exposure. The Risk Assessment Guidance for Superfund states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse non-cancer effects.

Table 2-1
Potential Chemical-Specific ARARs
Iceland Coin Laundry Site
Vineland, New Jersey

Act/Authority	Criteria/Issues	Citation	Status	Brief Description	FS Consideration
Federal Safe Drinking Water Act	National Primary Drinking Water Standards- Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs)	40 CFR 141	Relevant and Appropriate	Establishes health- and technology-based standards for public drinking water systems. Also establishes drinking water quality goals set at levels at which no adverse health effects are anticipated, with an adequate margin of safety.	The MCLs will be considered in developing preliminary remediation goals.
State of New Jersey Statutes and Rules	Drinking Water Standards- Maximum Contaminant Levels (MCLs)	N.J.A.C. 7:10 Safe Drinking Water Act	Relevant and Appropriate	Establishes MCLs that are generally equal to or more stringent then Safe Drinking Water Act (SDWA) MCLs.	The MCLs will be considered in developing preliminary remediation goals.
State of New Jersey Statutes and Rules	Groundwater Quality Standards	N.J.A.C. 7:9C Groundwater Quality Standards	Applicable	Establishes standards for the protection of groundwater quality. Used as the primary basis for setting numerical criteria for groundwater cleanups.	The promulgated values are compared to the maximum levels to determine the magnitude of contamination.

Table 2-2
Potential Location-Specific ARARs
Iceland Coin Laundry Site
Vineland, New Jersey

Act/Authority	Criteria/Issues	Citation	Status	Brief Description	FS Consideration
Federal	Statement on Procedures on Floodplain Management and Wetlands protection	40 CFR 6 Appendix A	Applicable	This Statement of Procedures sets forth Agency policy and guidance for carrying out the provisions of Executive Orders 11988 and 11990.	Alternatives will take into consideration floodplain management and wetland protection.
Federal	Policy on Floodplains and Wetland Assessments for CERCLA Actions	OSWER Directive 9280.0-12, 1985	To be considered	Superfund actions must meet the substantive requirements of E.O. 11988, E.O. 11990, and 40 CFR part 6, Appendix A.	Alternatives will take into consideration floodplain management and wetland protection.
Federal (Non-Regulatory)	Floodplains Executive Order	Executive Order 11988	To be considered	Federal agencies are required to reduce the risk of flood loss, to minimize impact of floods, and to restore and preserve the natural and beneficial values of floodplains.	The potential effects of any action will be evaluated to ensure that the planning and decision making reflect consideration of flood hazards and floodplains management, including restoration and preservation of natural undeveloped floodplains.

Table 2-2 (continued)
Potential Location-Specific ARARs
Iceland Coin Laundry Site
Vineland, New Jersey

Act/Authority	Criteria/Issues	Citation	Status	Brief Description	FS Consideration
Federal (Non-Regulatory)	Wetlands Executive Order	Executive Order 11990	To be considered	Federal agencies are required to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance natural and beneficial values of wetlands.	Remedial alternatives that involve construction must include all practicable means of minimizing harm to wetlands. Wetlands protection considerations must be incorporated into the planning and decision making of remedial alternatives.
Federal Endangered Species Act	Protection of threatened and endangered species	16 USC 1531 et seq. 40 CFR 400	Applicable	Statute regarding the special preservation and protection of threatened and endangered species of fish and wildlife.	The potential effects of any action will be evaluated to ensure that any endangered or threatened species would not be affected.
Federal Fish and Wildlife Conservation Act	Statement of Procedures for non-game fish and wildlife protection	16 usc 2901 et seq.	Applicable	Establishes EPA policy and guidance for promoting the conservation of non-game fish and wildlife and their habitats. Action must protect fish or wildlife.	Applicable for construction activities with may potentially impact non-game fish or wildlife and their habitats.
Federal National Historic Preservation Act	Procedures for preservation of historical and archeological data	16 USC 469 et. Seq.; 40 CFR 6301(c)	Applicable	Establishes procedures to provide for preservation of historical and archeological data that might be destroyed through alteration of terrain as a result of a federal construction project or a federally licensed activity or program.	Cultural resources survey would be performed to assess if historical or archeological data could potentially be encountered during remediation.

Table 2-2 (continued)
Potential Location-Specific ARARs
Iceland Coin Laundry Site
Vineland, New Jersey

Act/Authority	Criteria/Issues	Citation	Status	Brief Description	FS Consideration
New Jersey Freshwater Wetland Protection Act	Freshwater Wetland Protection Act rules	N.J.A.C.7:7A	Applicable	Establish requirements for the protection of freshwater wetlands. Requires permits for construction within wetland areas.	Applicable for construction activities performed in the vicinity of a wetland or waterway.
New Jersey Hazard Area Control Act	Floodplain Use and Limitations	N.J.A.C. 7:13	Applicable	State standards for activities within floodplains	Applicable for construction activities performed in the vicinity of a wetland or waterway.
New Jersey Endangered and Non-game Species Conservation Act	Protection of threatened and endangered species	N.J.S.A. 23:2A-1 to 13	Applicable	Standard for the protection of endangered, non-game and exotic wildlife	The potential effects of any action will be evaluated to ensure that any endangered or threatened species would not be affected.

Table 2-3
Potential Action-Specific ARARs
Iceland Coin Laundry Site
Vineland, New Jersey

Act/Authority	Criteria/Issues	Citation	Status	Brief Description	FS Consideration
General Remediation					
Federal Occupational Safety and Health Act	Worker Protection	29 CFR 1904	Applicable	Establishes requirements for recording and reporting occupational injuries and illnesses.	Under 40 CFR 300.38, requirements of OSHA apply to all activcities which fall under jurisdiction of the National Contingency Plan.
Federal Occupational Safety and Health Act	Worker Protection	29 CFR 1910	Applicable	Specifies minimum requirements to maintain worker health and safety during hazardous waste operations. Includes training requirements and construction safety requirements.	Under 40 CFR 300.38, requirements of OSHA apply to all activities which fall under jurisdiction of the National Contingency Plan.
Federal Occupational Safety and Health Act	Worker Protection	29 CFR 1926	Applicable	Specifies safety and health regulations for construction.	Under 40 CFR 300.38, requirements of OSHA apply to all activities which fall under jurisdiction of the National Contingency Plan.
Federal Resource Conservation and Recovery Act	Identification and listing of hazardous wastes	40 CFR 261	Applicable	Describes methods for identifying hazardous wastes and lists known hazardous wastes	applicable to the identification of hazardous wastes that are generated, treated, stored, or disposed during remedial activities.
Federal Resource Conservation and Recovery Act	Standards for owners/operators of permitted hazardous waste facilities	40 CFR 264.10 - 164.18	Relevant and Appropriate	Lists general facility requirements including general waste analysis, security measures, inspections, and training requirements	Treatment facility will be designed, constructed, and operated in accordance with this requirement. All workers will be properly trained.

Table 2-3 (continued)
Potential Action-specific ARARs
Iceland Coin Laundry Site
Vineland, New Jersey

Act/Authority	Criteria/Issues	Citation	Status	Brief Description	FS Consideration
General Remediation (Continued)					
New Jersey Statutes and Rules	Technical Requirements for Site Remediation	N.J.A.C. 7:26E	Applicable	Establishes minimum regulatory requirements for investigation and remediation of contaminated sites in New Jersey.	Operation of the treatment facility must comply with the regulation.
New Jersey Noise Control Act of 1971	Noise Control	N.J.A.C. 7:29	Applicable	Limits the noise generated from any industrial, commercial, public service or community service facility.	Limits the noise that can be generated during remedial activities.
New Jersey Uniform Construction Code	New Construction and Renovations	N.J.A.C. 5:23	Applicable	Establishes standards for all new construction and renovation.	This may be an ARAR to the extent that new construction fall within the standards.
New Jersey Soil Erosion and Sediment Control	Soil Erosion and Sediment Control Standards	N.J.A.C. 16:25A	Applicable	Requires erosion mitigation during construction activities.	Requires erosion control consideration during construction activities.

Table 2-3 (continued)
Potential Action-specific ARARs
Iceland Coin Laundry Site
Vineland, New Jersey

Act/Authority	Criteria/Issues	Citation	Status	Brief Description	FS Consideration
Discharge of Groundwater or Wastewater					
Federal Clean Water Act	National Pollution Discharge Elimination System (NPDES)	40 CFR 100, 122 and 125	Relevant and Appropriate	Issues permits for discharge into navigable waters. Establishes criteria and standards for imposing treatment requirements on permits.	Disposal of treated groundwater to the surface water. NPDES permit may not be required since New Jersey has an approved State Pollutant Discharge Elimination System (SPDES) permit program, the New Jersey State Pollutant Discharge Elimination System (NJPDES).
Federal Clean Water Act	Effluent Guidelines and Standards for the Point Source Category	40 CFR 414	Relevant and Appropriate	Requires specific effluent characteristics for discharge under NPDES permits.	Disposal of treated groundwater to the surface water. NPDES permit may not be required since New Jersey has an approved SPDES permit program (NJPDES).
Federal Clean Water Act	Ambient Water Quality Criteria	40 CFR 131.36	Relevant and Appropriate	Establishes criteria for surface water quality based on toxicity to aquatic organisms and human health.	Disposal of treated groundwater to the surface water. Federally approved New Jersey groundwater and surface water standards take precedence over the Federal criteria.
Federal Safe Drinking Water Act	Underground Injection Control Program	40 CFR 144 and 146	Relevant and Appropriate	Establishes performance standards, well requirements, and permitting requirements for groundwater reinjection wells.	Must comply with requirements for injection of treated groundwater.
New Jersey Statutes and Rules	The New Jersey Pollutant Discharge Elimination System	N.J.A.C. 7:14A	Applicable	Establishes standards for discharge of pollutants to surface water and groundwater.	New Jersey has a state approved program. Disposal of treated groundwater to surface water will require a NJPDES permit.

Table 2-3 (continued)
Potential Action-specific ARARs
Iceland Coin Laundry Site
Vineland, New Jersey

Act/Authority	Criteria/Issues	Citation	Status	Brief Description	FS Consideration
Off-gas Management					
Federal Clean Air Act	National Ambient Air Quality Standards	40 CFR 50	Relevant and Appropriate	Provides standards for ambient air quality that are protective of human health.	Need to meet air quality standards when discharging off-gas.
Federal Clean Air Act	Standards of Performance for New Stationary Sources	40 CFR 60	Relevant and Appropriate	Provides emission requirements for new stationary sources.	Need to meet requirements when discharging off-gas.
Federal Clean Air Act	National Emission Standards for Hazardous Air Pollutants	40 CFR 61	Relevant and Appropriate	Provides emission standards for 8 contaminants including benzene and vinyl chloride. Identifies 25 additional contaminants as having serious health effects, but does not provide emission standards for these contaminants.	Need to meet requirements when discharging off-gas.
Federal Directive	Control of Air Emissions from Superfund Air Strippers	OSWER Directive 9355.0-28	Relevant and Appropriate	Provides guidance on the use and controls for Superfund site air strippers as well as other vapor extraction techniques in attainment and non-attainment areas for ozone.	Applicable to remediation alternatives which involve air stripping and vapor extraction process.
New Jersey Air Pollution Control Act	Air Permits and Certificates	N.J.A.C. 7:27-22	Applicable	Describes requirements and procedures for obtaining air permits and certificates.	Applicable to remediation alternatives which involve discharge of vapor.
New Jersey Air Pollution Control Act	Standards for Hazardous Air Pollutants	N.J.A.C. 7:27	Applicable	Rules that govern the emission of and such activities that result in the introduction of contaminants into the ambient atmosphere.	Need to meet requirements when discharging off-gas.

Table 2-3 (continued)
Potential Action-specific ARARs
Iceland Coin Laundry Site
Vineland, New Jersey

Act/Authority	Criteria/Issues	Citation	Status	Brief Description	FS Consideration
Waste Transportation and Disposal					
Federal Resource Conservation and Recovery Act	Standards applicable to Transporters of Hazardous Waste	40 CFR 263	Applicable	Establishes standards for hazardous waste transporters	Contractor transport hazardous material from the site will comply with this regulation
Department of Transportation Rules	Rules for transportation of hazardous materials	49 CFR 107, 171, 177 to 179	Applicable	Outlines procedures for the packaging, labeling, manifesting, and transporting hazardous materials	Contractor transport hazardous material from the site will comply with this regulation
New Jersey Department of Transportation	Transportation of hazardous materials	N.J.A.C. 16:49	Applicable	Regulates shipping and transportation of hazardous material	Contractor transport hazardous material from the site will comply with the requirements

APPENDIX III

ADMINISTRATIVE RECORD INDEX

ICELAND COIN LAUNDRY SITE
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

3.0 REMEDIAL INVESTIGATION

3.2 Sampling and Analysis Data/Chain of Custody Forms

P. 300001- 300182 Report: Technical Memorandum, Iceland Coin Laundry Site, Remedial Investigation/Feasibility Study, Vineland. Cumberland County, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, October 4, 2002.

P. 300183 - 300705 Report: Data Summary Technical Memorandum, Iceland Coin Laundry Superfund Site, Remedial Investigation/Feasibility Study, Vineland. Cumberland County, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, April 15, 2004. (Attachment: Letter to Mr. Matthew Westgate, Remedial Project Manager, U.S. Environmental Protection Agency, from Ms. Jeanne Litwin, REM, CDM Federal Programs Corporation, April 15, 2004.)

3.3 Work Plans

P. 300706 - 300835 Report: Final Work Plan, Volume I, Iceland Coin Laundry Site, Remedial Investigation/Feasibility Study, Cumberland County, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, April 9, 2001.

P. 300836 - 300888 Report: Draft Health and Safety Plan (HASP) Iceland Coin Laundry Site, Remedial Investigation/Feasibility Study, Cumberland County, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, May 1, 2001.

P. 300889 - 301027 Report: Revised Final Work Plan, Volume I, Iceland Coin Laundry Site, Remedial Investigation/Feasibility Study, Cumberland County, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, January 14, 2002

P. 301028 - 301482 Report: Final Quality Assurance Project Plan, Iceland Coin Laundry Site, Remedial Investigation/Feasibility Study, Vineland, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, April 15, 2002.

P.	301483 - 301557	Report: Draft Quality Assurance Project Plan Addendum, Iceland Coin Laundry Site, Remedial Investigation/Feasibility Study, Vineland, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, December 6, 2002.

3.4 Remedial Investigation Reports

P.	301558 - 301624	Report: Iceland Coin Laundry Superfund. Site, City of Vineland, Cumberland County, New Jersey, Stage 1A Cultural Resources Survey, prepared by Mr. Patrick J. Heaton, RPA, Joel I. Klein, Ph. D., RPA, Mr. Douglas C. McVarish, John Milner Associates, Inc., prepared for CDM Federal Programs Corporation and the United States Environmental Protection Agency (Region II), August 2002.
P.	301625 - 301743	Report: Pathway Analysis Report, Iceland Coin Laundry Superfund Site, Remedial Investigation/Feasibility Study, Vineland, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, April 30, 2004.
P.	301744 - 302486	Report: Final Remedial Investigation Report Iceland Coin Laundry Site, Remedial Investigation/Feasibility Study, Vineland, Cumberland County, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, February 1, 2006

4.0 FEASIBILITY STUDY

4.3 Feasibility Study Reports

P.	400001 - 400054	Report: Draft Feasibility Study Technical Memorandum: Screening of Remedial Technologies, Iceland Coin Laundry Site, Remedial Investigation/Feasibility Study, Vineland, Cumberland County. New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, December 16, 2005.
P.	400055 - 400225	Report: Final Feasibility Study Report, Iceland Coin Laundry Site, Remedial Investigation/Feasibility Study, Vineland. Cumberland County, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, July 14, 2006.

8.0 HEALTH ASSESSMENTS

8.1 ATSDR Health Assessments

P. 800001 - 800255 Report: Final Baseline Human Health Risk Assessment, Iceland Coin Laundry Superfund Site. Remedial Investigation/Feasibility Study, Vineland, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. Environmental Protection Agency, January 27, 2006

P. 800256 - 800295 Report: Public Health Assessment for Iceland Coin Laundry Site (a/k/a Iceland Coin Laundry Area Groundwater Plume), Vineland, Cumberland County, New Jersey, prepared by U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, December 20, 2001.

10.0 PUBLIC PARTICIPATION

10.9 Proposed Plan

P. 10.00001- 10.00011 Superfund Program Proposed Plan, Iceland Coin Laundry Superfund Site, Vineland, New Jersey, prepared by U.S. EPA, Region 2, July 2006.

APPENDIX IV

NJDEP CONCURRENCE LETTER

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JON S. CORZINE
Governor

LISA P. JACKSON
Commissioner

Mr. George Pavlou, Director
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
Region II
290 Broadway
New York, NY 10007-1866

SEP 27 2006

Re: Iceland Coin Laundry Superfund Site
Record of Decision

Dear Mr. Pavlou:

The New Jersey Department of Environmental Protection (NJDEP) has reviewed the "Record of Decision, Iceland Coin Laundry Superfund Site, 1888 South Delsea Drive, Vineland, Cumberland County, New Jersey" prepared by the U.S. Environmental Protection Agency (USEPA) Region II in September 2006 and concurs with its selected remedy to address groundwater contaminated with tetrachloroethene and associated breakdown products at the site. The selected remedy for the site is in-situ treatment of the contaminant plume.

The major components of the selected remedy include:

- In-situ biological treatment (enhanced anaerobic bioremediation) for cleanup of the groundwater at the Iceland Coin Laundry Site and, if necessary, for soils at the facility area;
- Institutional controls which would include a Classification Exception Area and well drilling restrictions;
- Long-term groundwater monitoring; and,
- Connection of any residences or businesses, if determined necessary, to a public water supply that are impacted by the site plume.

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NJDEP appreciates the opportunity to participate in the decision making process to select an appropriate remedy and is looking forward to future cooperation with USEPA to implement the selected remedy.

If you have any questions, please call Edward Putnam, Assistant Director of the Remedial Response Element, at 609-984-3078.

Sincerely,

Irene Kropp, Assistant Commissioner
Site Remediation and Waste Management Program

C: Edward Putnam, Assistant Director, Remedial Response Element, NJDEP
Carole Petersen, Chief, New Jersey Remediation Branch, USEPA

APPENDIX V

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY
Iceland Coin Laundry Superfund Site

INTRODUCTION

This Responsiveness Summary provides a summary of the public's comments and concerns regarding the Proposed Plan for the Iceland Coin and Laundry Site. At the time of the public comment period, EPA proposed a preferred alternative for contaminated groundwater at the Site. All comments summarized in this document have been considered in EPA's final decision for the selection of a remedial alternative for the Site.

This Responsiveness Summary is divided into the following sections:

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS: This section provides the history of community involvement and interests regarding the Site.

II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS, AND RESPONSES: This section contains summaries of oral comments received by EPA at the public meeting, EPA's responses to these comments. No written comments were received during the public comment period.

III. ATTACHMENTS: The last section of this Responsiveness Summary provides attachments which document public participation in the remedy-selection process for-this Site. They are as follows:

Attachment A: the Proposed Plan that was distributed to the public for review and comment;

Attachment B: the public notice that appeared in the Vineland Daily Journal, and

Attachment C: the transcript of the public meeting.

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

The ROD outlined the remedy to address PCE and TCE groundwater contamination extending approximately 4,700 feet to the southwest of the facility. There were approximately 65 residences in this area that were sampled in 1990 and 1991. In late 1991, Point-of-Entry treatment systems were installed in 16 of the residences until the City of Vineland extended the water main to the area in July 1994. Ninety-one homes were connected by early 1996. After that, community concerns shifted from the safety of their drinking water to interest in the extent of contamination and the long-term cleanup.

On August 5, 2006, EPA released the Proposed Plan and supporting documentation for the groundwater remedy to the public for comment. EPA made documents available to the public in the Administrative Repositories maintained at the EPA Records Center, 18th floor, 290 Broadway, New York, N.Y. and the City of Vineland Health Department, 640 East Wood Street, City of Vineland, New Jersey. EPA published a notice of availability for the documents in the Vineland's *The Daily Journal* and opened a public comment period from August 5, 2006 to September 5, 2006. On August 10ch, EPA and a representative from NJDEP conducted a public meeting in the Council Chambers room of the Vineland City Hall to inform local officials and interested citizens about the Superfund process, to review the planned remedial activities at the Site, and to respond to any questions from residents and other attendees. No comments were received during the public meeting or the 30-day public comment period.

II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS, AND RESPONSES

PART 1: Verbal Comments

This section summarizes comments received from the public during the public comment period, and EPA's responses.

On August 5, 2006, EPA released the Proposed Plan and supporting documentation for the groundwater remedy to the public for comment. On August 10, 2006, EPA and a representative from NJDEP conducted a public meeting in the Council Chambers room of the Vineland City Hall to inform local officials and interested citizens about the Superfund process, to review the planned remedial activities at the Site, and to respond to any questions from residents and other attendees. No comments were received during the public meeting or the 30-day public comment period.

No written comments were received during the comment period.

PART 2: Written Comments

Comments and concerns that were not addressed at the public meeting were accepted in writing during the public comment period. No written comments were received during the comment period.

ATTACHMENT A

PROPOSED PLAN

Superfund Program
Proposed Plan

U.S. Environmental Protection Agency, Region II

Iceland Coin Laundry Superfund Site
Vineland, New Jersey

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan describes the remedial alternatives that the U.S. Environmental Protection Agency (EPA) considered to remediate the contaminated groundwater plume at the Iceland Coin Laundry Superfund Site (the Site) located in Vineland, N.J. and identifies EPA's preferred remedy with the rationale for this preference. The Preferred Alternative calls for applying in-situ bioremediation technology within the plume to restore the groundwater to levels that meet Federal and State standards. This document is issued by EPA, the lead agency for Site activities, and the New Jersey Department of Environmental Protection (NJDEP), the support agency for this project. EPA, in consultation with NJDEP, will select a final remedy for the Site after reviewing and considering all information submitted during the 30-day public comment period. EPA, in consultation with NJDEP, may modify the Preferred Alternative or select another response action presented in this Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan. EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Sections 300.430(f) and 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The nature and extent of the contamination at the Site and the alternatives summarized in this Proposed Plan are described in the February 2006 Remedial Investigation (RI) Report and the July 2006 Feasibility Study (FS) Report, respectively.

SITE BACKGROUND

Site Description

The Site is located at the former Iceland Coin Laundry and Dry Cleaning facility, at 1888 South Delsea Drive, in the City of Vineland, Cumberland County, New Jersey. (See Figure 1). The study area, which covers approximately 15 acres, consists of the former Iceland Coin Laundry and Dry Cleaning facility and the associated contaminated groundwater plume to the south/southwest of the former facility. To the west of the Site is a mobile

MARK YOUR CALENDAR

August 5, 2006 - September 5, 2006: Public comment period on the Proposed Plan. EPA will accept written comments on the Proposed Plan during the public comment period. Written comments on this Proposed Plan should be addressed to:

Matthew Westgate
Remedial Project Manager
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007-1866

Phone: (212) 637-4422
Internet: westgate.matthew@epa.gov

August 10, 2006 at 7:00 P.M.:

EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Feasibility Study (FS). Oral and written comments will also be accepted at the meeting. The public meeting will be held at:

Vineland City Hall
7th and Wood Streets,
Council Chambers Conference Room
Vineland, New Jersey

The administrative record file, which contains the information upon which the selection of the response action will be based, is available at the following locations:

Vineland City Health Department
640 East Wood Street
Vineland, NJ 08362
(856) 794-4000
Hours: Mon - Fri 9 AM - 5 PM

USEPA-Region II
Superfund Records Center
290 Broadway, 18th Floor
New York, NY 10007-1866
(212) 637-4308
Hours: Monday-Friday, 9:00 AM - 5:00 PM

home park; to the south is a home; adjacent to the north is a used auto lot; and to the east is vacant property once used as an automotive repair shop, and a New Jersey Department of Transportation (NJDOT) facility.

Site History

The former Iceland Coin Laundry and Dry Cleaning facility operated from approximately 1953 until at least 1971. Limited information is available regarding waste disposal areas and systems. Four coin-operated dry cleaning units of eight-pound capacity were present in the laundromat, each using four gallons of tetrachloroethene (PCE). It is not known how often the PCE was refilled. No waste/sludge was reportedly generated, since the PCE evaporated. The lint filters from the dry cleaning units were allegedly burned outside in the back of the building.

Two 14-foot deep seepage pits/cesspools with a 40-foot drain field between the pits were used beginning in 1962. According to the former owner, the cesspools were located in the front of the building. Septic system design drawings from 1963 indicate effluent from 10 washers discharged to a septic tank, continued through a 100-foot field drain, and terminated at a 4-foot diameter receptor vessel. The property was connected to the sanitary sewer in 1986.

On September 3, 1987, the City of Vineland Health Department collected a potable well sample from 1276 Garrison Road, in which TCE (trichloroethane) was detected. A second sample was collected in August 1990, in which both TCE and PCE were detected. A third sample in October 1990 confirmed the presence of TCE and PCE. The levels in this well exceeded both the State and Federal maximum contaminant levels (MCLs). Based on the analytical results, the homeowner was advised to discontinue using the well water for cooking and drinking purposes.

From December 1990 to September 1991, the Vineland Health Department collected potable well samples from 55 residences located in the area of Garrison Road and West Korff Drive. Analytical results from these sampling activities revealed levels of VOCs (volatile organic compounds) and mercury above Federal and State MCLs in 21 of the 55 water well samples. The primary contaminants were PCE, TCE, 1,2-dichloroethene (1,2-DCE), and mercury. The well with the detected concentration of mercury was subsequently resampled and mercury was not detected.

In November 1991, as a result of the private well contamination, NJDEP installed point-of-entry treatment (POET) units at the affected residences as a temporary remedial measure. In July 1994, the Vineland City Water Department extended public water hook-ups to the affected residences. In December 2003, four residential wells were still in use; three were used for irrigation only and one was still used for drinking water. The owner refused to be connected to public water and had a Point of Entry Treatment system installed.

The Site was placed on the National Priorities List (NPL) in October 1999. EPA is the lead agency for the Site and has primary responsibility for conducting remedial actions.

Site Geology/Hydrogeology

The Site is located in the southern part of the New Jersey Coastal Plain and is drained by tributaries of the Maurice River. The Coastal Plain may be characterized as a sequence of unconsolidated sands, silts, and clays that dip and thicken to the southeast. The project area is underlain by the Cohansey Sand, with the overlying Bridgeton Formation present locally. These units, as well as the overlying soils, are typically sandy, highly permeable, and low in organic matter and calcium carbonates. Slopes in the area are low, with surface elevations between 60 and 100 feet above mean seal level (amsl). The Site is relatively flat; the elevation is just under 70 feet amsl at the former Iceland Coin Laundry and Dry Cleaning facility and rises to just above 100 feet amsl south of the residential wells that were sampled in the early 1990s.

The principal aquifers of the New Jersey Coastal Plain are the Kirkwood-Cohansey aquifer system, the Atlantic City 800-foot sand of the Kirkwood Formation, the Wenonah-Mount Laurel aquifer, the Englishtown aquifer system, and the Potomac-Raritan-Magothy aquifer system. There are also many minor water-bearing zones locally

RESULTS OF THE REMEDIAL INVESTIGATION

EPA performed a remedial investigation, which included a source area investigation and a groundwater investigation. Both investigations were designed as a phased approach, using both screening-level and definitive-level data to efficiently locate areas of potential contamination. Each phase was designed to refine locations for subsequent phases of the investigation from potential on-site sources in Site soils. The source area investigation focused on the former Iceland Coin Laundry property, and included a surface geophysical survey to locate the septic tanks, cesspools, drainfields, and any other on-site source areas; subsurface soil screening and characterization; and surface and subsurface soil sampling. The groundwater plume focused on the area downgradient (southwest of) the former facility, and included groundwater characterization and screening, monitoring well installation and sampling, and residential well sampling. The objective of the groundwater investigation was to characterize the vertical and horizontal extent of contamination at and downgradient of the Site.

Only minor detections of contaminants were found in the soil samples. PCE was detected in subsurface soils at 34 micrograms per kilogram, at a depth of 1-3 feet below ground surface (bgs) in one soil boring located near the former burn pit area. PCE was detected in five surface soil samples (SS-01, SS-06, SS-08, SS-07, and SS-09), at levels below screening criteria. Polycylclic aromatic hydrocarbons (PAHs) were detected in three surface soil samples (SS-01, SS-02, and SS-10), with some levels above screening criteria.

The results of the source area investigation indicate that contaminant sources likely do not remain within the unsaturated soil zone, and that only residual levels of contamination remain in on-site soils.

EPA installed a total of 27 shallow, intermediate, and deep monitoring wells in areas upgradient, on, and downgradient of the former facility, to obtain data to characterize the nature and extent of the groundwater contaminant plume. Two rounds of monitoring well samples were collected. TCE and PCE were detected in five well clusters, situated along the axis of the plume (MW-2, MW-3, MW-4, MW-7, and MW-11 in attached figure), with some levels exceeding EPA and NJDEP's regulatory standards . PCE was detected at a maximum level of 260 parts per billion (ppb) in round 1 and 290 ppb in round 2. TCE was detected at 13 ppb and 17 ppb, respectively. Within these well clusters, exceedances were detected in shallow wells closer to the source area and in intermediate wells further downgradient. No exceedances were detected in wells completed in the deep zone of the aquifer. The VOC plume currently extends over 4,000 feet south/southwest from the Site, and is approximately 900 feet in width.

EPA collected two rounds of water samples from two residential wells. PCE was detected in one of these residential wells located on South Orchard Road, near the northern boundary of the plume at a level of 4.9 ppb. The well was converted to irrigation use only during the RI/FS.

Overall, the subsurface distribution of PCE and TCE indicates that the core of the plume has migrated vertically downward and horizontally to the south/southwest, and that residual contamination remains localized in and around the former facility. The farthest downgradient location in which PCE was detected was MW-11, located approximately 4,700 feet downgradient of the Facility, at a concentration of 14 micrograms per liter (μg/L).

Figure 2 shows the PCE plume. The contours delineate the plume areas in which PCE levels exceed 1 ug/L, 10 ug/L, and 100 ug/L.

SCOPE AND ROLE OF ACTION

This Proposed Plan constitutes the final response action for the Site. The primary objectives of this action are to reduce and minimize further downgradient migration of contaminants in groundwater, restore groundwater quality in the area of the contaminant plume, and remove any residual contamination adjacent to the Facility, if found.

The proposed remedy will use in-situ bioremediation technology within the groundwater contamination plume and potentially at the localized contamination area adjacent to the Facility. The planned action is necessary to minimize any potential future health and environmental impacts.

SUMMARY OF SITE RISKS

As part of the RI/FS, a baseline risk assessment was conducted to estimate the current and future effects of contaminants on human health and the environment. The Site is currently an active commercial establishment, with adjacent residential properties, and it is likely that the future land use will remain the same. Additionally, groundwater at the Site is designated by the State as a potable water supply, meaning it could be available for drinking in the future. The baseline human health risk assessment focused on health effects for a variety of possible receptors, including current on-site workers and possible future on-site residents (adults and children) exposed to soils by ingestion of, inhalation of, and dermal contact with contaminants; and current on-site workers, current off-site residents (adults and children), and possible future on-site residents (adults and children) exposed to groundwater through ingestion and inhalation of volatile contaminants. More detail about the exposure pathways and estimates of risk can be found in the *Final Human Health Risk Assessment* for the Site. It is the lead agency's current judgment that the Preferred Alternative identified in this Proposed Plan is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances from the Site.

Human Health Risks

EPA's statistical analysis of soil sampling data indicates that all risks and hazards to all populations were within the acceptable levels of risk. For further discussion of risks, please see the text box, "What is risk and how is it calculated?"

EPA's statistical analysis of groundwater sampling data indicates that probable exposure concentrations of PCE and TCE are 112 ug/l and 8 ug/l, respectively. These concentrations are associated with excess lifetime cancer risks and noncancer hazard quotients of 7 x 10-4 and 1.1 for the off-site resident adult, 5 x 10-4 and 3 for the off-site resident child, 2 x 10-4 and 0.4 for the on-site worker, 1 x 10-3 and 1 for the possible future on-site resident adult, and 8 x 10-4 and 3 for the possible future on-site resident child. These concentrations are also in excess of the New Jersey MCL of 1 ug/l for both PCE and TCE.

These risk and hazard levels indicate that there is significant potential risk to populations from direct exposure to groundwater. These risk estimates are based on current reasonable maximum exposure scenarios and were developed by taking into account various conservative assumptions about the frequency and duration of an individual's exposure to the groundwater, as well as the toxicity of PCE and TCE.

A comparison of concentrations of PCE and TCE in groundwater to conservative health-based screening values indicates that there is potential for vapor intrusion into on-site buildings from contaminated groundwater. Therefore, additional investigation of the vapor intrusion pathway at the Site is necessary and will occur during the remedial design phase.

Ecological Risk Assessment

EPA conducted an ecological risk assessment at the Site as part of the RI. This assessment concluded that there were no ecological receptors or habitat identified at the Site. As a result, a Screening Level Ecological Risk Assessment (SLERA) was not required.

REMEDIAL ACTION OBJECTIVES

Remedial Action objectives (RAOs) are specific goals to protect human health and the environment. Section 121(d) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA) requires that, at a minimum, any remedial action implemented at a site achieve overall protection of human health and the environment and comply with Applicable or Relevant and Appropriate Regulations (ARARs). ARARs at a site may include both Federal and State regulations. Other criteria that do not meet the definition of an ARAR, but may also be considered when developing cleanup alternatives are known as to-be-considered criteria (TBCs). Before developing remedial action (cleanup) alternatives for a Superfund site, EPA establishes both Remedial Action Objectives (RAOs) and Preliminary Remedial Goals (PRGs). RAOs are media-specific goals for protecting human health and the environment. PRGs are chemical-specific cleanup goals, which are used as benchmarks in the screening, development and evaluation of cleanup alternatives. RAOs and PRGs are based on the ARARs and TBCs that have been identified as applicable to the Site.

The RAOs developed for groundwater at the Iceland Coin Laundry Site are listed below.

- Prevent ingestion of, dermal contact with, and inhalation of chlorinated VOC contaminated groundwater having concentrations in excess of PRGs and,
- Restore the groundwater aquifer system to the PRGs within a reasonable time frame

The PRGs were selected based on federal or state promulgated regulations, including:

- PCE 1 µg/L
- TCE 1 µg/L
- cis-1,2-DCE 70 µg/L

These PRGs were then used as a benchmark in technology screening, remedial action alternative development, and detailed evaluation of alternatives in the FS report. The retained remedial technologies were assembled into the following remedial action alternatives.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA requires that each selected site remedy be protective of human health and the environment, be cost effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

The "construction time" for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy. It generally takes 1-2 years for planning, design and procurement prior to subsequent construction of the remedial alternative.

Alternative 1 -- No Action

Estimated Capital Cost:	$0
Estimated Annual O&M Cost:	$0
Estimated Present Worth:	$0
Estimated Construction Time:	None

The no action alternative is required by the National Contingency Plan (NCP) to be carried through the screening process, as it serves as a baseline for comparison of the Site remedial action alternatives. Under this alternative, no action would be taken to remediate the contaminated groundwater at the Site. The alternative would not involve any monitoring of groundwater at the Site or institutional controls.

Groundwater would continue to migrate and the contamination would continue to attenuate, mainly through dilution and dispersion processes. This alternative does not reduce the exposure of receptors to Site contaminants. There are no capital or operation and maintenance (O&M) costs associated with this alternative.

Because this alternative would result in hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure of groundwater, EPA would review such action at least every five years.

Alternative 2 -- Institutional Controls and Long-term Monitoring

Estimated Capital Cost:	$38,700
Estimated Annual O&M Cost:	$120,000
Estimated Present Worth:	$1,770,000
Estimated Construction Time:	None

Under this alternative, no active action would be taken to remediate contaminated groundwater at the Site. Institutional controls such as the designation of a groundwater Classification Exception Area (CEA) would be implemented to eliminate possible exposure of contaminated groundwater to receptors.

Long-term monitoring involving annual groundwater sampling, 5-year review, and periodic Site investigation would be implemented to monitor and evaluate the migration and changes of contaminant concentrations in groundwater.

Because this alternative would result in hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure of groundwater, EPA would review such action at least every five years.

Alternative 3 -- In-Situ Physical/Chemical Treatment

Estimated Capital Cost:	$5,440,000
Estimated Annual O&M Cost:	$520,000
Estimated Present Worth:	$10,690,000
Estimated Construction Time:	2 years

In-situ treatment consists of treating contaminated groundwater in the subsurface.

For this alternative, groundwater circulation well (GCW) technology would be used to treat the contaminant plume within the 10 µg/L PCE contour line. GCWs integrate the principles of groundwater re-circulation with air stripping or carbon adsorption of VOCs. The GCW would have a deep and a shallow screen zone. Groundwater would be extracted from the deep screen interval of the well, treated by air stripping or carbon adsorption within the well, and then discharged back to the formation

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance exposure from a site in the absence of any actions to control or mitigate these under current and future land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the contaminants of concern (COCs) at the site in various media (*i.e.*, soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil. Factors relating to the exposure assessment include, but are not limited to, the concentrations that people might be exposed to and the potential frequency and duration of exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health effects, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health effects.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions explained in the Exposure Assessment. Current Superfund guidelines for acceptable exposures are an individual lifetime excess cancer risk in the range of 10^{-4} to 10^{-6} (corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk) with 10^{-6} being the point of departure. For non-cancer health effects, a "hazard index" (HI) is calculated. An HI represents the sum of the individual exposure levels compared to their corresponding reference doses. The key concept for a non-cancer HI is that a "threshold level" (measured as an HI of less than 1) exists below which non-cancer health effects are not expected to occur.

at the shallow screen interval. This technology induces vertical flow within the aquifer, and potentially increases the transport of contaminants from low permeable zones into relatively high permeable zones, subsequently increasing the pumping efficiency in comparison to traditional pump-and-treat systems and reduces the remediation time. Since GCW technology is an innovative technology, a pilot study would be required to determine its effectiveness and to develop the design parameters.

Some minor residual soil contamination at the laundry facility property was identified during the RI. If the pre-design investigation confirms residual contamination adjacent to the Facility that requires treatment, in-situ chemical oxidation would be used for this area.

Because this remedy will not result in hazardous substances, pollutants or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure after implementation of the remedy, a statutory five-year review is not required. Although five-year reviews are not required by statute in connection with this alternative, it is EPA's policy to conduct five-year reviews until cleanup goals have been achieved.

Alternative 4 - - In-situ Biological Treatment

Estimated Capital Cost:	$4,920,000
Estimated Annual O&M Cost:	$220,000
Estimated Present Worth:	$7,550,000
Estimated Construction Time:	2 years

This alternative would include applying in-situ bioremediation technology within the 10 µg/L PCE plume area and potentially at the localized contamination area adjacent to the Facility. PCE and TCE could be effectively biodegraded through reductive dechlorination under anaerobic conditions. The RI results indicate that the Site groundwater is under aerobic conditions, which is unsuitable for naturally occurring biodegradation of PCE and TCE. However, amendments such as electron donors and nutrients could be injected into the area and alter the groundwater conditions to promote anaerobic degradation of PCE and TCE to cis-1,2-dichloroethylene (DCE) or methane, ethane and ethene. The breakdown products, cis-1,2-DCE and vinyl chloride (VC), can easily be degraded under existing Site conditions. Generation of VC at concentrations of concern is unlikely. No VC has been detected at the Site during the RI, and cis-1,2-DCE was found at only one location at a concentration higher than the PRG. Bench and pilot-scale study would be required to demonstrate the effectiveness of the technology.

Because this remedy will not result in hazardous substances, pollutants or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure after implementation of the remedy, a statutory five-year review is not required. Although five-year reviews are not required by statute in connection with this alternative, it is EPA's policy to conduct five-year reviews until cleanup goals have been achieved.

Alternative 5 -- Pump-and-Treat

Estimated Capital Cost:	$4,630,000
Estimated Annual O&M Cost:	$560,000
Estimated Present Worth:	$13,110,000
Estimated Construction Time:	2 years

Alternative 5 consists of pumping the groundwater from extraction wells to groundwater treatment systems at a rate of 110 gallons per minute, treating the contaminated groundwater through carbon adsorption or other treatment units, then recharging the treated water through surface or subsurface recharge structures. Pumping may be continuous or pulsed to allow equilibration of contaminants with the groundwater.

If the pre-design investigation confirms that localized contamination is present near the Facility and requires treatment, in-situ chemical oxidation would be applied at this area.

Because this remedy will not result in hazardous substances, pollutants or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure after implementation of the remedy, a statutory five-year review is not required. Although five-year reviews are not required by statute in connection with this alternative, it is EPA's policy to conduct five-year reviews until cleanup goals have been achieved.

EVALUATION OF REMEDIAL ALTERNATIVES

In selecting its preferred alternative, EPA uses nine NCP criteria to evaluate the viable remedial alternatives developed for the site. The detailed analysis consists of an assessment of the individual alternatives against each of the nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

CERCLA requires that each selected site remedy be protective of human health and environment, be cost effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element to the reduction of toxicity, mobility, or volume of the hazardous substances.

COMPARATIVE ANALYSIS

1. Overall Protection of Human Health and the Environment

Alternative 1 would not be protective of human health and the environment. Alternative 2 would be protective of human health through institutional controls but would not be protective of the environment. Alternatives 3, 4 and 5 would be equally protective of human health and the environment and would achieve the RAOs. Alternative 4 is expected to achieve RAOs in the shortest time, followed by Alternative 3. Alternative 5 would require the longest time of operations among these three alternatives.

For Alternative 4, the biodegradation process would be closely monitored to ensure complete breakdown of biodegradation byproducts occurs. Accumulation of byproducts is very rare and not anticipated. If the reductive dechlorination stalls, the treatment can be augmented.

2. Compliance with ARARs

Alternatives 1 and 2 would not attain the ARARs in a reasonable time frame. Alternatives 3, 4, and 5 would attain the ARARs within the treatment areas through active treatment, while the contamination outside of the treatment zones would be attenuated by natural mechanisms. All alternatives would comply with location- and action-specific ARARs.

3. Long-term Effectiveness and Permanence

Alternatives 1 and 2 would not have long-term effectiveness and permanence, since contaminants would remain in the subsurface and pose potential risks to human health and the environment. Alternatives 3, 4, and 5 would have long-term effectiveness and permanence through either in-situ or ex-situ treatment. The treatment processes are not reversible.

If pilot testing demonstrates the technologies in Alternatives 3 and 4 are suitable for the Site conditions, these technologies are considered adequate and reliable processes to treat the contamination, since they have been demonstrated successfully at other sites.

4. Reduction of Toxicity/Mobility/Volume through Treatment

Alternatives 1 and 2 would not reduce the Toxicity/Mobility/Volume (T/M/V), since no active in-situ or ex-situ treatment would be implemented. The total volume of contaminated groundwater would increase as contaminants migrate downgradient. Alternatives 3, 4, and 5 would reduce the T/M/V through physical, chemical or biological processes.

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES

Overall Protectiveness of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

Compliance with ARARs evaluates whether the alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value.

State/Support Agency Acceptance considers whether the State agrees with EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.

Community Acceptance considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

5. Short-term Effectiveness

For Alternative 1, protection of the community and workers would not be applicable, as no remedial action would occur. For Alternative 2, there would be minimum short-term inconveniences to the residents. For Alternatives 3, 4, and 5, there would be some short-term inconveniences due to the scope of the field operations. However, no major adverse impacts would be expected. Air monitoring, engineering controls, and appropriate worker personal protective equipment (PPE) would be used to protect the community and workers for Alternatives 2 through 5.

For Alternatives 3 and 4, tree removal would be required to access well locations. Consent from property owners would be obtained prior any field work.

The timeframe to accomplish the active remediation for Alternative 4 is anticipated to be shorter than for Alternative 3 based on experience at other sites. Alternative 5 would be operated for a long time due to relatively slow groundwater velocity at the Site. In the absence of groundwater modeling, it would be difficult to configure the optimal layout of groundwater extraction wells within the treatment area and predict the operational timeframe.

For Alternative 4, in-situ bioremediation, the selected amendment would be injected into the subsurface and exist in the groundwater for more than 6 years. Although this amendment is food grade, it may still not be desirable to use this groundwater as drinking water. Currently, only one residence is using groundwater as drinking water. This house is located outside of the treatment area and the PCE level is below the federal drinking water standard.

6. Implementability

Technical Feasibility

Alternative 1 would be easiest to implement since no action would be taken. Alternative 2 would be the second easiest to implement. Alternatives 3 and 4 would require a pilot study since both involve innovative technologies. Both Alternatives 3 and 5 are technically more difficult to implement than the other alternatives. Optimum groundwater extraction rates would need to be determined during design and a higher volume of groundwater pumping may be required to attain goals.

Groundwater treatment, operation and maintenance and discharge requirements for Alternatives 3 and 5 are technically more difficult to implement than other alternatives especially in a residential area.

Administrative Feasibility

Alternatives 3, 4, and 5 may be administratively difficult to implement because leasing or purchasing of private land would be necessary, and community acceptance of the treatment methodologies and locations of the treatment systems would likely be more difficult than the limited action or no action alternatives. Installation of underground piping, pumps, and groundwater extraction/injection wells would be difficult in a residential area.

Availability of Services and Materials

Alternative 1 would not require any services or materials. Alternatives 2-5 would require common construction services and materials for implementation of the remedy.

7. Cost

The present worth for Alternative 5 ($13.11 million) is the highest, followed by Alternative 3 ($10.69 million), and then Alternative 4 ($7.55 million). Alternative 2 ($1.77 million) has the lowest present worth since it involves no treatment. The costs associated with Alternative 5 are based on a total pumping rate of 110 gallons per minute which could increase significantly when design engineering studies are completed. Alternative 1 has no cost since it involves no action.

8. State Support/Agency Acceptance

The State of New Jersey is still evaluating EPA's preferred alternative presented in this Proposed Plan.

9. Community Acceptance

Community Acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the Responsiveness Summary of the Record of Decision (ROD), the document that officially formalizes the selection of the remedy.

SUMMARY OF THE PREFERRED ALTERATIVE

Based upon an evaluation of the various alternatives, EPA recommends Alternative 4, *In-Situ* Biological Treatment (Preferred Alternative), for cleanup of the groundwater at the Iceland Coin Laundry Site.

In the Preferred Alternative, amendments such as electron donors and nutrients could be injected into the targeted groundwater plume area to alter the groundwater conditions to promote anaerobic degradation of PCE and TCE to cis-1,2-DCE or methane, ethane and ethene. The breakdown products, cis-1,2-DCE and VC, can easily be degraded under existing Site conditions. In-situ biological treatment would be used to treat the groundwater plume that contains PCE above 10 ppb.

If, during implementation, any residences or businesses within the areal extent of the groundwater contaminant plume are found to have not yet been connected to public water, EPA would offer to connect them, and seal their wells.

Industrial and irrigation water wells in the area would also be evaluated, and a determination will be made regarding their continued use, including the possibility of either closure or treatment prior to use.

While the financial costs of this alternative are relatively high compared with the No-Action or Monitoring Alternatives, those costs are outweighed by the clear benefits of the remedy. The Preferred Alternative does not require long-term operation of equipment. As a result, the Preferred Alternative has relatively fewer impacts to the local community than Alternatives 3 and 5 during construction and operation of the action. This alternative would also remediate the VOC plume more quickly than Alternative 5.

Because an estimated 10 to 15 years would be required before complete restoration of the groundwater is achieved from the initiation of the remedy, the Preferred Alternative includes groundwater monitoring to ensure that human health and the environment are protected, and institutional controls such as a Classification Exception Area and well restrictions.

Based on information currently available, EPA believes the Preferred Alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. EPA expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA §121(b): 1) be protective of human health and the environment; 2) comply with ARARs; 3) be cost-effective; 4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and 5) satisfy the preference for treatment as a principal element if treatment of contaminated soil is required prior to disposal.

COMMUNITY PARTICIPATION

EPA and the State of New Jersey provide information regarding the cleanup of the Iceland Coin Laundry Superfund Site to the public through meetings, the Administrative Record file for the Site, and announcements published in The Daily Journal. EPA and the State encourage the public to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted there.

EPA and NJDEP rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund Site. To this end, the RI and FS reports and this Proposed Plan have been made available to the public for a public comment period which begins on August 5, 2006 and concludes on September 5, 2006.

A public meeting will be held during the public comment period at the Vineland City Hall on August 10, 2006 at 7:00 p.m. to present the conclusions of the RI/FS, to elaborate further on the reasons for recommending the preferred remedy, and to receive public comments.

Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary Section of the ROD, the document which formalizes the selection of the remedy.

For further information on EPA's preferred alternative for the Iceland Coin Laundry Superfund Site:

Matt Westgate Remedial Project Manager (212) 637-4422	Pat Seppi Community Relations Coordinator (212) 637-3679

U.S. EPA
290 Broadway 19th Floor
New York, New York 10007-1866

The EPA Region 2 Regional Public Liaison is:
George Zachos
Toll-free (888) 283-7626 or (732) 321-6621

U.S. EPA Region 2
2890 Woodbridge Avenue, MS-211
Edison, NJ 08837

Figure 1. Site Location Map

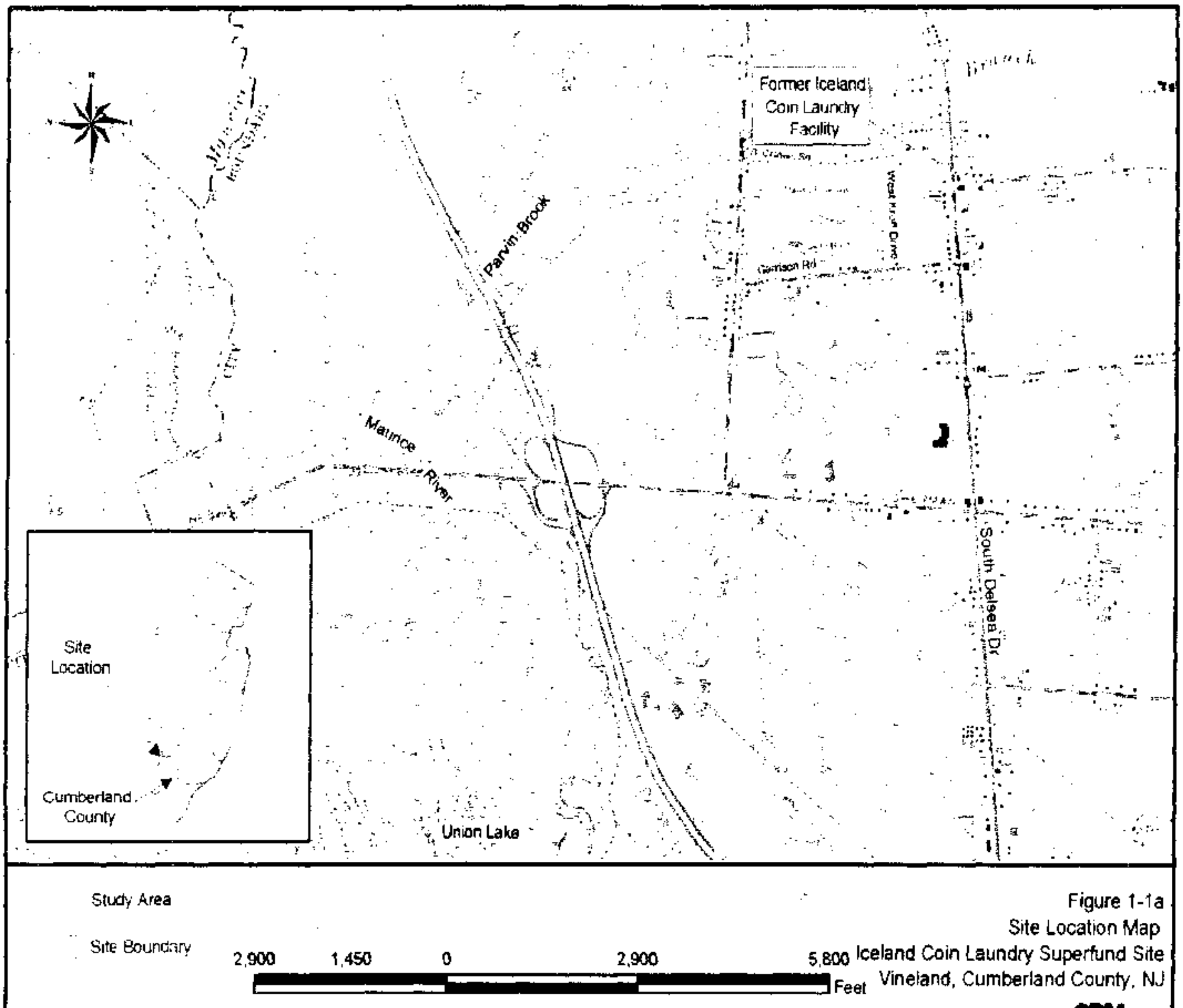
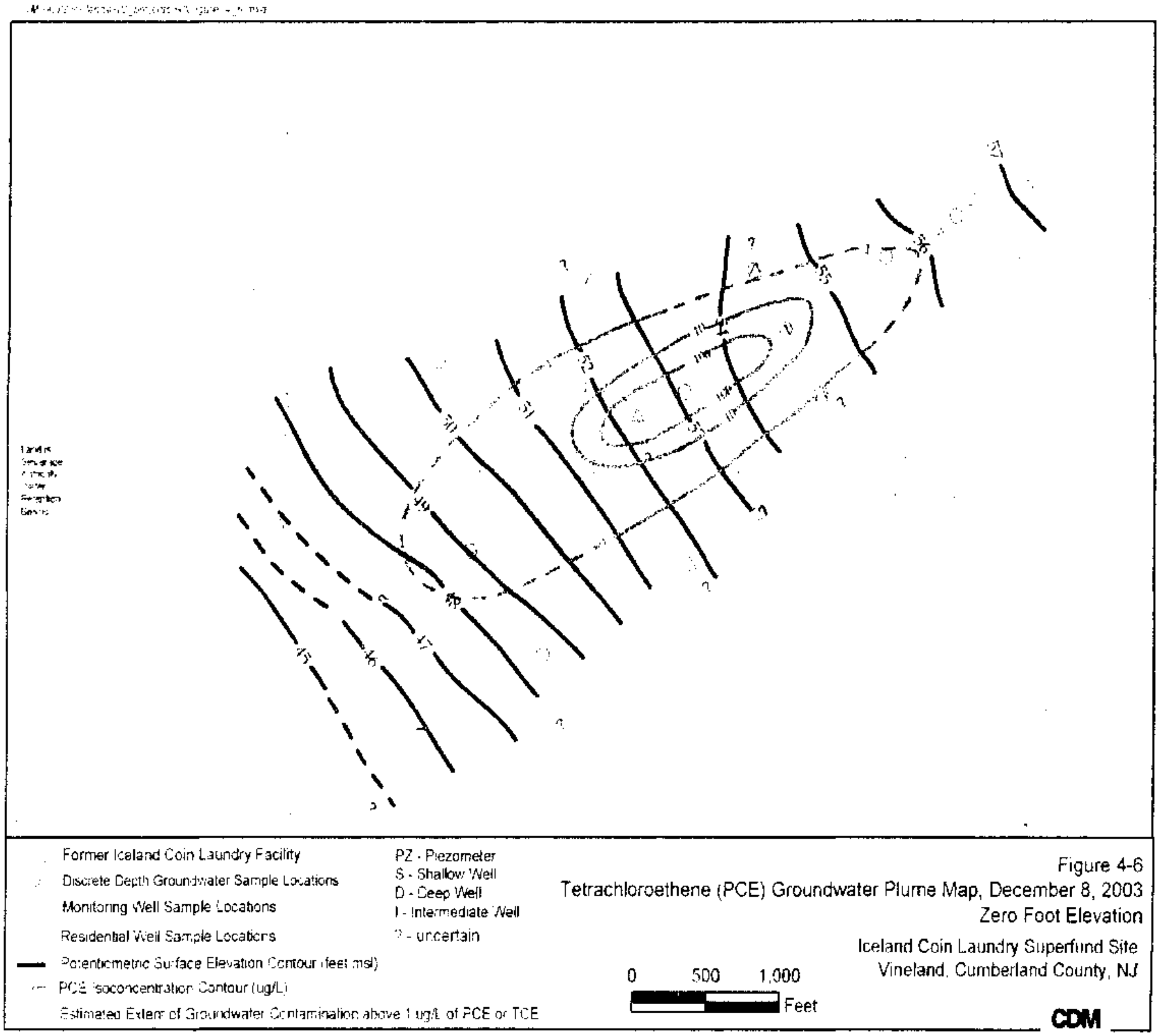


Figure 2 Map illustrating Tetrachloroethylene (PCE) extent of groundwater plume. December 2003.



ATTACHMENT B

PUBLIC NOTICE

mission officially canceled
sale. The city keeps a $3,311
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Smart Packaging's niche is
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Donald Ayres, city economic
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e very long," Ayres said.

EPA is hosting a Public Meeting for the Iceland Coin Laundry Superfund Site

The U.S. Environment Protection Agency invites you to attend a public meeting to discuss the Proposed Plan for a final cleanup plan for contaminated ground water at the Iceland Coin Laundry Superfund Site. The site is located at 1888 South Delsea Drive, in the City of Vineland, Cumberland County, New Jersey and the recommended final plan is on site biological treatment of the Ground Water.

The meeting will be held at the:

Vineland City Hall
Council Chambers Room
640 East Wood Street (cor. 7th)
Vineland, NJ 08362
on Thursday, August 10, 2006
at 7:00 P.M.

To request a copy of the Proposed Plan you can:

E-mail Ms. Pat Seppi, Community Involvement Coordinator: seppi.pat@epa.gov

Or Call Ms. Seppi: (212) 637-3679 or Toll-free at 1-800-346-5009

Or Visit EPA's website: www.epa.gov/region02/superfund/npl

The public comment period for the Proposed Plan runs from August 5, 2006 to September 5, 2006. All written comments should be mailed to:

Matthew Westgate, Remedial Project Manager
U.S. Environment Protection Agency
290 Broadway, 19th Floor
New York, NY 10007-1866
or by e-mail: westgate.matthew@epa.gov

All site related documents can be obtained at the following information repositories:

U.S. EPA Records Center Region II 290 Broadway, 18th Floor New York, NY 10007-1866 (212) 637-3261	City of Vineland Health Dept. 640 East Wood Street Vineland, New Jersey 08362 (856) 794-4000 ext.4131

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ATTACHMENT C

PUBLIC MEETING TRANSCRIPT

UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

- - - - - - - - - - -

PUBLIC MEETING

FOR THE

ICELAND COIN LAUNDRY SUPERFUND SITE

- - - - - - - - - - -

Thursday, August 10, 2006

- - - - - - - - - - -

Transcript of public hearing taken by and before Teresa J. F. Bautz, a Certified Shorthand Reporter, License No. XI02073, and Notary Public of the State of New Jersey, at Vineland City Hall, Counci1 Chambers Room, 640 East Wood Street, Vineland, New Jersey, 08362, on the above-mentioned date at 7: 00 p. m.

TERESA J. F. BAUTZ
Certified Shorthand Reporter
14 Davis Avenue, PO Box 49
Shiloh, New Jersey 08353-0049
Phone: (856)455-3936 Fax: (856)455-5169

PRESENTATION:

PAT SEPPI
Community Involvement Coordinator

MATTHEW WESTGATE
EPA Project Manager

CHORFAN TSANG, P.E.
CDM Project Manager

ALSO PRESENT:

JEFFREY JOSEPHSON
EPA Section Chief

CHLOE METZ EPA
Risk Assessor

MICHAEL SIVAK
EPA Risk Assessor

LISA CAMPBELL
CDM RI Task Manager

- - - - -

(The hearing commenced at approximately 7:20 p. m.)

MS. SEPPI: We're going to get started. First of all , I'd like to thank you for being here tonight. My name is Pat Seppi , I am the community involvement coordinator for EPA and also for the site, the Iceland Coin Laundry site. I'd like to ask that those people who are here who will be speaking to please introduce yourself and tell us your relationship to the site.

MR. JOSEPHSON: My name is Jeff Josephson. I am included in New Jersey's project state coordination team which is located within EPA Region Two, emergency remedial response location.

MR. WESTGATE: I'm Matthew Westgate. I'm the project manager for Iceland Coin Laundry.

MR. TSANG: I'm Frank Tsang. We are the consultant to the EPA.

MS. CAMPBELL: I'm Lisa Campbell. I also work for the consultant.

MS. METZ: And I'm Chloe Metz.

I’m the human health risk assessor.

MR. SIVAK: I'm Michael Sivak. I am also a risk assessor assisting Chloe this evening.

MS. SEPPI: Thank you. And we also have the assistant to Congressman LoBiondo. And Terri is our stenographer. We're here tonight to present the proposed plan to clean up the Iceland Coin Laundry site. Community involvement is a very important part of this process. And that's one of the reasons we have this meeting is to give you an opportunity to listen to the alternatives that we've chosen for the site and see what your comments or questions on it are.

We also have a public comment period which started on August 5th that will run until September 5th. If you should come up with any questions or comments after this meeting, you're certainly welcome to put them in writing or e-mail them to Matt Westgate, the project manager, and his address is on the front page of the proposed plan.

Now, you'll also notice we

have Terri here tonight recording this meeting to make sure that your comments do become part of the record of decision which will be the final legal document that will detail how we plan to clean up the site. But again, we want to make your comments part of the final summary so we certainly take them into consideration.

So I told you about the public comment period. The only other thing, I hope you signed in. We want to make you part of our mailing list. And there are some handouts there.

So I think with that I'm going to turn this over to Matt, and he's going to tell you a little bit about the Superfund project. Matt.

MR. WESTGATE: Okay. Superfund was created in 1980, also known as CERCLA, Comprehensive Environmental Response Compensation Liability Act. And it was created in response to sites like Love Canal in upstate New York where they had very big contamination problems and nobody really cleaned them up.

Superfund looks at toxic waste, disposal disasters. It has two branches. There's an emergency response removal program and then there's a long-term cleanup program which we're a part of.

In 1986 they amended the CERCLA law with superfund amendments and Reauthorization Act. Both of these combined provide federal funds for clean up of hazardous waste sites and to respond to those emergencies involving hazardous substances.

Superfund empowers EPA to compel responsible parties to pay for or to conduct the necessary response actions. The superfund process starts with site discovery and ranking where we do site investigation, preliminary groundwater sampling, surface soil sampling. And we actually rank the contamination as compared to what receptors might be impacted. When the site ranks at a certain level it's put on the national priorities list which then will trigger a remedial investigation feasibility study which is a very thorough and detailed investigation of contamination to determine the area, extent and levels of contamination, physical properties of the site.

Once we have a very good idea of what the contamination situation looks like, we come up with alternatives for cleaning it up. And under the legislation we prepare the alternatives or we analyze the alternatives with respect to nine criteria which are listed there.

Protection of human health and environment, number one; compliance with applicable or relevant and appropriate requirements, basic regulatory part of it. We look at the alternatives with long-term effectiveness and permanence in mind; reduction of toxicity, mobility or volume of the material; short-term effectiveness; implementabi1ity; cost is a factor; State acceptance and the community acceptance.

At that point we come up with a proposed remedy, and this meeting is an example of how we put that proposed remedy out in the public and try and get feedback from as many people as we can. We pick one of the alternatives and that decision is documented in what's called Record of Decision which basically lays out the approach for the design and the remedial action to take care of the problem.

After remedial action we're not completely finished yet. There's a five-year review process where we go back and look at the site to see the effectiveness of the remedy and make sure that there's no changed conditions that might affect that. We also consider changes in the regulations regarding the toxicity of the contaminants of concern. If the standards have gotten more stringent, then we might have to re-look at what choices we made in the ROD.

I'm going to turn the presentation over to Frank who is going to briefly describe what his company did in terms of remedial investigation on the site.

MR. TSANG: Good evening again. The former Iceland Coin Laundry facility is located at 1888 South Delsea Drive. The remedial investigation covered the former facility property as well as the area downgradient of the facility. Iceland Coin

Laundry and Dry Cleaning operated from approximately 1953 until at least 1971. The facility had four coin operated dry cleaning units inside. It reportedly used tetrachloroethylene, also referred to and commonly referred to as PCE, as the dry cleaning fluid.

In 1987 the City of Vineland Health Department found trichloroethene, commonly referred to as TCE, in reception wells downgradient from the facility. Subsequent sampling of the residential wells found PCE, TCE and also 1,2-dichloroethene, also referred to as DCE. Both TCE and DCE are degradation products of PCE.

In 1994 public water supply was provided to the affected residences except at one house. The owner refused to be connected to the public water supply, and upon entry a cleanup unit was provided in the house. The site was placed on the national priority list in October 1999.

CDM performed the remedial investigation from June 2003 to December 2003 and it consisted of two parts, the source area

Investigation and the groundwater Investigation. The source area Investigation focused on the facility property Itself. The Investigation used a phased approach In the investigation and did the investigation in phases.

The first phase we used the surface geophysical survey to locate any subsurface structures that may act as a continued source of groundwater contamination. Using the results of the geophysical survey, CDM then performed subsurface soil screening using what they call membrane interface probe.

Basically detectors are installed at the tip of the probe, and the probe was pushed in the ground. The detectors provide a continual and instantaneous reading of the contaminant concentrations in the ground. And using the screening results we locate our soil samples, and we collected ten soil surface samples and five subsurface soil samples.

This slide shows the MIP screening location. Basically we spread them out, you know, back here (indicating) because it was reported that the owner burned the lint filters from the dry cleaning unit back in the area. We put the screening location in the front (indicating) because we want to look for any source material down here because allegedly these are the locations for the cesspool and the drain field for the facility.

And this slide shows the surface soil sample location, and basically these are more evenly distributed throughout the faci1ity.

The result of the soil area investigation showed that only very low levels of PCE which are below the screening criteria were detected in on-site soil. And based on the results, there are currently no contaminant sources on-site that contribute to the groundwater contamination.

Groundwater investigation focused on the area downgradient from the facility. Again, the investigation was conducted in phases. We screened the groundwater samples first to optimize the location for the monitoring wells. As a result of the screening investigation, CDM then installed 27 shallow, intermediate and deep monitoring wells throughout the plume area. Then we collected two rounds of samples from the monitoring wells and also collected water samples from two residential wells.

This slide shows the extent of PCE contamination. The highest detected PCE concentration is located in the middle of the plume where this triangle is. Concentration is about 290 micrograms per liter as compared to the drinking water standard of 1 microgram per liter.

As you can see, the core of the plume, we call this the core of the plume, which is a concentration of above 10 micrograms per liter has migrated away from the former facility. The reason for that is there's no existing source at the facility as the facility shut down back in the early '70s, and as groundwater moved through the area it flushed the plume core to the current location and it will continue to migrate if not remediated.

This slide shows the extent of TCE plume. TCE plume is pretty much at the same location as the PCE plume, however at a concentration much less than the PCE concentrations. The highest detected TCE concentration is only 17 micrograms per liter as compared to the drinking water standard of 1 microgram per liter.

As part of the remedial investigation a human health risk assessment was conducted. The human health risk assessment is a measure of potential risks of developing cancer or potential for non-cancer health effects. Cancer risk is expressed as a probability of increased cancer within a certain population. EPA's target cancer risk range is one extra case of cancer in a population of a million people to one extra case in 10,000 people.

For the non-cancer health effects it measures by comparing the exposure concentrations to the threshold levels. The threshold levels are the level that no adverse effects are going to be observed. The non-cancer health effects are measured as hazard index. The EPA's target hazard index is one.

Now, to calculate the risks for the site, you know, we created scenarios. These scenarios include receptors and pathways, you know. The receptors could be hypothetical. Let's see, we turn the current retail facility into a home and have people live in there, so we call it a future residence. And then for the downgradient area we also include the current residence, that people live in the house. Also in the future people can live in the house, but we also assume some hypothetical pathway, the way you expose the contaminants.

Currently all the affected residents in the plume area have been provided with public water supply so they are not drinking the water. Therefore the risk assessment, we assume they are drinking the water. So there's a very conservative way to look at the risk.

And also we use some very conservative number, you know, the frequency of exposure, the contaminant concentrations and the body weight are very conservative numbers put into the risk models and come up with the risk values.

After we finished risk calculations, then we compare the risk results to EPA's target value on target risk ranges. The conclusion from that is that the current and the future residents and site workers exceed the target risk range mainly from direct exposure to contaminated groundwater. PCE and TCE are the two major contaminants that contribute to the most risks.

The EPA also determined that there's a potential for PCE or TCE vapor intrusion into the former facility and contaminated groundwater. As a result EPA decided to conduct additional investigation during the remedial design phase to look into this potential pathway.

And then we move into the feasibility study. The feasibility study involves several steps. First step is to establish the remedial action objectives, which are media specific, which are goals for the protection of human health and involvement. In order to measure the achievement of the remedial action objectives, clean up levels, also referred to as preliminary remediation goals, were developed.

The next step in the study is to identify any applicable remedial technologies and also go through the evaluation process. The technologies that are determined to be effective and implementable are retained and then combined into alternatives. The alternatives then are evaluated using nine criteria that Matt said to you earlier.

The EPA has established two remedial action objectives for this site. Our first objective is to prevent ingestion of and dermal contact with contaminated groundwater. That is mainly to address the risks result that we discussed earlier. As I mentioned earlier, currently the public water supply has been provided for the affected residences, so there's no current exposures. But we want to make sure that there's no future exposure too. So EPA would establish a restriction in the use of contaminated groundwater through drinking water well drilling, a permit restriction with the help of New Jersey

Department of Environmental Protection.

The second remedial action objective for the site is to restore the groundwater aquifer to the cleaned up levels within a reasonable time frame. EPA has selected New Jersey Groundwater Quality Standards as the clean up levels. The New Jersey Groundwater Quality Standards have the same numerical values as the drinking water standard for these three contaminants.

Five remedial action alternatives were developed for the site. The first alternative is no action. Actually, the name implies no further action would be implemented on-site under this alternative. This alternative is required under the superfund program as the baseline for comparison to the other alternatives that are 1isted here.

Alternative two is institutional controls and long-term monitoring. Alternatives three through five are active treatment alternatives that use the various treatment technologies, and we will get into those four alternatives in more detail in the next couple sides.

Under alternative two, as I mentioned earlier, EPA would implement these two controls with assistance from New Jersey DEP to restrict the use of contaminated groundwater. Basically the restriction would deny any drinking water well permit within the contaminated plume area. EPA would also monitor the contaminated groundwater movement and migration, degradation, for the next 30 years.

Because the groundwater will migrate over time and based on the monitoring result, EPA would perform periodic investigation of the current condition of the plume at that time. Because contamination remained on site, EPA would perform a review of the site conditions every five years to ensure the site will continue to protect the health and the environment. As required by EPA's guidelines, this alternative will continue for 30 years.

Before I discuss and present to you the detail of alternatives three to five, I would like to talk about common elements for these three alternatives. Two areas would be targeted for treatment under alternatives three to five. The first area is the plume core. The plume core has the bulk of the contamination. The folks for the feasibility study would define the plume core as any PCE or TCE concentration about 10 micrograms per liter as shown by this figure within the pink line here. It's not as clear on this figure.

The second area is at the former facility. During the groundwater screening investigation residual contamination was found at one screening location. However, when we collected groundwater samples from the monitoring wells about 100 feet away from that screening location, we did find contamination in the groundwater. As a result, EPA would conduct additional investigation during the design phase to confirm existence of contamination at these locations. When the contamination is confirmed, then we will implement treatment at that location.

EPA would also utilize the natural processes to attenuate the very low concentrations of TCE and PCE contamination at the fringe area of the plume.

Also there are two other common elements, the institutional controls and long-term monitoring, and they are the same as discussed under alternative two.

Under alternative three, the in-situ physical and chemical treatment, we would use groundwater circulation well technology to treat the PCE and TCE plume core. The groundwater circulation well is a specially-designed well that contains two parts. One part is to extract the groundwater from the ground and pump it to the surface. The groundwater is then treated, and then we inject through the second part of the well back into the aquifer.

Because it's an innovative technology, pilot studies would be performed to evaluate the effectiveness and also to obtain the design parameters for this technology. And at the former facility we would implement in-situ chemical oxidation which treat the residual soil contamination if it is confirmed through the predesign investigation.

Also, basically for the in-situ chemical oxidation we would utilize oxidants such as Protexin permanganate. We would Inject the chemical Into the ground and oxidize the PCE and TCE Into a nontoxic chemical such as carbon dioxide, water and salt. It would take about two years to construct the multiple groundwater circulation wells for this site, and it would take about ten years to treat the plume core. And EPA would monitor the plume fringe for the next 30 years under this alternative.

Under alternative four we will utilize in-situ biological treatment to treat the plume core as well as the residual soil contamination at the former facility. In-situ biological treatment has been successfully implemented at many other sites. We will perform bench and pilot studies to obtain the design parameters. The advantage of in-situ biological treatment for this site is that there are no permanent structures on-site. There are no long-term operations involved.

We would inject amendments such as nutrients and electron donors into the ground. All the biological activity is in the aquifer itself and we estimate it would take about three to six months to inject one round of the amendments. And we estimate it would take two to three rounds of injections over a 10-year period to complete the treatment of the plume core.

EPA would then monitor the plume fringe for the next 30 years. So there's not a lot of operation at the site under this alternative.

Alternative five is pump and treat. Basically groundwater would be extracted using multiple extraction wells. Pump the water to the surface and treat it using conventional treatments such as granular activated carbon. The treated water would then be recharged back into the aquifer.

During the design phase groundwater modeling would be performed to determine the number of extraction wells, the well locations and also the pumping rates of the well. Again, we'll use in-situ oxidation to treat the residual soil contaminants at the former facilities.

It will take, well, it will take about two years to finish constructions and will take more than 30 years to treat the plume core under this alternative. And this slide summarizes the cost estimate for the various alternatives. Alternative two is $1.8 million, alternative three is $10.7 million, alternative four is $7.5 million. And alternative five would be most likely exceed $13.1 million.

Now we give the presentation back to Matt for the preferred alternative.

MR. WESTGATE: After going through all these different alternatives and consulting with the State, we picked alternative four which is the in-situ biological treatment. When you consider things like cost and implementabi1ity, this will certainly achieve the goals in a reasonable time for a reasonable price.

It does not require long-term operation of equipment. It has relatively few impacts to the local community, fewer impacts to the local community than the other alternatives. It provides the best balance of trade-offs among the alternatives. And we figure that groundwater could be restored in 10 to 15 years.

We would also satisfy the statutory requirements and protect both human health and the environment. We would comply with state laws, be cost effective and it would utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. And it would satisfy the preference for treatment as the principal element.

We ask for any input from the public on our decision and any questions at this point.

MS. SEPPI: Well, I thank you very much for coming tonight, listening to our presentation. If you talk to anyone you know, please tell them about the public comment period. They can certainly get comments to Matt either written or through e-mail. And thank the congressman for his continued

Interest In the site. We do appreciate that. And again, if you have any questions, contact me any time. Thank you all very much.

(The hearing concluded at approximately 7:51 p.m.)

C E R T I F I C A T I O N

STATE OF NEW JERSEY

SS.

COUNTY OF CUMBERLAND

I, TERESA J. F. BAUTZ, a Certified Shorthand Reporter and Notary Public of the State of New Jersey, do hereby certify that I reported the testimony in the above-captioned matter; that the said witnesses were duly sworn by me; that the foregoing is a true and correct transcript of the stenographic notes of testimony taken by me in the above-captioned matter.

I FURTHER CERTIFY that I am not an attorney of counsel of any of the parties, nor a relative or employee of any attorney or counsel in connection with the action, nor financially interested in the action.

____

TERESA J.F. BAUTZ, CSR #XI02073

ATTACHMENT D

WRITTEN COMMENTS

No written comments submitted to EPA.