

RECORD OF DECISION AMENDMENT

**Emmell's Septic Landfill Superfund Site
Operable Unit Two**

**Galloway Township
Atlantic County, New Jersey**



September 29, 2017

PREPARED BY:

**U.S. Environmental Protection Agency
Region II**

DECLARATION FOR THE RECORD OF DECISION AMENDMENT

SITE NAME AND LOCATION

Emmell's Septic Landfill Superfund Site
Galloway Township, Atlantic County, New Jersey
Operable Unit Two (OU2)

Superfund Site Identification Number: NJD980772727

STATEMENT OF BASIS AND PURPOSE

This decision document presents an amendment to the selected remedial action for Operable Unit Two (OU2) of the Emmell's Septic Landfill Superfund Site (Site) in order to address impacted and threatened potable wells located at the distal end of the contaminated groundwater plume. This remedy was chosen by the U.S. Environmental Protection Agency (EPA) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. §§9601-9675, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record file for this Site (see Appendix IV).

The New Jersey Department of Environmental Protection (NJDEP) was consulted on the proposed amended remedy for OU2 in accordance with CERCLA §121(f), 42 U.S.C. §9621(f), and it concurs with the selected remedy (see Appendix V).

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this OU2 Record of Decision (ROD) Amendment, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The response action selected in this OU2 ROD Amendment modifies the groundwater and soil remedy selected in the 2008 ROD for OU2. The soils cleanup selected in the 2008 ROD has been completed and the groundwater extraction and treatment system has been in operation since 2012. Since the issuance of the OU2 ROD, EPA has identified additional potable wells at the distal end of the groundwater contaminant plume which have been impacted or threatened by Site-related groundwater contamination.

The major components of the response action selected in this ROD Amendment include the following:

- Installation of new potable wells for properties which are threatened or impacted by contaminated groundwater emanating from the Site. The double-cased replacement wells will be drilled to a depth of approximately 350 feet below ground surface (bgs) into the Rio Grande water bearing unit, which has not been impacted and is not threatened by Site-related groundwater contamination.
- Decommissioning of existing shallow potable wells in accordance with requirements established by the New Jersey Department of Environmental Protection (NJDEP).

DECLARATION OF STATUTORY DETERMINATIONS

The selected response action meets the requirements for remedial actions set forth in Section 121 of CERCLA, 42U.S.C. § 9621. It is protective of human health and the environment, meets a level of control of the hazardous substances, pollutants and contaminants which meets the federal and state requirements that are legally 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.

The response action selected in this ROD Amendment will not satisfy the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment). However, this statutory preference is currently being met through operation of the groundwater extraction and treatment system at the Site.

Geochemical modeling conducted in support of the remedy selected in the OU2 ROD estimated that it will take approximately 25 years to achieve the remediation goals throughout the groundwater contaminant plume. The OU2 remedy will result in hazardous substances, pollutants, or contaminants remaining at the Site at levels above that which would allow for unlimited use and unrestricted exposure until performance standards are attained. Because it may take more than five years to attain the cleanup levels, policy reviews pursuant to Section 121(c) of CERCLA will be conducted no less often than once every five years after the completion of construction to ensure that the remedy is, or will be, protective of human health and environment.

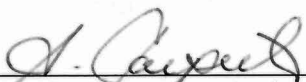
DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD Amendment. Additional information can be found in the Administrative Record file for this 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 Operable Unit Two Risks” section.
- Cleanup levels established for chemicals of concern and the basis for these levels can be found in the “Remedial Action Objectives” section.
- Current and reasonably anticipated future land use assumptions used in the 2017 updated human health risk evaluation and OU2 ROD Amendment can be found in the “Current and Potential Future Site and Resource Uses” section.
- Estimated capital, operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected can be found in the “Description of Alternatives” section.
- Key factors that led to selecting the amended 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 decisions) may be found in the "Comparative Analysis of Alternatives" and "Statutory Determinations" sections.

AUTHORIZING SIGNATURE:



Angela Carpenter, Acting Director
Emergency & Remedial Response Division
U.S. Environmental Protection Agency, Region II

9.29.17
Date

RECORD OF DECISION AMENDMENT

DECISION SUMMARY

Emmell's Septic Landfill Superfund Site
Galloway Township, Atlantic County
New Jersey



U.S. Environmental Protection Agency
Region II
New York, New York
September 2017

Table of Contents

	<u>Page</u>
SITE NAME, LOCATION AND DESCRIPTION	1
SITE HISTORY AND ENFORCEMENT ACTIVITIES	1
HIGHLIGHTS OF COMMUNITY PARTICIPATION	3
SCOPE AND ROLE OF OPERABLE UNIT	4
SUMMARY OF SITE CHARACTERISTICS	5
CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES	5
SUMMARY OF OPERABLE UNIT TWO RISKS	5
REMEDIAL ACTION OBJECTIVES	8
DESCRIPTION OF REMEDIAL ALTERNATIVES	9
COMPARATIVE ANALYSIS OF ALTERNATIVES	10
PRINCIPAL THREAT WASTE	14
SELECTED REMEDY	15
STATUTORY DETERMINATIONS	17
DOCUMENTATION OF SIGNIFICANT CHANGES	18

Appendices

Appendix I	Figures
Appendix II	Tables
Appendix III	Tables – Risk Assessment
Appendix IV	Administrative Record Index
Appendix V	State Letter of Concurrence
Appendix VI	Responsiveness Summary

SITE NAME, LOCATION AND BRIEF DESCRIPTION

The Emmell's Septic Landfill Site (Site), EPA ID# NJD980772727, is located at 128 South Zurich Avenue in a predominantly rural area of Galloway Township, Atlantic County, New Jersey (see Figure 1). The Site consists of a 38-acre former septic waste and sludge disposal facility, and the groundwater contaminant plume which has emanated from the Site property.

Residential properties are located to the east/northeast and west/northwest of the Emmell's Site, along Liebig Street and Zurich Avenue. The area immediately south of the Site is undeveloped and heavily wooded. Further to the south and southeast of the Site is the Morses Mill Stream and its associated wetlands and surface impoundments. The campus of Stockton University is located approximately 0.8 miles southeast of the Site. Groundwater in the vicinity of the Site is utilized as a potable water source. However, residents located on Lisa Drive, Liebig Street and Zurich Avenue, who previously used private wells for drinking water, have been connected to the public water supply. Residents further east of the Site, in Galloway Township and the City of Port Republic, also utilize groundwater as a potable water source through private wells.

The U.S. Environmental Protection Agency (EPA) has been designated as the lead agency for cleanup of the Site, with the New Jersey Department of Environmental Protection (NJDEP) functioning in a support role. Investigations and cleanup actions at the Site have been conducted using federal funding.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

From 1967 to 1979, the Site was used for the disposal of septic wastes and sewage sludge which were reportedly disposed of in trenches and lagoons. Other wastes, including chemical wastes, drums of paint sludge, gas cylinders, household garbage, and construction debris, were also disposed of at the Site. Operations at the Site ceased in August 1979.

Sampling conducted at the Site in 1984 by the NJDEP indicated the presence of soil and groundwater contamination. Also in 1984, the Atlantic County Health Department (ACHD) sampled residential wells in the vicinity of the Site. Results of this sampling indicated the presence of elevated concentrations of volatile organic compounds (VOCs) in five residential wells. The contaminated wells were subsequently closed and replaced with deeper wells.

In 1996, NJDEP and consultants for Galloway Township conducted additional investigations at the Site. Results of these investigations indicated the presence of VOCs in groundwater. An Expanded Site Inspection Report prepared for NJDEP in 1997 confirmed the presence of Site-related groundwater contamination.

In 1997 and 1998, EPA's Removal Action Branch (RAB) and Environmental Response Team conducted soil and groundwater investigations at the Site. A number of VOCs were detected in soil, soil gas, and groundwater samples, including trichloroethene (TCE) and its associated degradation products, and various chlorinated benzene compounds. Waste materials, including

paint-like substances, sludge, and drums, were observed in test pit excavations. The results of this investigation indicated that waste materials at the Site were a continuing source of groundwater contamination.

The Site was proposed for inclusion on the National Priorities List (NPL) in April 1999, and was placed on the NPL on July 22, 1999, making it eligible for Superfund cleanup.

In July 1999, EPA's RAB initiated a removal action at the Site to address buried drums and waste material which were continuing to serve as a source of groundwater contamination. This removal action, which was completed in February 2000, resulted in the excavation and off-site disposal of 435 drums, eleven compressed gas cylinders, and approximately 28,000 cubic yards of contaminated soil.

On February 16, 2000, EPA initiated a Focused Feasibility Study (FFS) for groundwater contamination at the Site. The FFS was intended to evaluate whether it was appropriate to implement an interim remedy for groundwater contamination while the Site-wide Remedial Investigation/Feasibility Study (RI/FS) was being conducted. On September 30, 2003, EPA issued the Operable Unit 1 (OU1) ROD which selected an interim remedy to control the migration of groundwater contamination near the disposal area of the Site until a Site-wide remedy could be implemented. The interim remedy provided for the extraction and treatment of contaminated groundwater on the Site property, with discharge of treated groundwater to recharge basins constructed at the Site.

Groundwater investigations conducted during the OU1 FFS indicated that residential wells in the vicinity of the Site were in danger of being impacted by Site-related groundwater contamination. Therefore, during the summer of 2003, EPA connected 36 residences to the nearby municipal water supply.

The Site-wide OU2 RI was conducted from the Summer of 2002 through 2006. The RI included the installation and sampling of additional groundwater monitoring wells in the deep zone of the aquifer, as well as a membrane interface probe investigation to delineate the possible extent of non-aqueous phase liquid (NAPL) beneath the Site. NAPL was not detected during this investigation.

In September 2008, EPA completed the Site-wide OU2 RI/FS. Also in September 2008, EPA issued the OU2 ROD which selected a final remedy for contaminated soil and groundwater related to the Site. The major components of the OU2 remedy include:

- Excavation and off-site disposal of soil contaminated with polychlorinated biphenyls (PCBs);
- Extraction and treatment of groundwater contaminated with VOCs, with discharge of the treated groundwater to an on-site recharge basin;

- Installation of biosparging wells downgradient of the capture zone of the groundwater extraction system, to enhance the aerobic degradation of vinyl chloride in the groundwater;
- Implementation of a long-term groundwater monitoring program to monitor the effectiveness of the groundwater remedy; and
- Establishment of a Classification Exception Area, which is an institutional control, to minimize the potential for exposure to contaminated groundwater until the groundwater in the shallow and deep zones of the aquifer meets the cleanup goals.

During 2008, 2010 and May 2017, EPA replaced residential wells in the vicinity of the Site which were either impacted or threatened by Site-related groundwater contamination. Nine replacement wells were installed to a depth of greater than 300 feet bgs in a clean water-bearing zone as part of these removal actions. This water-bearing zone is separated from the impacted aquifer by 50 to 100 feet of clay and is not considered threatened by Site contamination.

Construction of the components of the OU1 interim groundwater remedy was completed in September 2010. This remedy was designed to control off-property migration of contaminated groundwater and involved the construction of a groundwater extraction and treatment system and two recharge basins at the Site. Groundwater was extracted and treated at a rate of 100 gallons per minute (gpm) during operation of the interim groundwater treatment system. Operation of the groundwater component of the OU2 Site-wide remedy was initiated during the Fall of 2012. As part of the groundwater component of the OU2 remedy, the groundwater extraction and treatment system and recharge basins constructed for the OU1 interim groundwater remedy were expanded to provide for the treatment and discharge of additional groundwater. The OU2 groundwater extraction and treatment system is currently pumping and treating 250 gallons per minute of contaminated groundwater.

During 2015, a biosparging pilot study was conducted to evaluate the effectiveness of biosparging to address VOCs in groundwater downgradient of the capture zone of the OU2 groundwater extraction system. In September 2016, a Biosparging Pilot Study Report was prepared which recommended that biosparging not be implemented at this time due to declining concentrations of VOCs in the area of the plume that was considered for biosparging. Long-term monitoring of groundwater quality is currently being conducted by the EPA in the vicinity of the Site. A final determination concerning the need to implement biosparging at the Site will be made after the collection of additional groundwater data.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The FFS for Downgradient Residential Wells (Residential Well FFS) and EPA's Proposed Plan to amend the OU2 remedy for the Site were released to the public for comment on July 20, 2017. These documents were made available to the public in the OU2 administrative record file maintained at the Atlantic County Library, Galloway Township Branch, located at 306 East

Jimmie Leeds Road, Galloway Township, New Jersey and in the EPA Region II Records Center at 290 Broadway, New York City.

A notice of availability of the above-referenced documents was published in The Press of Atlantic City on July 20, 2017. This notice also announced a public comment period on these documents, which ran from July 20, 2017 to August 21, 2017.

In addition, EPA held a public meeting on August 3, 2017 at 7:00 pm at the Galloway Township Middle School in Galloway, New Jersey to present the findings of the Residential Well FFS and EPA's Proposed Plan to the community and local officials. At this meeting, representatives of EPA answered questions concerning the remedial alternatives developed as part of the Residential Well FFS. Responses to comments received by EPA at this public meeting and in writing during the public comment period are included in the Responsiveness Summary (see Appendix VI).

SCOPE AND ROLE OF OPERABLE UNIT

EPA has addressed the cleanup of this Site by implementing immediate actions to address situations which presented an imminent threat to human health, and a long-term cleanup. Immediate actions, known as removal actions, which have been implemented to date include: the removal of 435 drums, eleven compressed gas cylinders and approximately 28,000 cubic yards of contaminated soil from the disposal area of the Site; the connection of 36 residences threatened by Site-related groundwater contamination to the municipal water supply, and the replacement of 9 residential wells which were impacted or threatened by Site-related groundwater contamination.

The long-term cleanup has been conducted in two discrete phases, or Operable Units. OU1, which was the subject of a 2003 Record of Decision, provided for implementation of an interim groundwater remedy to control further off-Site migration of groundwater contaminants near the disposal area of the Site while the Site-wide remedy was being designed and constructed. Construction of the OU1 interim groundwater extraction and treatment system was completed in September 2010. OU2, provided for implementation of a remedy to address PCB-contaminated surface soils located near the disposal area of the Site, as well as a final remedy for the VOC-contaminated groundwater related to the Site. The removal of PCB-contaminated soil from the Site was completed in September 2011. The OU2 final groundwater extraction and treatment system has been operating at the Site since the Fall of 2012.

The scope and role of this remedy amendment is to modify the remedy selected in the OU2 ROD to provide for an alternate water supply for properties with potable wells which are impacted or threatened by Site-related groundwater contamination at concentrations exceeding New Jersey Groundwater Quality Criteria (NJGWQC). All other components of the OU2 remedy will remain unchanged.

SUMMARY OF SITE CHARACTERISTICS

In order to ensure the protection of residences downgradient of the Site-related groundwater plume, from 2006 through 2016 the EPA periodically sampled potable wells at the distal end of the groundwater contaminant plume. The results of the February 2016 potable well sampling event indicated the presence of Site-related VOCs in the samples collected from several potable wells located downgradient of the capture zone of the OU2 groundwater extraction and treatment system (see Figure 2). Specifically, Site-related VOCs such as vinyl chloride, trichloroethene (TCE) and 1,1-dichloroethene were detected in potable wells at concentrations in excess of their respective NJGWQC. Vinyl chloride was detected in potable well water at concentrations up to 2.3 micrograms per liter (ug/L), in excess of its NJGWQC of 1 ug/L. In addition, TCE and 1,1-dichloroethene were detected at concentrations up to 3.6 ug/L and 6.3 ug/L, in excess of their respective NJGWQC of 1 ug/L and 2 ug/L. Furthermore, 1,1,1-trichloroethane and 1,2-dichloroethane were detected in one potable well at concentrations of 6.7 ug/L and 3.3 ug/L, in excess of their respective NJGWQC of 3 ug/L and 2 ug/L.

CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Land Uses: Land east of the Garden State Parkway, at the distal end of the groundwater contaminant plume, is currently used for residential and recreational purposes. Therefore, future residential and recreational use of this land is anticipated.

Ground and Surface Water Uses: Groundwater east of the Garden State Parkway, at the distal end of the groundwater contaminant plume, has been given a Class II-A designation by the NJDEP, indicating that it can be used for potable purposes. Furthermore, groundwater in this area is currently being used for potable purposes by residents and a campground/resort. Therefore, EPA anticipates that groundwater in this area will continue to be used for potable purposes.

SUMMARY OF OPERABLE UNIT TWO RISKS

A baseline human health risk assessment (HHRA) was conducted in 2008 as part of the Site-wide OU2 RI/FS to estimate the current and future effects of Site-related contaminants on human health and the environment. An HHRA is an analysis of the potential adverse human health effects of releases of hazardous substances from a site in the absence of any actions or controls to mitigate such releases, under current and future land uses. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. As part of the Residential Well FFS, an updated human health risk evaluation for residential use of groundwater was conducted using more recent data collected from the distal part of the groundwater contaminant plume which was not previously evaluated as part of the baseline HHRA. This section of the OU2 ROD Amendment summarizes the results of the 2008 baseline HHRA, as well as the 2017 updated human health risk evaluation.

Human Health Risk Assessment Process

As part of the OU2 HHRA, a four-step process was utilized for assessing Site-related cancer risks and non-cancer health hazards. The four step process is comprised of:

Hazard Identification - uses the analytical data collected to identify chemicals of potential concern (COPCs) at a site for each medium, 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 by which humans are potentially exposed (i.e., ingesting contaminated soil) under both current and reasonably anticipated future land uses;

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); and

Risk Characterization - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks. The risk characterization identifies contaminants with concentrations which exceed acceptable levels, defined by the National Contingency Plan (NCP) as an excess lifetime cancer risk greater than 1×10^{-6} to 1×10^{-4} , for cancer, and a Hazard Index (HI) of greater than 1 for non-cancer health hazards. Chemicals with concentrations that exceed these guidelines are considered chemicals of concern (COCs) for the Site and are typically those that will require remediation. The uncertainties associated with the risk calculations are also evaluated under this step.

Human Health Risk Assessment

The 2008 HHRA began with selecting COPCs in the various media (i.e., on-site soil and off-site groundwater) that could potentially cause adverse health effects in exposed populations. These populations included on-Site visitors, recreational visitors (dirt bike riding and horseback riding), and construction workers who may be exposed to contaminants in the soils by ingestion, inhalation, and dermal contact, and also off-Site adult and child residents who may be exposed through ingestion and inhalation of groundwater used as a potable water supply or by inhalation through vapor intrusion. In this assessment, exposure point concentrations were estimated using either the maximum detected concentration of a contaminant or the 95th-percent upper-confidence limit (UCL) of the average concentration. Chronic daily intakes were calculated based on the reasonable maximum exposure (RME), which is the highest exposure reasonably anticipated to occur at the Site. The RME is intended to estimate a conservative exposure scenario that is still within the range of possible exposures. Central tendency exposure assumptions, which represent typical average exposures, were also developed.

For groundwater, future exposure to groundwater through ingestion, dermal contact and inhalation of contaminated groundwater was evaluated for both future off-Site adult and child

residents. The estimated cancer risks for off-Site adult residents (5×10^{-3}) and off-Site child residents (4×10^{-2}) were above the EPA acceptable cancer risk range from exposure to VOCs in the groundwater, primarily trichloroethene, vinyl chloride, 1,1,2-trichloroethane, and 1,2-dichloroethane. In addition, the non-cancer hazard index for the adult resident (12) and child resident (101) exceeded EPA's acceptable hazard index of 1 due to concentrations of VOCs (1,1,2-trichloroethane, 1,2-dichloroethane, 1,4-dichlorobenzene, chloroform, tetrachloroethene, trichloroethene, and vinyl chloride) and mercury. Based upon these findings, EPA determined that implementation of the remedy selected in the OU2 ROD was necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

For the 2017 updated human health risk evaluation, groundwater data collected from ten monitoring locations located within the distal part of the groundwater contaminant plume, including both residential and groundwater monitoring wells were combined to calculate exposure point concentrations (Appendix III, Table 1). The exposure pathway that was evaluated was residential populations of adults and children that may potentially be exposed through ingestion, inhalation and dermal contact with groundwater. (Appendix III, Table 2). The exposure point concentrations and exposure assumptions were combined with non-cancer (Appendix III, Table 3) and cancer (Appendix III, Table 4) toxicity data to calculate the risks and hazards associated with groundwater exposure. The hazard index for non-cancer effects is elevated for exposure to groundwater, due primarily to concentrations of 1,1,2-trichloroethane for the current/future adult and child residents (Appendix III, Table 5). A summary of the estimated cancer risks are presented in Appendix III, Table 6. The results indicate that the cancer risks are at the upper-bound of EPA's risk management range of 1×10^{-6} to 1×10^{-4} for current/future residents due to a combination of chloroform, 1,2-dichloroethane, 1,2-dichloroethane, cis-1,2-dichloroethylene, 1,1,2-trichloroethane, trichloroethylene and vinyl chloride concentrations in the groundwater.

Uncertainties

EPA guidance for risk assessment provides a systematic means for organizing, analyzing and presenting information on the nature and magnitude of potential risks to human health posed by exposure to chemicals based on current and hypothetical future exposure pathways. Despite the advanced state of the current methodology, uncertainties and limitations are inherent in the risk assessment process. These uncertainties can lead to an over- or under-estimation of potential risks. Because there are uncertainties in each step of the risk assessment process, these uncertainties are often magnified in the final risk characterization. The final quantitative estimates of risk may be one or several orders of magnitude different from the actual potential risk associated with a given exposure. Because of the conservative approaches used in each step, the overall results of this risk assessment are most likely to over-estimate the potential Site risks.

Following EPA guidance, concentrations detected in wells located at the distal end of the groundwater contaminant plume were compared to screening levels. The residential wells were only sampled for VOCs and the monitoring wells were sampled for VOCs and metals as those are the Site-related compounds that could be present in the groundwater plume. Recently, the compound 1,4-dioxane has been identified at other environmental sites as frequently occurring in

VOC groundwater plumes since it was used as a solvent stabilizer. Samples from existing shallow wells in the Residential Well FFS study area have not been analyzed for 1,4-dioxane. Future sampling may demonstrate that 1,4-dioxane is present above the NJGWQC of 0.4 ug/L and may contribute to potential risk to residential use of groundwater.

Basis for Remedial Action

The 2017 human health risk evaluation demonstrates that unacceptable non-carcinogenic health effects may be associated with potable use of groundwater in the impacted aquifer at the distal end of the groundwater contaminant plume. Therefore, EPA has determined that the response action selected in this OU2 ROD Amendment is necessary to protect public health, welfare or the environment from actual or threatened releases of hazardous substances, pollutants or contaminants from the Site.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are specific goals to protect human health and the environment. These objectives are based upon available information and standards such as applicable or relevant and appropriate requirements (ARARs) and risk-based levels established in the HHRA. The OU2 ROD identified RAOs for contaminated soil and groundwater to address the human health risks and environmental concerns posed by Site-related contamination. The RAOs identified in the OU2 ROD are as follows:

Soil Remedial Action Objective

- Prevent or minimize potential human and ecological receptor exposure to contaminated surface soil that presents an unacceptable risk to human health and the environment.

Groundwater Remedial Action Objectives

- Prevent ingestion and dermal contact with contaminated groundwater which may present an unacceptable risk to current and potential users of groundwater in the vicinity of the Site.
- Restore the aquifer, within a reasonable time frame, to Class I-PL Ground Water Quality Standards (GWQSs) for groundwater west of the Garden State Parkway (GSP), and to Class II GWQSs for groundwater east of the GSP.

The excavation of PCB-contaminated soil from the Site, which was completed in September 2011, addressed risks presented by contaminated surface soil. Furthermore, the ongoing implementation of the OU2 groundwater extraction and treatment system will satisfy the groundwater RAOs for the majority of the Site. However, impacted groundwater located outside of the capture zone of the OU2 groundwater remedy has either impacted or threatens to impact additional residential wells. Therefore, the groundwater RAO for this area is:

- Prevent ingestion and dermal contact with contaminated groundwater which may present an unacceptable risk to current and potential users of groundwater in the vicinity of the Site.

DESCRIPTION OF REMEDIAL ALTERNATIVES

CERCLA §121(b)(1), 42 U.S.C. §9621(b)(1) requires 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, Section 121(b)(1) establishes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility or volume of hazardous substances. CERCLA §121(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants which at least attains Applicable or Relevant and Appropriate Requirements (ARARs) under federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

Alternate water supply alternatives for properties located at the distal end of the groundwater contaminant plume were assembled based upon engineering judgement and previous experience at the Site and other Superfund sites. As previously discussed, alternate water supplies have already been provided for threatened or impacted potable wells located closer to the Site. The construction time for each of the alternatives only reflects the time necessary to construct the alternative and does not include the time required to design the alternative or procure contracts for the design and construction of the alternative. Geochemical modeling conducted in support of the remedy selected in the OU2 ROD estimated that it will take approximately 25 years to achieve the remediation goals throughout the groundwater contaminant plume. This assessment includes the distal end of the plume to be addressed by this action. The OU2 remedy will result in hazardous substances, pollutants, or contaminants remaining at the Site above levels that would allow for unlimited use and unrestricted exposure until performance standards are attained. Because it may take more than five years to attain the cleanup levels, policy reviews pursuant to Section 121(c) of CERCLA will be conducted no less often than once every five years after the completion of construction to ensure that the remedy is, or will be, protective of human health and environment.

Alternative 1 – No Action

Section 300.430(e)(6) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR §300.430(e)(6)), requires that the No Action alternative be considered as a baseline for comparison with other alternatives. Under this alternative, no corrective action of any kind would be implemented to address potable wells which are impacted or threatened by the groundwater contaminant plume.

Total Capital Cost	\$0
Operation and Maintenance	\$0 (Total)
Total Present Net Worth	\$0
Construction Duration	0 months

Alternative 2 – Replace Residential Wells

This alternative consists of installing new residential wells for homes which are threatened or impacted by VOC-contaminated groundwater at the Site (see Figure 3). It is currently estimated that 14 residential wells would need to be replaced. The replacement wells would be drilled to a depth of approximately 350 feet bgs into the Rio Grande water bearing unit. The shallower contaminated groundwater is separated from the Rio Grande unit by a 50 to 100-foot-thick clay unit. Water samples collected from the Rio Grande unit have demonstrated that water below the clay is not impacted by contamination. The replacement wells would be double cased to prevent downward migration of groundwater contaminants. After construction, each well would be connected to the existing service line. The property owner would be responsible for future maintenance of the replacement well. The existing shallow residential wells would then be decommissioned in accordance with NJDEP requirements. If necessary, additional potable wells could be replaced in the future if threatened or impacted by Site-related contamination.

Total Capital Cost	\$1,075,757
Operation and Maintenance	\$0 (Total)
Total Present Net Worth	\$1,075,757
Construction Duration	6 months

Alternative 3 – Connection to Public Water Supply

Under this alternative, over 2 miles of waterline would be installed, beginning at the New Jersey American Water (“NJAW”) water supply main located on East Moss Mill Road. The water main would extend to the intersection of East Moss Mill Road and Pomona Road and southwest down Pomona Road and northeast up English Creek Road and Riverside Drive. Over 2,200 feet of service connections would then be installed for properties in the threatened area. It is estimated that 14 potable wells would also be decommissioned in accordance with NJDEP requirements as part of this alternative. Residents connected to the waterline would be responsible for paying future NJAW bills.

Total Capital Cost	\$3,302,845
Operation and Maintenance	\$0 (Total)
Total Present Net Worth	\$3,302,845
Construction Duration	1-2 years

COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting remedies for sites, EPA considers the factors set out in CERCLA § 121, 42 U.S.C. § 9621, by conducting a detailed analysis of the viable remedial alternatives pursuant to the NCP, 40 CFR § 300.430(e)(9), EPA’s *Guidance for Conducting Remedial Investigations and Feasibility Studies*, and OSWER Directive 9355.3-01. The detailed analysis consisted of an

assessment of the individual alternatives against each of nine evaluation criteria at 40 C.F.R. § 300.430(e)(9)(iii) and a comparative analysis focusing upon the relative performance of each alternative against the criteria.

Threshold Criteria - The following two criteria are known as "threshold criteria" because they are the minimum requirements that each alternative must meet in order to be eligible for selection as a remedy:

1. *Overall Protection of Human Health and the Environment:* Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls.
2. *Compliance with applicable or relevant and appropriate requirements (ARARs):* Section 121 (d) of CERCLA and NCP § 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).

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those State standards that are identified by a state in a timely manner and that are more stringent than Federal requirements may be applicable. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those State standards that are identified in a timely manner and are more stringent than Federal requirements may be relevant and appropriate.

Compliance with ARARs addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes or provides a basis for invoking a waiver.

Primary Balancing Criteria - The next five criteria, criteria 3 through 7, 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 permanence:* A similar degree of long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. This criterion includes the consideration of residual risk that will remain on-site following remediation and the adequacy and reliability of controls.
4. *Reduction of toxicity, mobility, or volume through treatment:* Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.
5. *Short-Term Effectiveness:* Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community and the environment during construction and operation of the remedy until cleanup levels are achieved.
6. *Implementability:* Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.
7. *Cost:* Includes estimated capital and O&M costs, and net present worth value of capital and O&M costs.

Modifying Criteria - The final two evaluation criteria, criteria 8 and 9, are called "modifying criteria" because new information or comments from the state or the community on the Proposed Plan may modify the preferred alternative or cause another response measure to be considered.

8. *State acceptance:* Indicates whether based on its review of the Residential Well FFS report and the Proposed Plan, the state supports, opposes, and/or has identified any reservations with the selected amended remedy.
9. *Community acceptance:* Summarizes the public's general response to the remedial alternatives described in the Proposed Plan and the Residential Well FFS report. This assessment includes determining which of the remedial alternatives the community supports, opposes, and/or has reservations about.

A comparative analysis of the remedial alternatives considered for impacted or threatened wells at the distal end of the groundwater contaminant plume, based upon the above evaluation criteria, follows.

Overall Protection of Human Health and the Environment

Alternative 1 would not provide for protection of human health and the environment as it does not prevent ingestion and dermal contact with contaminated groundwater which may present an unacceptable risk to current and potential future users of groundwater. Alternatives 2 and 3 would both be protective of human health as both alternatives prevent ingestion and dermal contact with contaminated groundwater by providing an alternate water supply for current and potential users of groundwater in the threatened area.

Compliance with Applicable or Relevant and Appropriate Requirements

Alternative 1 would not comply with ARARs in that residential well water in the impacted and threatened area would continue to exceed Federal and New Jersey Drinking Water Standards. Since Alternatives 2 and 3 provide a new water supply and are not cleaning up the groundwater, no chemical-specific ARARs are triggered but Alternatives 2 and 3 will comply with all action-specific and location specific ARARs. In addition, operation of the OU2 groundwater extraction and treatment system will result in compliance with chemical-specific ARARs for groundwater.

Long-Term Effectiveness and Permanence

The No Action Alternative would not be effective in the long-term because this alternative would not provide adequate controls of risk to human health over the long-term as there are no mechanisms to prevent future exposure.

Alternatives 2 and 3 would both be effective in the long-term because both alternatives control risk by providing an alternate water supply. In addition, both alternatives would permanently eliminate exposure to contaminated groundwater by requiring that shallow potable wells are decommissioned.

Reduction of Toxicity, Mobility, or Volume Through Treatment

The implementation of Alternatives 1, 2 and 3 would not treat groundwater contaminants and would not reduce their toxicity, mobility, or volume. However, this criterion is met through the ongoing operation of the OU2 groundwater extraction and treatment system.

Short-Term Effectiveness

The No Action Alternative includes no construction and would have no short-term impacts at the Site. However, this alternative would not achieve the RAO.

Alternative 2 would be expected to have short-term impacts on the residents and local community during construction of the remedy, which is estimated to take approximately 6 months. These impacts would be expected to include additional noise and truck traffic and interruption in water service while the resident's well is being installed. However, bottled water would be provided during interruption of water service. Implementation of Alternative 3 would be expected to have the same impacts on the local community but for a longer duration, given the

estimated 1 to 2 years required to construct this remedy. In addition, the local community would be subjected to lane closures during construction activities.

Implementability

Alternative 1 is the most readily implementable as no action would be required. Alternatives 2 and 3 are also implementable as no special techniques, materials or labor are required to implement these alternatives. However, under Alternative 3, the water main would be extended from the nearest NJAW public supply main in Galloway Township into portions of the threatened area which are located in the City of Port Republic. NJAW's franchise area does not include the City of Port Republic and the franchise area would require expansion to fully implement this alternative. Therefore, NJAW would need to negotiate with the City of Port Republic for use of the City's public rights of way. In addition, Alternative 3 would require extensive excavation of 2 miles of existing roadways and all private properties in order to install the water main and service connections. Therefore, Alternative 2 is easier to implement compared to Alternative 3.

Cost

The No Action Alternative would have no cost as no action would be required. The total estimated present worth cost for Alternative 2 is \$1,075,757 to install 14 new residential wells and decommission the existing potable wells. Alternative 3 is estimated to have a present worth cost of \$3,302,845 to install over 2 miles of water main, 2,200 feet of service connections and to decommission the existing potable wells in the impacted and threatened area.

State/Support Agency Acceptance

The State of New Jersey concurs with EPA's selected remedy amendment, Alternative 2.

Community Acceptance

EPA solicited input from the community on the remedial response measures proposed to address impacted or threatened potable wells at the distal end of the groundwater plume. Oral comments were recorded from attendees of the August 3, 2017 public meeting. Written comments were not received during the public comment period. During the public meeting, most members of the public supported EPA's plan to install replacement wells. However, one resident in the threatened area expressed a preference for being connected to the public water supply. Residents also questioned whether EPA would address additional potable wells if they were impacted by the Site in the future. The Responsiveness Summary located in Appendix VI addresses all comments received during the public comment period.

PRINCIPAL THREAT WASTE

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)). Principal threat wastes are source materials that include or contain hazardous substances, pollutants or

contaminants that act as a reservoir of contaminants that can migrate to groundwater, surface water or air, or acts as a source for direct exposure. Contaminated groundwater generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (NAPLs) in groundwater may be viewed as source material. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. Non-principal threat wastes are those wastes that generally can be reliably contained and present only a low risk in the event of exposure.

The buried drums and waste material which were removed from the Site as part of a removal action conducted from July 1999 through February 2000 were considered “Principal Threat” wastes. The waste material addressed during this removal action contained elevated levels of VOCs which, if not remediated, would have continued to serve as a source of groundwater contamination. Additional principal threat wastes have not been identified at the Site. Therefore, the amended OU2 remedy does not address principal threat wastes.

SELECTED REMEDY

Based upon an evaluation of the results of groundwater investigations conducted at the distal end of the groundwater contaminant plume, the detailed analysis of various remedial alternatives, and public comments, EPA has selected Alternative 2, Replace Residential Wells, as the remedy amendment to provide an alternate water supply to property owners impacted or threatened by Site-related groundwater contamination. The major components of the remedy amendment are as follows:

- Installation of new potable wells for properties which are threatened or impacted by contaminated groundwater emanating from the Site. The double-cased replacement wells will be drilled to a depth of approximately 350 feet below ground surface (bgs) into the Rio Grande water bearing unit, which has not been impacted by Site-related groundwater contamination.
- Decommissioning of existing shallow potable wells in accordance with requirements established by the New Jersey Department of Environmental Protection (NJDEP).

EPA currently estimates that approximately 14 potable wells will need to be replaced. No additional downgradient potable wells are considered threatened by Site-related groundwater contamination at this time, but if this condition changes additional potable wells can be replaced. The replacement wells will be drilled to a depth of approximately 350 feet bgs into the Rio Grande water bearing unit. The shallower contaminated groundwater is separated from the Rio Grande unit by a 50 to 100-foot-thick clay unit. Water samples collected from the Rio Grande unit have demonstrated that water below the clay is not impacted by contamination. Furthermore, the replacement wells will be double cased to prevent downward migration of groundwater contaminants. After construction, a pump will be installed and the well connected to the existing service line. All replacement wells will be sampled to ensure that they meet drinking water standards. Other components of the OU2 remedy will remain as described in the

2008 OU2 ROD. EPA will continue to operate the groundwater extraction and treatment system and conduct long-term groundwater monitoring to assess the effectiveness of the OU2 remedy throughout the Site-related groundwater plume. In addition, EPA expects that establishment of the CEA will help to ensure that new potable wells are not impacted by Site-related groundwater contamination.

Summary of the Rationale for the Selected Remedy

The selection of a remedy for a Superfund site is accomplished through evaluation of each of the developed remedial alternatives against the above-referenced nine criteria, as specified in the NCP. Based upon an evaluation of the results of groundwater investigations conducted at the distal end of the groundwater contaminant plume, the detailed analysis of the various remedial alternatives, and public comments, EPA has determined that Alternative 2 satisfies the requirements of CERCLA Section 121, 42 U.S.C. §9621, and provides the best balance of tradeoffs among the remedial alternatives with respect to the nine evaluation criteria, set forth in 40 CFR §300.430(e)(9).

The selected remedy amendment is expected to be protective of human health and the environment, once implemented, and will comply with ARARs. Potential risks to residents located at the distal end of the groundwater contaminant plume will be addressed through the installation of replacement wells which will be screened in a clean water-bearing unit. While Alternative 3, Connection to Public Water Supply, would also be protective and comply with ARARs, once implemented, Alternative 2 is more easily implemented than Alternative 3 and is expected to have less short-term impacts on the local community during construction. Furthermore, Alternative 2 can be implemented in a shorter timeframe and at less cost (6 months, \$1,075,757) than Alternative 3 (1 to 2 years, \$3,302,845).

Summary of the Estimated Cost of the Selected Remedy Amendment

The estimated capital, operation and maintenance and present worth costs for the selected remedy are detailed in the Residential Well FFS Report. The cost estimates, which are based upon estimates developed for similar projects, engineering judgment and construction bids, are order of magnitude engineering cost estimates that are expected to be within +50 to -30 percent of the actual cost for implementation of the remedy. The discount rate used for calculating total present worth costs is 7%. The estimated capital, O&M and total present worth costs, as well as construction time are detailed below and in Appendix II, Table 3:

Total Capital Cost	\$1,075,757
Operation and Maintenance	\$0 (Total)
Total Present Net Worth	\$1,075,757
Construction Duration	6 months

Expected Outcome of the Selected Remedy Amendment

The selected remedy amendment, Alternative 2, addresses the potential for exposure to contaminated groundwater at the distal end of the Site-related groundwater contaminant plume.

The potential for exposure to contaminated groundwater will be addressed through the replacement of threatened potable wells with deeper potable wells to be screened in a clean water-bearing unit. Furthermore, the existing shallow potable wells will be decommissioned in accordance with NJDEP requirements, further reducing the risk of future exposure to contaminated groundwater.

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 OU2 remedy amendment will be protective of human health and the environment, once implemented, as it will address the potential for exposure to contaminated groundwater at the distal end of the Site-related groundwater contaminant plume through the replacement of threatened and impacted potable wells with deeper potable wells to be screened in a clean water-bearing unit. In addition, the existing shallow potable wells will be decommissioned in accordance with NJDEP requirements, further reducing the risk of future exposure to contaminated groundwater.

Compliance with ARARs

The selected OU2 remedy amendment will result in meeting Federal and New Jersey State Drinking Water Standards, and New Jersey Groundwater Quality Standards in newly installed potable wells, and continued operation of the groundwater extraction and treatment system selected in the OU2 ROD will continue to treat groundwater contamination related to the Site, to attain a degree of cleanup that complies with chemical-specific ARARs. In addition, location-specific ARARs concerning wetlands, floodplains, endangered species and cultural/historic features will be complied with by installing replacement wells and service lines in locations which avoid these features.

Cost Effectiveness

EPA has determined that the selected OU2 remedy amendment 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." (40 CFR §300.430(f)(1)(ii)(D)). EPA evaluated 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, or volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness of a remedy. The relationship of the overall effectiveness of the selected remedy amendment was determined to be proportional to costs and hence, this alternative represent a reasonable value for the money to be spent. The estimated present worth cost of the selected remedy amendment is \$1,075,757. While Alternative 3, Connection to Public Water Supply, would also satisfy the threshold criteria, it would do so at greater cost than the selected remedy amendment.

Utilization of Permanent Solutions and Alternative Treatment Technologies

EPA has determined that the selected remedy amendment utilizes permanent solutions and treatment technologies to the maximum extent that is practicable. The selected remedy amendment is expected to permanently provide a clean potable water source to threatened and impacted residents which is free of contaminants related to the Site.

Preference for Treatment as a Principal Element

The statutory preference for the use of remedies that involve treatment as a principal element is not satisfied by the selected remedy amendment. However, continued operation of the groundwater extraction and treatment system selected in the OU2 ROD has and will continue to treat groundwater contamination related to the Site.

Five-Year Review Requirements

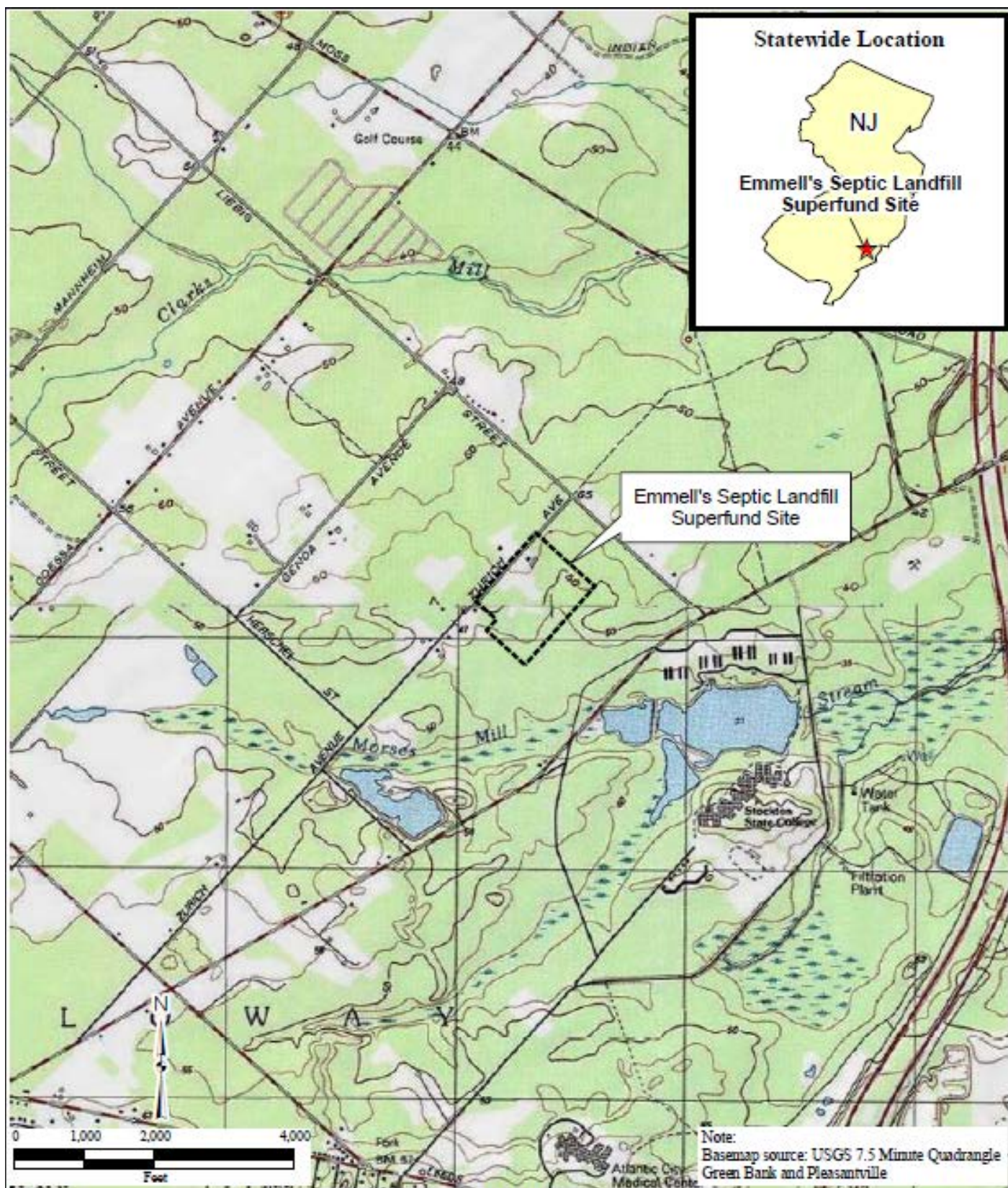
Geochemical modeling conducted in support of the remedy selected in the OU2 ROD estimated that it will take approximately 25 years to achieve the remediation goals throughout the groundwater contaminant plume. The OU2 remedy will result in hazardous substances, pollutants, or contaminants remaining at the Site above levels that would allow for unlimited use and unrestricted exposure until performance standards are attained. Because it may take more than five years to attain the cleanup levels, policy reviews pursuant to Section 121(c) of CERCLA will be conducted no less often than once every five years after the completion of construction to ensure that the remedy is, or will be, protective of human health and environment.

DOCUMENTATION OF SIGNIFICANT CHANGES

Upon review of all comments submitted, EPA has determined that no significant changes to the selected remedy amendment, as presented in the Proposed Plan, are warranted.

APPENDIX I

FIGURES



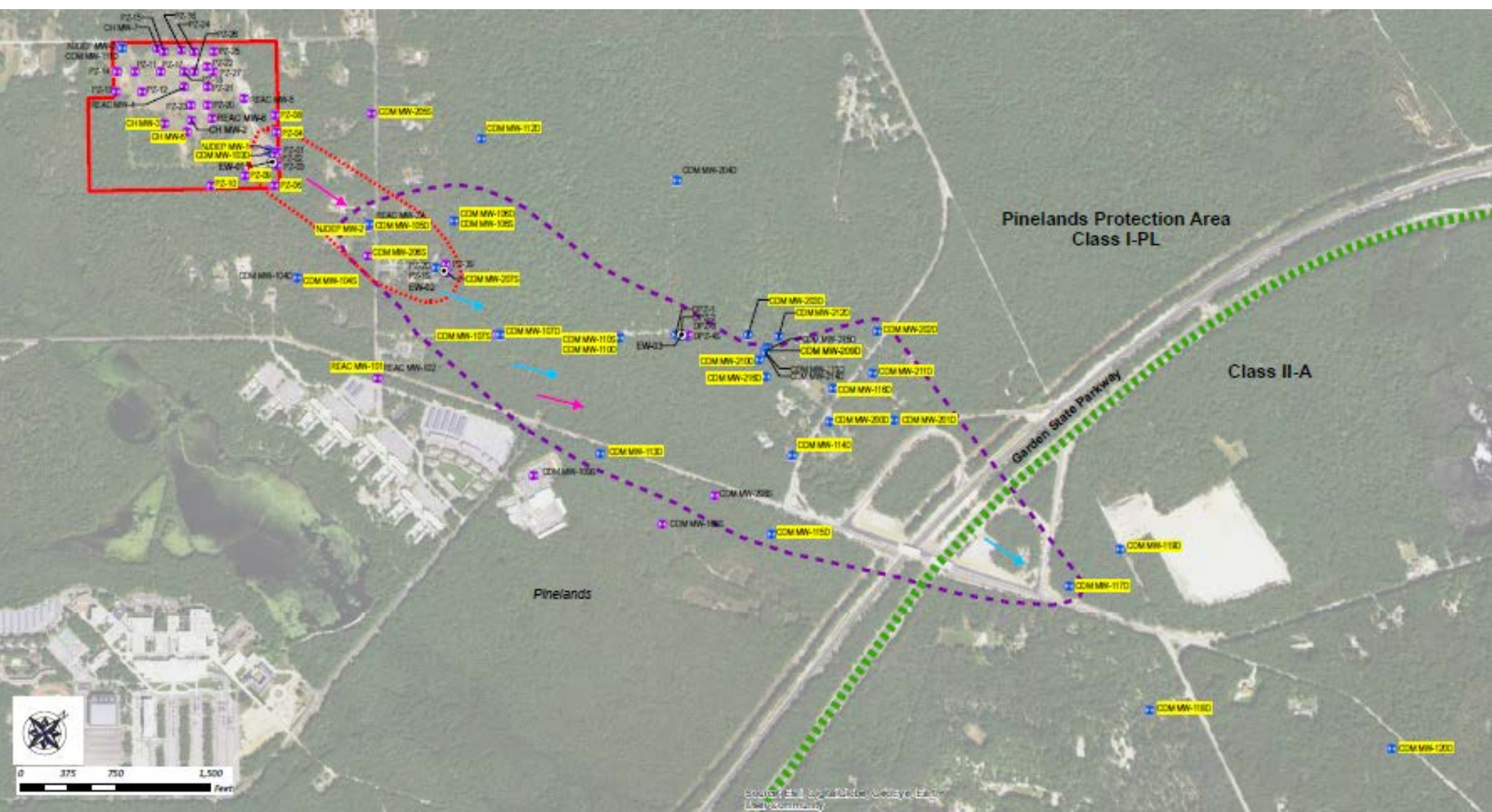
\\Gis-srv-01\hgl\Emmell's Septic Landfill\MSHW
2013 AR
(1-01)\Site_Loc.mxd
10/7/2014 MB
Source: HGL, ESRI Online Imagery

Legend

 Site

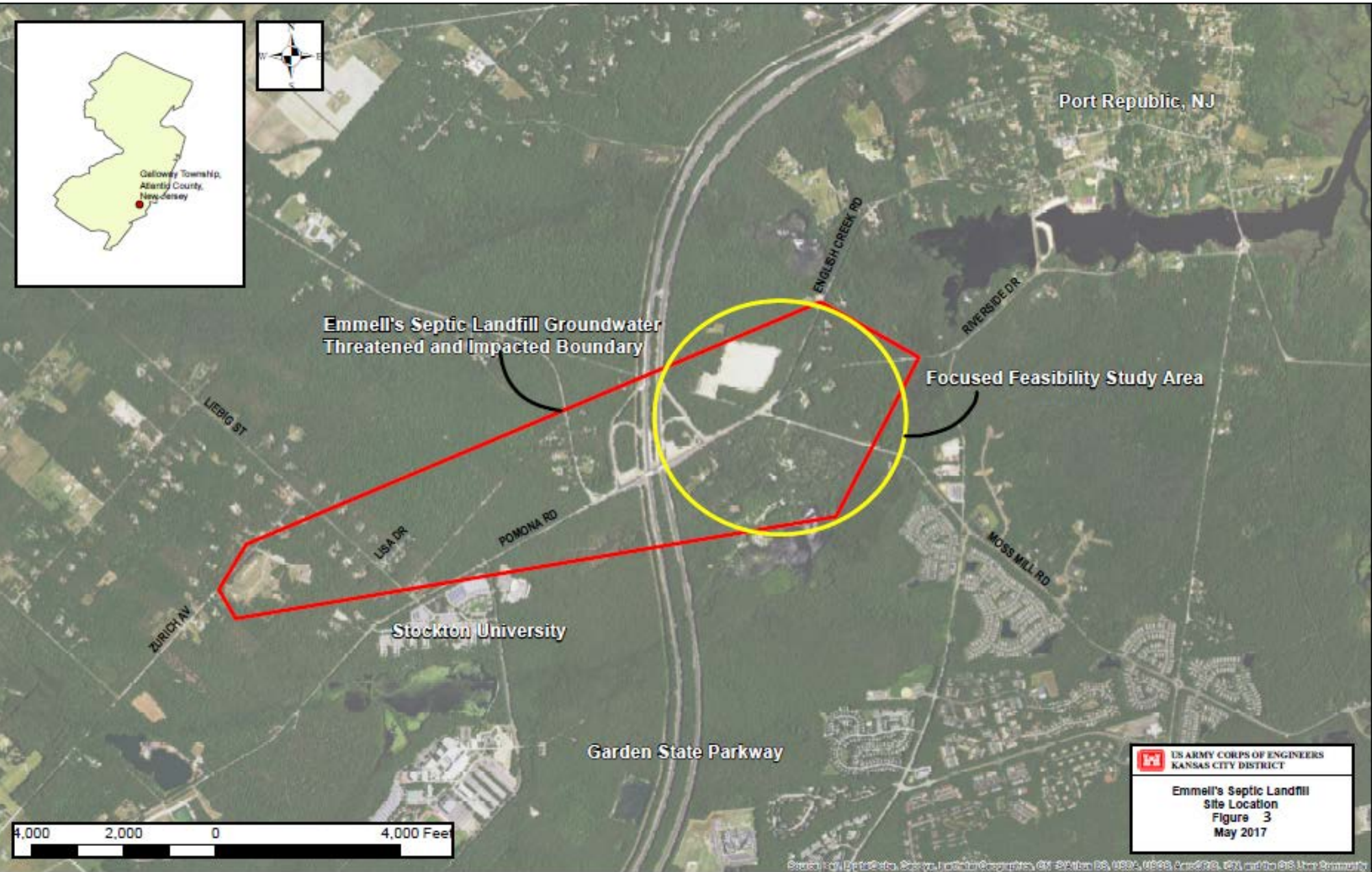
Figure 1
Site Location Map





- ◆ Deep Monitoring Well
 ■ Well Included in Long Term Monitoring Plan
 ■ Deep Plume Limit Estimated
 → Shallow Plume Flow Direction
- ◆ Shallow Monitoring Well
 ⊙ Extraction Well
 ■ Shallow Plume Limit Estimated
 → Deep Plume Flow Direction
- Site Boundary
 ■ Pinelands Boundary
 — Plume limits based upon combined 1 µg/L limit of cis-1,2-DCE, vinyl chloride, and 1,1,1-TCA (2015-2016 data)

Figure 2
Groundwater Impact Map
 May 2017
 Emmells Septic Landfill Superfund Site
 Galloway Township, Atlantic County, New Jersey



 US ARMY CORPS OF ENGINEERS
KANSAS CITY DISTRICT

Emmell's Septic Landfill
Site Location
Figure 3
May 2017

© 2017 US Army Corps of Engineers, Kansas City District. All rights reserved. No part of this document may be reproduced without written permission from the US Army Corps of Engineers, Kansas City District.

APPENDIX II

TABLES

TABLE 1
COMPOUNDS DETECTED ABOVE STANDARDS IN POTABLE WELLS

Compound	Federal Maximum Contaminant Level (ug/L)	New Jersey Ground Water Quality Standard (ug/L)	Maximum Concentration Detected (ug/L)
1,1,2-Trichloroethane	5	3	6.7
1,2-Dichloroethane	5	2	3.3
Trichloroethene	5	1	3.6
1,1-Dichloroethene	7	1	6.3
Vinyl Chloride	2	1	2.3

Table 2
Applicable or Relevant and Appropriate Requirements (ARARs)

Chemical-Specific ARARs	
Federal Standards and Guidelines	New Jersey Standards and Guidelines
National Primary Drinking Water Standards (40 CFR 141) - Maximum contaminant levels (MCLs) and non-zero maximum contaminant level goals (MCLGs)	- Drinking Water Standards (New Jersey Administrative Code (N.J.A.C). 7:10 Safe Drinking Water Act) - Ground Water Quality Standards N.J.A.C. 7:9C
Location-Specific ARARs	
Federal Standards and Guidelines	New Jersey Standards and Guidelines
<u>Wetlands and Floodplains Standards and Regulations</u> - Statement on Procedures on Floodplain Management and Wetlands Protection (40 CFR 6 Appendix A) - Policy on Floodplains and Wetland Assessments for CERCLA Actions (OSWER Directive 9280.0-12, 1985) - Wetlands Executive Order (EO 11990) - Flood plain Executive Order (EO 11988) <u>Wildlife Habitat Protection Standards and Regulations</u> - Federal Endangered Species Act (16 USC 1531 et seq.; 40 CFR 400) - Federal Fish and Wildlife Conservation Act (16 USC 2901 et seq.) <u>Cultural Resources</u> - National Historic Preservation Act (40 CFR 6.301) <u>Historic Preservation Standards and Regulations</u> - National Historic Preservation Act (40 CFR 6.301)	<u>Wetlands and Floodplains Standards and Regulations</u> - New Jersey Flood Hazard Area Control Act - Floodplain Use and Limitations (N.J.A.C. 7:13) - New Jersey Freshwater Wetland Protection Act - Freshwater Wetlands Protection Act Rules (N.J.S.A. 13:9B-1; N.J.A.C. 7:7A) <u>Wildlife Habitat Protection Standards and Regulations</u> - New Jersey Endangered and Non-Game Species Conservation Act (N. J. S. A. 23:2A-1 to -13) - New Jersey Endangered Plant Species List Act - Endangered Plant Species Program (N.J.S.A. 13.1B-15.151 to -15.158; N.J.A.C. 7:5B)
Action-Specific ARARs	
Federal Standards and Guidelines	New Jersey Standards and Guidelines
<u>General - Site Remediation</u> Federal Clean Water Act - National Pollutant Discharge Elimination System (40 CFR 100 <i>et seq.</i>); Effluent Guidelines and Standards for the Point Source	<u>General - Site Remediation</u> - New Jersey Soil Erosion and Sediment Control - Soil Erosion and Sediment Control Standards (N.J.A.C. 16.25A) - New Jersey Uniform Construction Code (N.J.A.C. 5:23) - New Jersey SA 58:4A-5 and NJAC 7:9D – Drilling and well installation requirements

* Table 2 identifies ARARs for the OU2 remedy, as amended.

Table 3
Cost of Selected Remedy Amendment

Description	Quantity	Unit	Unit Cost	Total
Mobilization/Demonization	1	LS	\$5,000	\$5,000
Well Permit	14	EA	\$130	\$1,820
Drill/Install Well	14	EA	\$30,000	\$420,000
Surface Casing	14	EA	\$1,900	\$26,600
Riser Pipe and Screen	14	EA	\$2,800	\$39,200
Grout	14	EA	\$4,200	\$58,800
Filter pack/bentonite seal	14	EA	\$250	\$3,500
Pitless Adapter	14	EA	\$500	\$7,000
Submersible pump 1.5 HP	14	EA	\$750	\$10,500
Electric line and conduit for pump	14	EA	\$1,300	\$18,200
1-inch riser for pump	14	EA	\$400	\$5,600
Service Connection	14	EA	\$2,000	\$28,000
Seal/Abandon Old Well	14	EA	\$4,200	<u>\$58,800</u>
Subtotal				\$683,020
Contingency	25%			<u>\$170,755</u>
Subtotal				\$853,775
Project Management	6.00%			\$51,227
Remedial Design	12.00%			\$102,453
Construction Management	8.00%			<u>\$68,302</u>
				\$221,982
Total Capital Cost				\$1,075,757

1) Unit costs determined from contractor costs on USACE Remedial Action Contracts in Region 2.

2) Cost to drill and install a well includes sampling of the new well to confirm no exceedance of drinking water standards.

APPENDIX III

TABLES - Risk Assessment

TABLE 1 Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations	
---	--

Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Point	Chemical of Concern	Concentration Detected		Concentration Units	Frequency of Detection	Exposure Point Concentration (EPC)	EPC Units	Statistical Measure
		Min	Max					

Groundwater – Distal Plume	Chloroform	0.67	2.3	ug/l	2/16	0.893	ug/l	95% KM(t) UCL
	1,1-dichloroethane	0.59	14	ug/l	10/16	8.15	ug/l	95% Gamma
	1,2-dichloroethane	3	3	ug/l	1/16	3	ug/l	Maximum
	cis-1,2-dichloroethylene	0.81	66	ug/l	10/16	22.5	ug/l	95% KM(t) UCL
	1,1,2-trichloroethane	5	5	ug/l	1/16	5	ug/l	Maximum
	Trichloroethylene	0.72	2.9	ug/l	6/16	1.14	ug/l	95% KM(t) UCL
	Vinyl chloride	0.75	2.3	ug/l	4/16	1.07	ug/l	95% KM(t) UCL

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

This table presents the chemicals of concern (COCs) and exposure point concentrations (EPCs) for each of the COCs in groundwater, within the distal plume. The table includes 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 EPC and how it was derived.

TABLE 2
SELECTION OF EXPOSURE PATHWAYS
Emmell's Septic Superfund Site

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis
Current/Future	Groundwater	Groundwater	Groundwater – Distal Plume	Resident	Adult	Ingestion	Quant
						Dermal	Quant
						Inhalation	Quant
					Child	Ingestion	Quant
						Dermal	Quant
						Inhalation	Quant

Quant: will be quantitatively evaluated

Child = 0-6 years

TABLE 3

Non-Cancer Toxicity Data Summary

Pathway: Oral/Dermal

Chemical of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	% Absorp. Efficiency (Dermal)	Adjusted RfD (Dermal)	Adj. Dermal RfD Units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD: Target Organ	Dates of RfD:
Chloroform	Chronic	0.01	mg/kg-day	100	0.01	mg/kg-day	Liver	100	IRIS	05/2017
1,1-dichloroethane	Chronic	0.2	mg/kg-day	100	0.2	mg/kg-day	Kidney	3,000	PPRTV	05/2017
1,2-dichloroethane	Chronic	0.006	mg/kg-day	100	0.006	mg/kg-day	Renal	300	PPRTV	05/2017
cis-1,2-dichloroethylene	Chronic	0.002	mg/kg-day	100	0.002	mg/kg-day	Kidney	3,000	IRIS	05/2017
1,1,2-trichloroethane	Chronic	0.004	mg/kg-day	100	0.004	mg/kg-day	Blood	1,000	IRIS	05/2017
Trichloroethylene	Chronic	0.0005	mg/kg-day	100	0.0005	mg/kg-day	Heart	10 to 1,000	IRIS	05/2017
Vinyl chloride	Chronic	0.003	mg/kg-day	100	0.003	mg/kg-day	Liver	30	IRIS	05/2017

Pathway: Inhalation

Chemical of Concern	Inhalation RfC	RfC Units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD: Target Organ	Dates of RfD:
Chloroform	0.0977	mg/m ³	Alimentary System/Kidney/Developmental	300	Cal/EPA	05/2017
1,1-dichloroethane	-----	-----	-----	-----	-----	05/2017
1,2-dichloroethane	0.007	mg/m ³	Nervous system	3,000	PPRTV	05/2017
cis-1,2-dichloroethylene	-----	-----	-----	-----	-----	05/2017
1,1,2-trichloroethane	0.0002	mg/m ³	NOAEL	1,000	PPRTV	05/2017
Trichloroethylene	0.002	mg/m ³	Heart	10 to 1,000	IRIS	05/2017
Vinyl chloride	0.1	mg/m ³	Liver	30	IRIS	05/2017

Key

Cal/EPA: California Environmental Protection Agency
 IRIS: Integrated Risk Information System, U.S. EPA
 PPRTV: Provisional Peer Review Toxicity Value
 ----- No information available

Summary of Toxicity Assessment

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

TABLE 4 Cancer Toxicity Data Summary									
---	--	--	--	--	--	--	--	--	--

Pathway: Oral/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
Chloroform	0.031	(mg/kg/day) ⁻¹	0.031	(mg/kg/day) ⁻¹	B2	Cal/EPA	05/2017
1,1-dichloroethane	0.0057	(mg/kg/day) ⁻¹	0.0057	(mg/kg/day) ⁻¹	C	Cal/EPA	05/2017
1,2-dichloroethane	0.091	(mg/kg/day) ⁻¹	0.091	(mg/kg/day) ⁻¹	B2	IRIS	05/2017
cis-1,2-dichloroethylene	-----	-----	-----	-----	-----	-----	05/2017
1,1,1,2-trichloroethane	0.057	(mg/kg/day) ⁻¹	0.057	(mg/kg/day) ⁻¹	C	IRIS	05/2017
Trichloroethylene	0.046	(mg/kg/day) ⁻¹	0.046	(mg/kg/day) ⁻¹	Carcinogenic to humans	IRIS	05/2017
Vinyl chloride	0.72	(mg/kg/day) ⁻¹	0.72	(mg/kg/day) ⁻¹	A	IRIS	05/2017

Pathway: Inhalation						
----------------------------	--	--	--	--	--	--

Chemical of Concern	Unit Risk	Units	Inhalation Slope Factor	Slope Factor Units	Weight of Evidence/ Cancer Guideline Description	Source	Date
Chloroform	0.000023	(ug/m ³)	0.000023	(ug/m ³)	B2	IRIS	05/2017
1,1-dichloroethane	0.0000016	(ug/m ³)	0.0000016	(ug/m ³)	C	Cal/EPA	05/2017
1,2-dichloroethane	0.000026	(ug/m ³)	0.000026	(ug/m ³)	B2	IRIS	05/2017
cis-1,2-dichloroethylene	-----	-----	-----	-----	-----	-----	05/2017
1,1,1,2-trichloroethane	0.000016	(ug/m ³)	0.000016	(ug/m ³)	C	IRIS	05/2017
Trichloroethylene	0.0000041	(ug/m ³)	0.0000041	(ug/m ³)	Carcinogenic to humans	IRIS	05/2017
Vinyl chloride	0.0000044	(ug/m ³)	0.0000044	(ug/m ³)	A	IRIS	05/2017

Key:	EPA Weight of Evidence:
-------------	--------------------------------

Key:	EPA Weight of Evidence:
-------------	--------------------------------

IRIS: Integrated Risk Information System. U.S. EPA
CalEPA: California Environmental Protection Agency
A: Known Human Carcinogen
B2: Probable Human Carcinogen
C: Possible Human Carcinogen
---- No information available

Summary of Toxicity Assessment

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

TABLE 5 Risk Characterization Summary - Noncarcinogens	
--	--

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Child (0-6)

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk			
					Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Groundwater	Groundwater – Distal Plume	Chloroform	Liver	0.004	0.0004	0.004	0.009
			1,1-dichloroethane	Kidney	0.002	0.0002	-----	0.002
			1,2-dichloroethane	Renal	0.02	0.001	0.2	0.2
			cis-1,2-dichloroethylene	Kidney	0.6	0.06	-----	0.6
			1,1,2-trichloroethane	Blood	0.06	0.004	12	12.1
			Trichloroethylene	Heart	0.1	0.02	0.3	0.4
			Vinyl chloride	Liver	0.02	0.001	0.005	0.2

Hazard Index Total=	13
---------------------	----

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk			
					Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Groundwater	Groundwater – Distal Plume	Chloroform	Liver	0.003	0.0002	0.004	0.007
			1,1-dichloroethane	Kidney	0.001	0.00009	-----	0.001
			1,2-dichloroethane	Renal	0.02	0.0007	0.2	0.2
			cis-1,2-dichloroethylene	Kidney	0.3	0.04	-----	0.4
			1,1,2-trichloroethane	Blood	0.03	0.003	12	12
			Trichloroethylene	Heart	0.07	0.01	0.3	0.4
			Vinyl chloride	Liver	0.01	0.0008	0.005	0.02

Hazard Index Total=	13
---------------------	----

GI – Gastrointestinal system

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 exposure to groundwater within the distal plume. 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 6 Risk Characterization Summary - Carcinogens	
---	--

Scenario Timeframe:	Current/Future
Receptor Population:	Resident
Receptor Age:	Adult/Child

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Dermal	Inhalation	Exposure Routes Total
Groundwater	Groundwater	Groundwater – Distal Plume	Chloroform	3.6E-07	3.1E-08	3.7E-06	4.0E-06
			1,1-dichloroethane	6.0E-07	4.5E-08	2.3E-06	3.0E-06
			1,2-dichloroethane	3.5E-06	1.6E-07	1.4E-05	1.8E-05
			cis-1,2-dichloroethylene	-----	-----	-----	-----
			1,1,2-trichloroethane	3.7E-06	2.6E-07	1.4E-05	1.8E-05
			Trichloroethylene	9.6E-07	1.5E-07	1.2E-06	2.3E-06
			Vinyl chloride	5.0E-05	3.9E-06	3.2E-06	5.7E-05
Total Risk =						1.0E-04	

Summary of Risk Characterization - Carcinogens

The table presents cancer risks for groundwater exposure within the distal plume. As stated in the National Contingency Plan, the point of departure is 10^{-6} and the acceptable risk range for site-related exposure is 10^{-6} to 10^{-4} .

APPENDIX IV

ADMINISTRATIVE RECORD INDEX

COMPREHENSIVE ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL
07/19/2017

REGION ID: 02

Site Name: EMMELL'S SEPTIC LANDFILL
CERCLIS ID: NJD980772727
OUID: 02
SSID: 02JW
Action: ROD AMENDMENT

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
334021	7/19/2017	COMPREHENSIVE ADMINISTRATIVE RECORD INDEX FOR OU2 FOR THE EMMELL'S SEPTIC LANDFILL SITE	6	Administrative Record Index		(US ENVIRONMENTAL PROTECTION AGENCY)
102241	Undated	EMMELL'S SEPTIC LANDFILL SITE, OPERABLE UNIT 2, ADMINISTRATIVE RECORD FILE, INDEX OF DOCUMENTS.	6	List/Index		(US ENVIRONMENTAL PROTECTION AGENCY)
106271	Undated	EMMELL'S SEPTIC LANDFILL SITE, OPERABLE UNIT 2, ADMINISTRATIVE RECORD FILE UPDATE, INDEX OF DOCUMENTS.	1	List/Index		(US ENVIRONMENTAL PROTECTION AGENCY)
114120	11/12/1993	Report: Final Site Inspection Prioritization Report, Emmell's Septic Landfill, Galloway Township, New Jersey, prepared by Roy F. Weston, Inc., prepared for U.S. EPA, Region 2, November 12, 1993.	268	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(ROY F. WESTON INCORPORATED)
114121	04/15/1997	Report: Expanded Site Investigation, Emmell's Septic Landfill, Galloway Township, Atlantic County, prepared by New Jersey Department of Environmental Protection, Division of Publicly Funded Site Remediation, Environmental Measurements and...	470	Report		(NJ DEPARTMENT OF ENVIRONMENTAL PROTECTION)
114122	06/20/1998	Memorandum to Mr. George Prince, U.S. EPA/ERTC Work Assignment Manager, Roy F. Weston, Inc., from Charles Perry, REAC Task Leader, Roy F. Weston, Inc., re: Document Transmittal Under Work Assignment 3-310, June 20, 1998...	506	Report	PRINCE,GEORGE (US ENVIRONMENTAL PROTECTION AGENCY)	PERRY,CHARLES (ROY F. WESTON INCORPORATED)

COMPREHENSIVE ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL
07/19/2017

REGION ID: 02

Site Name: EMMELL'S SEPTIC LANDFILL
CERCLIS ID: NJD980772727
OUID: 02
SSID: 02JW
Action: ROD AMENDMENT

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
114124	09/12/2000	Report: Groundwater Focused Feasibility Study, Final Quality Assurance Project Plan, Emmell's Septic Landfill, Remedial Investigation/Feasibility Study, Galloway's Township, New Jersey, prepared by CDM Federal Programs Corporation,...	463	Work Plan	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
114125	08/03/2001	Report: Final Technical Memorandum for Groundwater, Emmell's Septic Landfill, Groundwater Focused Feasibility Study, Galloway Township, New Jersey, prepared by CDM Federal Programs Corporation, prepared for U.S. EPA, Region 2, August 3, 2001.	137	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
103073	01/25/2002	Report: Final Work Plan, Volume I, Emmell's Septic Landfill Site, Remedial Investigation/ Feasibility Study, Galloway Township, Atlantic County, New Jersey, Work Assignment No.: 035-RICO-02JW...	135	Work Plan	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
114133	03/01/2002	Report: Public Health Assessment for Emmell's Septic Landfill, Galloway Township, Atlantic County, New Jersey, prepared by New Jersey Department of Health and Senior Services, Hazardous Site Health Evaluation Program,...	45	Report		(NEW JERSEY DEPARTMENT OF HEALTH AND SENIOR SERVICES)
103074	06/27/2002	Report: Final Addendum to the Final Quality Assurance Project Plan, Emmell's Septic Landfill, WA 035-RICO-02JW, EPA Contract No.: 68-W-98-210, prepared by CDM Federal Programs Corporation...	1	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)

COMPREHENSIVE ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL
07/19/2017

REGION ID: 02

Site Name: EMMELL'S SEPTIC LANDFILL
CERCLIS ID: NJD980772727
OUID: 02
SSID: 02JW
Action: ROD AMENDMENT

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
114126	05/01/2003	Report: Revised Final Groundwater Focused Feasibility Study, Emmell's Septic Landfill Site, Remedial Investigation/Feasibility Study, Galloway Township, New Jersey, Volume I, prepared by CDM Federal Programs Corporation,...	169	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
114127	05/01/2003	Report: Revised Final Groundwater Focused Feasibility Study, Emmell's Septic Landfill Site, Remedial Investigation/Feasibility Study, Galloway Township, New Jersey, Volume II, Appendix A-M, prepared by CDM Federal Programs Corporation,...	501	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
114128	05/01/2003	Report: Revised Final Groundwater Focused Feasibility Study, Emmell's Septic Landfill Site, Remedial Investigation/Feasibility Study, Galloway Township, New Jersey, Volume III, Appendix N, prepared by CDM Federal Programs Corporation, prepared for ...	852	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
103075	05/27/2004	Report: Revised Work Plan Letter, Volume I, Supplemental Remedial Investigation Activities, Emmell's Septic Landfill Site, Remedial Investigation/Feasibility Study, Galloway Township, New Jersey, Work Assignment No.: 135-RICO-02JW, prepared by CDM ...	33	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)

COMPREHENSIVE ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL
07/19/2017

REGION ID: 02

Site Name: EMMELL'S SEPTIC LANDFILL
CERCLIS ID: NJD980772727
OUID: 02
SSID: 02JW
Action: ROD AMENDMENT

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
103076	11/30/2004	Report: Final Addendum Number 2 to the Final Quality Assurance Project Plan, Emmell's Septic Landfill Site, Supplemental Remedial Investigation / Feasibility Study, (RI/FS) Activities, Galloway Township, New Jersey, Work Assignment No.: 135-RICO-02JW..	314	Work Plan	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
103071	04/21/2005	Letter to Mr. Joseph Gowers, Remedial Project Manager, U.S. Environmental Protection Agency, Region 2, from Ms. Maria D. Watt, P.E., Site Manager, CDM Federal Programs Corporation, re: Rationale for Sample Location Modifications, Emmell's Septic ...	5	Letter	GOWERS,JOSEPH (US ENVIRONMENTAL PROTECTION AGENCY)	WATT,MARIA,D (CDM FEDERAL PROGRAMS CORPORATION)
103072	05/12/2005	Report: Technical Memorandum, Supplemental Membrane Interface, Probe Investigation, Emmell's Septic Landfill Site, Remedial Investigation /Feasibility Study, Galloway Township, Atlantic County, New Jersey, Work Assignment No.: 135-RICO-02JW...	98	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
103077	11/28/2005	Report: Work Plan Letter, Mud Rotary / Hydropunch Screening, Supplemental Remedial Investigation Activities, Emmell's Septic Landfill Site, Remedial Investigation / Feasibility Study, Galloway Township, New Jersey, Work Assignment No.: 135-RICO-02JW...	12	Work Plan	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)

COMPREHENSIVE ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL
07/19/2017

REGION ID: 02

Site Name: EMMELL'S SEPTIC LANDFILL
CERCLIS ID: NJD980772727
OUID: 02
SSID: 02JW
Action: ROD AMENDMENT

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
103078	05/30/2007	Report: Final Screening Level Ecological Risk Assessment, Emmell's Septic Landfill Superfund Site, Galloway Township, New Jersey, Work Assignment No.: 135-RICO-02JW...	124	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
103079	04/01/2008	Report: Final Human Health Risk Assessment Report, Emmell's Septic Landfill Site, Remedial Investigation / Feasibility Study, Galloway Township, New Jersey, Work Assignment No.: 135-RICO-02JW...	239	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
103080	04/11/2008	Report: Final Remedial Investigation Report, Volume 1, Text, Tables, Figures, Emmell's Septic Landfill Site, Galloway Township, Atlantic County, New Jersey, Work Assignment No.: 135-RICO-02JW...	290	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
103081	04/11/2008	Report: Final Remedial Investigation Report, Volume 2, Appendices A to J, Emmell's Septic Landfill Site, Galloway Township, Atlantic County, New Jersey, Work Assignment No.: 135-RICO-02JW...	490	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
103082	04/11/2008	Report: Final Remedial Investigation Report, Volume 3, Appendices K to O, Emmell's Septic Landfill Site, Galloway Township, Atlantic County, New Jersey, Work Assignment No.: 135-RICO-02JW...	806	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
103084	06/13/2008	Report: Final Feasibility Study Report, Emmell's Septic Landfill Site, Galloway Township, Atlantic County, New Jersey, Work Assignment No.: 135-RICO-02JW...	285	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)

COMPREHENSIVE ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL
07/19/2017

REGION ID: 02

Site Name: EMMELL'S SEPTIC LANDFILL
CERCLIS ID: NJD980772727
OUID: 02
SSID: 02JW
Action: ROD AMENDMENT

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
103086	07/01/2008	Report: Superfund Program Proposed Plan, Emmell's Septic Landfill Superfund Site, prepared by U.S. Environmental Protection Agency, Region 2, July 2008.	17	Work Plan		(US ENVIRONMENTAL PROTECTION AGENCY)
103083	07/25/2008	Letter to Mr. Joseph Gowers, Remedial Project Manager, U.S. Environmental Protection Agency, Region 2, from Ms. Jeanne Litwin, REM, RAC II Program Manager, CDM Federal Programs Corporation, re: Addendum to Final Screening Level Ecological Risk...	27	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(CDM FEDERAL PROGRAMS CORPORATION)
103085	08/18/2008	Transcript: United States Environmental Protection Agency Public Meeting In Re: Emmell's Septic Superfund Site, August 18, 2008.	42	Meeting Document		
106265	09/30/2008	RECORD OF DECISION, EMMELL'S SEPTIC LANDFILL SITE, OPERABLE UNIT TWO, GALLOWAY TOWNSHIP, ATLANTIC COUNTY, NEW JERSEY.	168	Report		(US ENVIRONMENTAL PROTECTION AGENCY)
503341	05/01/2017	FINAL FOCUSED FEASIBILITY STUDY FOR OU2 FOR THE EMMELL'S SEPTIC LANDFILL SITE	122	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(US ARMY CORPS OF ENGINEERS)
503342	07/18/2017	PROPOSED PLAN FOR OU2 FOR THE EMMELL'S SEPTIC LANDFILL SITE	12	Report		(US ENVIRONMENTAL PROTECTION AGENCY)

APPENDIX V

STATE LETTER OF CONCURRENCE



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
SITE REMEDIATION & WASTE MANAGEMENT PROGRAM

Mail Code 401-06

P. O. Box 420

Trenton, New Jersey 08625-0420

Tel. #: 609-292-1250

Fax. #: 609-777-1914

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

September 13, 2017

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

Re: Emmell's Septic Landfill Superfund Site
Record of Decision Amendment Operable Unit 2
EPA ID# NJD980772727
DEP PI# G000005221

Dear Mr. Prince:

The New Jersey Department of Environmental Protection (DEP) completed its review of the "Record of Decision Amendment, Emmell's Septic Landfill Superfund Site, Operable Unit Two, Galloway Township, Atlantic County, New Jersey" prepared by the U.S. Environmental Protection Agency (EPA) Region II in September 2017 and concurs with the selected remedy to address impacted and threatened potable wells from the site's contaminated groundwater plume.

The selected remedy included in this Record of Decision (ROD) Amendment modifies the groundwater and soil remedy selected in the 2008 ROD. The soils cleanup selected in the 2008 ROD has been completed and the groundwater extraction and treatment system has been in operation since 2012. More recently, EPA identified additional potable wells that have been impacted or threatened by site-related groundwater contamination.

The major components of the response action selected in this ROD Amendment include the following:

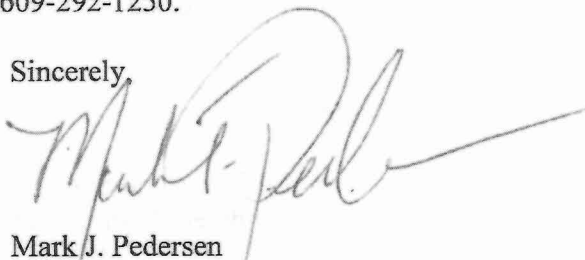
- Installation of new potable wells for properties threatened or impacted by contaminated groundwater emanating from the site. The double-cased replacement wells will be drilled to a depth of approximately 350 feet below ground surface into the Rio Grande water bearing unit, which has not been impacted and is not threatened by site-related groundwater contamination.

- Decommissioning of existing shallow potable wells in accordance with requirements established by DEP.

DEP appreciates the opportunity to participate in the decision-making process to amend the selected remedy for this site. Further, DEP is looking forward to future cooperation with EPA during remedial actions for this site to ensure a safe drinking water supply to area residents.

If you have any questions, please call me at 609-292-1250.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Mark J. Pedersen', with a long horizontal flourish extending to the right.

Mark J. Pedersen
Assistant Commissioner
Site Remediation & Waste Management Program

C: Kenneth J. Kloo, Director, Division of Remediation Management, DEP
Edward Putnam, Assistant Director, Publicly Funded Response Element, DEP
Carole Petersen, Chief, New Jersey Remediation Branch, EPA Region II

APPENDIX VI

RESPONSIVENESS SUMMARY

APPENDIX VI

RESPONSIVENESS SUMMARY

INTRODUCTION

This Responsiveness Summary provides a summary of the significant comments and concerns submitted by the public on the July 2017 Proposed Plan for the Emmell's Septic Landfill Superfund Site, and EPA's responses to those comments and concerns. All comments summarized in this document have been considered in EPA's final decision for the selection of an Operable Unit Two (OU2) remedy amendment to provide an alternate water supply for residents threatened by Site-related groundwater contamination.

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 concerns regarding the Site.
- II. **COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS AND RESPONSES:** This section includes summaries of comments received by EPA during the August 3, 2017 public meeting, as well as responses to these comments. Written comments were not received by EPA during the public comment period.

The Responsiveness Summary includes attachments which document public participation in the remedy selection process for the Site. These attachments are as follows:

Attachment A - July 2017 Proposed Plan for the Emmell's Septic Landfill Site;

Attachment B - Public Notice published in The Press of Atlantic City on July 20, 2017; and

Attachment C - Transcripts of the August 3, 2017 Public Meeting.

I. **BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS**

EPA's Proposed Plan to amend the OU2 remedy for the Site and the Residential FFS were released to the public for comment on July 20, 2017. These documents were made available to the public in the OU2 administrative record file maintained at the Atlantic County Library, Galloway Township Branch, located at 306 East Jimmie Leeds Road, Galloway Township, New Jersey and in the EPA Region II Records Center at 290 Broadway, New York City.

A notice of availability of the above-referenced documents was published in The Press of Atlantic City on July 20, 2017. This notice also announced a public comment period on these documents, which ran from July 20, 2017 to August 21, 2017. Copies of the Proposed Plan were also mailed to the residents located in the area to be addressed by the OU2 remedy amendment.

In addition, EPA held a public meeting on August 3, 2017 at 7:00 pm at the Galloway Township Middle School in Galloway, New Jersey to present the findings of the Residential FFS and EPA's Proposed Plan to the community and local officials. At this meeting, representatives of EPA presented the Proposed Plan to amend the OU2 remedy and answered questions concerning the remedial alternatives developed as part of the Residential FFS.

Since inclusion of the Site on the National Priorities List, EPA has implemented a community relations program designed to inform the community of Site-related Superfund activities and to solicit input from the community regarding Site-related concerns and questions. These activities have included disseminating fact sheets, conducting public meetings and public availability sessions and updating local officials on Site activities.

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

This section summarizes comments received from the public during the public comment period along with EPA's responses to those comments.

Comment #1: A resident asked whether EPA will replace additional potable wells in the future if these wells are impacted or threatened by Site-related groundwater contamination.

EPA Response: EPA is committed to addressing any unacceptable risks to human health which may result from exposure to Site-related contamination. Therefore, if EPA determines in the future that additional potable wells are threatened or impacted by Site-related contamination at levels which present an unacceptable risk to human health, EPA will take action to alleviate that risk by providing a clean alternate water supply.

Comment #2: A citizen asked how quickly the Site-related groundwater contaminant plume moved.

EPA Response: EPA's Site-related groundwater studies determined that groundwater moves approximately 0.5 feet/day in the aquifer beneath the Site property. However, it should be noted that this velocity does not take into account natural processes, such as contaminant adsorption and degradation, which tend to slow the movement of contaminants in groundwater. Furthermore, EPA's continued operation of a groundwater extraction and treatment system at the Site is expected to significantly impede further movement of the groundwater contaminant plume.

Comment #3: A citizen inquired as to the type of wells that EPA has and will sample in the future.

EPA Response: EPA currently maintains a network of groundwater monitoring wells which are used to monitor the Site-related groundwater contaminant plume. Historically, EPA has collected groundwater samples from these monitoring wells in order to characterize the nature and extent of groundwater contamination related to the Site, and to evaluate the effectiveness of the groundwater extraction and treatment system. In addition, EPA has sampled residential wells in the vicinity of the Site to ensure that residents are not exposed to Site-related contamination. EPA will continue to collect groundwater samples from its Site-related monitoring wells to continue to evaluate the effectiveness of the groundwater extraction and treatment system in cleaning up groundwater contamination. In addition, EPA will sample potable wells in the vicinity of the Site, as appropriate to ensure the protection of area residents from exposure to Site-related contamination.

Comment #4: Several residents of the City of Port Republic expressed concern regarding the detection of elevated levels of 1,2-dichloropropane and 1,3-dichloropropene in their well water. These residents were also concerned that other residents of the City of Port Republic were not being notified of the potential of these compounds in their well water.

EPA Response: - It is EPA's understanding that 1,2-dichloropropane and 1,3-dichloropropene were commonly utilized for agricultural purposes as soil fumigants. Investigations conducted at the Site indicate that these contaminants are not associated with disposal activities at the Site. Furthermore, 1,2-dichloropropane and 1,3-dichloropropene are not typically detected in the Site-related groundwater contaminant plume. Therefore, potable wells impacted by these contaminants cannot be addressed as part of the selected remedy amendment. However, residents whose potable wells have been impacted by these contaminants are advised to contact the New Jersey Department of Environmental Protection (NJDEP) to determine if they are eligible to seek compensation for damages through the State of New Jersey's Spill Compensation Fund. Representatives of the NJDEP have been notified of residents' concerns regarding the detection of these compounds in their well water.

Comment #5: A resident expressed a preference for connecting threatened residents to the public water supply, on the basis that it would be more cost-effective than having to maintain potable wells.

EPA Response: As noted in the *Comparative Analysis of Alternatives* section of the OU2 ROD Amendment, the selected remedy amendment is more implementable than Alternative 3, which would require an expansion of the New Jersey American Water service area, as well as extensive excavation of two miles of roadway. Further, EPA estimates that the selected remedy amendment will cost \$1,075,757 to implement, while connection to the public water supply is estimated to cost \$3,302,845. The selected remedy amendment is equally protective as Alternative 3, more implementable, and less costly than the connection to the public water

supply alternative. Furthermore, while residents will be responsible for the cost of maintaining the replacement wells, these maintenance costs may be significantly less than the fees associated with purchasing water from the water company.

Comment #6: A citizen expressed concern that the new replacement wells may be impacted by Site-related groundwater contamination.

EPA Response: As noted in the OU2 ROD Amendment, EPA intends to drill the replacement wells to a depth of approximately 350 feet below ground surface into the Rio Grande water bearing unit, which has been found to be free of Site-related contamination. The shallower contaminated groundwater is separated from the Rio Grande unit by a 50 to 100-foot-thick clay unit. The low permeability of this clay unit impedes downward movement of groundwater contamination. In addition, the replacement wells will be double cased, with the outer casing set into the above-referenced clay unit. Installation of double-cased wells will minimize the potential for leakage of contaminated groundwater into the Rio Grande unit. Finally, water from all replacement wells will be sampled after construction to ensure that groundwater standards are met.

Comment #7: A resident asked EPA to provide detail about the depth of the groundwater contaminant plume.

EPA Response: Groundwater contamination near the Site property is located in the shallow zone of the aquifer, at a depth of 50 to 80 feet below ground surface. As the groundwater plume moves east of the Site property, it moves down into a deeper zone of the aquifer. Site-related groundwater contamination east of the Garden State Parkway, at the distal end of the groundwater plume, is located at an approximate depth of 120 feet below ground surface, which is above the clay unit which separates this aquifer from the Rio Grande water-bearing unit.

Comment #8: A resident asked about the order in which wells will be replaced. This resident noted that their neighbor already had their well replaced by EPA.

EPA Response: Under Superfund, two different types of responses are used to manage Site cleanup. Removal actions are used to address situations which present an immediate threat to human health. Remedial actions are implemented to address long-term cleanups which do not present an immediate threat to human health. Historically, EPA has replaced residential wells which were impacted by Site-related groundwater contamination utilizing its removal authority. EPA determined that continued use of the replaced wells for potable purposes presented an immediate threat to human health. EPA is currently issuing the OU2 ROD amendment to provide an alternate water supply for residents that are threatened by Site-related groundwater contamination over the long term. The order in which these threatened wells will be replaced will be determined in the future, in consultation with the respective property owners.

Comment #9: A resident asked about Galloway Township plans to have water mains installed on East Moss Mill Road.

EPA Response: EPA is unaware of any imminent plans to install water mains on the section of East Moss Mill Road covered by this OU2 ROD Amendment. EPA further notes that the OU2 ROD Amendment will also provide for the replacement of wells for properties located on English Creek Road and Riverside Drive in the City of Port Republic. Questions regarding infrastructure construction planned by Galloway Township should be directed to that entity.

Comment #10: A citizen inquired as to whether mercury was a contaminant of concern at the Site.

EPA Response: Mercury has not been identified as a contaminant of concern in groundwater at the Site.

Comment #11: A resident expressed concern that he recently installed a well in the area threatened by Site-related groundwater contamination without knowledge of threats to his well.

EPA Response: The remedy selected in the OU2 ROD provides for the establishment of a Classification Exception Area (CEA) in the area of the groundwater contaminant plume to minimize the potential for exposure to contaminated groundwater until groundwater at the Site meets cleanup goals. A CEA is an institutional control which provides notice that there is groundwater contamination in a particular area related to discharge from a contaminated site. Once established, the CEA will influence decisions regarding the installation of potable wells in the vicinity of the Site-related groundwater plume. In particular, this information will be available to representatives of the NJDEP who review and approve permit applications for the installation of new potable wells. EPA is currently coordinating the establishment of the Site-related CEA with representatives of the NJDEP.

Comment #12: A resident asked why the alternate water supply alternatives considered by EPA required closure of the threatened wells which could be used for irrigation purposes.

EPA Response: When providing an alternate water supply for residences, EPA routinely requires closure of the threatened or impacted water source in order to mitigate the potential for future exposure to contaminated groundwater. As an example, if threatened or impacted potable wells were not closed, the potential would exist for future property owners to unknowingly utilize an impacted well for potable purposes.

Comment #13: A citizen asked whether groundwater sampling conducted for the Site could detect contaminants from other sources.

EPA Response: Groundwater samples currently collected from Site-related monitoring wells and residential wells are analyzed for a class of contaminants known as volatile organic compounds (VOCs). EPA has determined that VOCs related to past disposal activities at the Site have impacted groundwater quality in the aquifer beneath and to the east of the Site

property. EPA's sampling efforts would detect these VOCs regardless of whether they were related to the Site or some other source.

Comment #14: A resident asked whether residential wells in the threatened area would be sampled again by EPA prior to installation of replacement wells.

EPA Response: EPA representatives recently collected potable well samples from residences in the area threatened by Site-related groundwater contamination on August 29 and 30, 2017. EPA may conduct additional sampling of the threatened wells if delays in installation of replacement wells are anticipated.

Comment #15: A citizen asked whether the replacement wells would be monitored by EPA.

EPA Response: All replacement wells will be sampled upon installation to ensure that they can provide potable water that meets State and federal drinking water standards. In the future, EPA may sample some or all of the replacement wells to confirm that the selected remedy remains protective. Regardless of EPA's future sampling activities, EPA recommends that all residents with potable wells arrange to have their well water sampled for contaminants on an annual basis.

Comment #16: A resident asked about the health effects of exposure to the contaminants related to the Site and whether a water faucet filter would be effective in treating these contaminants.

EPA Response: EPA believes that exposure to some of the VOCs present in the Site-related groundwater plume at elevated levels over an extended period of time can increase the likelihood of developing cancer. Specifically, EPA has determined that long-term exposure to these VOCs at levels present in groundwater at the distal end of the groundwater plume could result in a 1 in 10,000 excess chance of developing cancer over a lifetime. In addition, EPA has determined that exposure to 1,1,2-trichloroethane at levels present in groundwater at the distal end of the groundwater plume may result in non-carcinogenic health effects. EPA notes that commercially-available water faucet filters utilize varying treatment technologies which may or may not effectively remove Site-related contaminants from drinking water. Furthermore, over time, the treatment media in these filters becomes saturated reducing the effectiveness of the filter in removing contaminants. For these reasons, EPA cautions against relying solely on commercially-available water faucet filters for the removal of Site-related contaminants.

ATTACHMENT A

PROPOSED PLAN

Superfund Program
Proposed Plan for Record of Decision
Amendment

U.S. Environmental Protection Agency,
Region 2



Emmell's Septic Landfill Superfund Site Operable Unit Two
July 2017

EPA ANNOUNCES PROPOSED PLAN

The United States Environmental Protection Agency (EPA) is issuing this Proposed Plan to present the EPA's Preferred Alternative to amend the Operable Unit Two (OU2) Record of Decision (ROD) in order to address impacted and threatened potable wells located at the distal end of the contaminated groundwater plume associated with the Emmell's Septic Landfill Superfund Site (Site). Since issuance of the Operable Unit One (OU1) and OU2 RODs, which provided for the extraction and treatment of contaminated groundwater at the Site, the EPA has determined that additional residential wells have been impacted or are threatened by Site-related groundwater contamination.

The EPA's preferred remedy to address impacted or threatened potable wells in the vicinity of the Site is Alternative 2, which provides for the replacement of impacted or threatened potable wells. The replacement wells will be drilled to a depth of approximately 350 feet below ground surface (bgs) in a water-bearing unit which is separated from the shallower contaminated and threatened groundwater by a 50 to 100 foot thick clay unit. The impacted or threatened wells will then be decommissioned.

This Proposed Plan includes a summary of 3 alternatives to address threatened potable wells in the vicinity of the Site. This document is issued by the EPA, the lead agency for Site activities, in consultation with the New Jersey Department of Environmental Protection (NJDEP), the support agency. This Proposed Plan also summarizes information from the OU1 and OU2 RODs and subsequent remedial actions and investigations.

The EPA, in consultation with NJDEP, will select a remedy modification for the OU2 remedy after reviewing and considering all information submitted during a 30-day public comment period. The EPA, in consultation with NJDEP, may modify the preferred alternative or select other response actions presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives presented in this document.

The EPA is issuing this Proposed Plan as part of its community relations program under Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, commonly known as Superfund). This Proposed Plan summarizes information that can be found in greater detail in the Focused Feasibility Study for Operable Unit 2 Downgradient Residential Wells (Residential Well FFS) and other documents contained in the Administrative Record for the Site.

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:

July 20, 2017 – August 21, 2017

EPA will accept written comments on the Proposed Plan during the public comment period.

PUBLIC MEETING: August 3, 2017

EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Focused Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at 7:00PM at the Galloway Township Middle School, 100 South Reeds Road, Galloway, New Jersey 08205.

For more information, see the Administrative Record at the following locations:

U.S. EPA Records Center, Region 2
290 Broadway, 18th Floor.
New York, New York 10007-1866
(212) 637-4308
Hours: Monday-Friday - 9 am to 5 p.m., by appointment.

www.epa.gov/superfund/emmells-septic

Atlantic County Library
Galloway Township Branch
306 East Jimmie Leeds Road
Galloway Township, NJ 08205
(609) 652-2352
Hours: Tues -Thurs 9am – 8pm, Mon, Fri & Sat 9am – 5pm

SITE DESCRIPTION

The Site is located at 128 South Zurich Avenue in a predominantly rural area of Galloway Township, Atlantic County, New Jersey (see Figure 1). The Site consists of a 38-acre former septic waste and sludge disposal facility,

and the groundwater contaminant plume which has emanated from the Site property.

Residential properties are located to the east/northeast and west/northwest of the Emmell's Site, along Liebig Street and Zurich Avenue. The area immediately south of the Site is undeveloped and heavily wooded. Further to the south and southeast of the Site is the Morses Mill Stream and its associated wetlands and surface impoundments. The campus of Stockton University is located approximately 0.8 miles southeast of the Site. Groundwater in the vicinity of the Site is utilized as a potable water source. However, residents located on Lisa Drive, Liebig Street and Zurich Avenue who previously used private wells for drinking water have been connected to the public water supply. Residents further east of the Site, in Galloway Township and the City of Port Republic, also utilize groundwater as a potable water source through private wells.

SITE HISTORY

From 1967 to 1979, the Site was used for the disposal of septic wastes and sewage sludge which were reportedly disposed of in trenches and lagoons. Other wastes, including chemical wastes, drums of paint sludge, gas cylinders, household garbage, and construction debris, were also disposed of at the Site. Operations at the Site ceased in August 1979.

Sampling conducted at the Site in 1984 by the NJDEP indicated the presence of soil and groundwater contamination. Also in 1984, the Atlantic County Health Department (ACHD) sampled residential wells in the vicinity of the Site. Results of this sampling indicated the presence of elevated concentrations of volatile organic compounds (VOCs) in five residential wells. The contaminated wells were subsequently closed and replaced with deeper wells.

In 1996, NJDEP and consultants for Galloway Township conducted additional investigations at the Site. Results of these investigations indicated the presence of VOCs in groundwater. An Expanded Site Inspection Report prepared for NJDEP in 1997 confirmed the presence of site-related groundwater contamination.

In 1997 and 1998, EPA's Removal Action Branch (RAB) and Environmental Response Team conducted soil and groundwater investigations at the Site. A number of VOCs were detected in soil, soil gas, and groundwater samples, including trichloroethene (TCE) and its associated degradation products, and various chlorinated benzene compounds. Waste materials, including paint-like substances, sludge, and drums, were observed in test

pit excavations. The results of this investigation indicated that waste materials at the Site were a continuing source of groundwater contamination.

The Site was proposed for inclusion on the National Priorities List (NPL) in April 1999, and was placed on the NPL on July 22, 1999, making it eligible for Superfund cleanup.

In July 1999, EPA's RAB initiated a removal action at the Site to address buried drums and waste material which were continuing to serve as a source of groundwater contamination. This removal action, which was completed in February 2000, resulted in the excavation and off-site disposal of 435 drums, eleven compressed gas cylinders, and approximately 28,000 cubic yards of contaminated soil.

On February 16, 2000, EPA initiated a Focused Feasibility Study (FFS) for groundwater contamination at the Site. The FFS was intended to evaluate whether it was appropriate to implement an interim remedy for groundwater contamination while the site-wide Remedial Investigation/Feasibility Study (RI/FS) was being conducted. On September 30, 2003, EPA issued the OU1 ROD which selected an interim remedy to control the migration of groundwater contamination near the disposal area of the Site until a site-wide remedy could be implemented. The interim remedy provided for the extraction and treatment of contaminated groundwater on the Site property with discharge of treated groundwater to recharge basins constructed at the Site.

Groundwater investigations conducted during the OU1 FFS indicated that residential wells in the vicinity of the Site were in danger of being impacted by site-related groundwater contamination. Therefore, during the summer of 2003, EPA connected 36 residences to the nearby municipal water supply.

The site-wide OU2 RI was conducted from the Summer of 2002 through 2006. The RI included the installation and sampling of additional groundwater monitoring wells in the deep zone of the aquifer, as well as a membrane interface probe investigation to delineate the possible extent of non-aqueous phase liquid (NAPL) beneath the Site. NAPL was not detected during this investigation.

In September 2008, EPA completed the site-wide OU2 RI/FS. Also in September 2008, EPA issued the OU2 ROD which selected a final remedy for contaminated soil and groundwater related to the Site. The major components of the OU2 remedy include:

- Excavation and off-site disposal of soil contaminated with polychlorinated biphenyls (PCBs);
- Extraction and treatment of groundwater contaminated with VOCs, with discharge of the treated groundwater to an on-site recharge basin;
- Installation of biosparging wells downgradient of the capture zone of the groundwater extraction system, to enhance the aerobic degradation of vinyl chloride in the groundwater;
- Implementation of a long-term groundwater monitoring program to monitor the effectiveness of the groundwater remedy; and
- Establishment of a Classification Exception Area, which is an institutional control, to minimize the potential for exposure to contaminated groundwater until the groundwater in the shallow and deep zones of the aquifer meets the cleanup goals.

During 2008, 2010 and May 2017, EPA replaced residential wells in the vicinity of the Site which were either impacted or threatened by site-related groundwater contamination. Nine replacement wells were installed to a depth of greater than 300 feet bgs in a clean water-bearing zone as part of these removal actions.

Construction of the components of the OU1 interim groundwater remedy was completed in September 2010. This remedy was designed to control off-property migration of contaminated groundwater and involved the construction of a groundwater extraction and treatment system and two recharge basins at the Site. Operation of the groundwater component of the OU2 site-wide remedy was initiated during the Fall of 2012. As part of the groundwater component of the OU2 remedy, the groundwater extraction and treatment system and recharge basins constructed for the OU1 interim groundwater remedy were expanded to provide for the treatment and discharge of additional groundwater. The OU2 groundwater extraction and treatment system is currently pumping and treating 250 gallons per minute of contaminated groundwater.

During 2015, a biosparging pilot study was conducted to evaluate the effectiveness of biosparging to address VOCs in groundwater downgradient of the capture zone of the OU2 groundwater extraction system. In September 2016, a Biosparging Pilot Study Report was prepared which recommended that biosparging not be implemented at this time due to declining concentrations of VOCs in the area of the plume that was considered for biosparging. Long-term monitoring of groundwater quality is currently being conducted by the EPA in the vicinity of the Site.

SITE CHARACTERISTICS

In order to ensure the protection of residences downgradient of the site-related groundwater plume, from 2006 through 2016 the EPA periodically sampled potable wells in this area. The results of the February 2016 potable well sampling event indicated the presence of site-related VOCs in the samples collected from several potable wells located downgradient of the effective capture zone of the OU2 groundwater extraction and treatment system (see Figure 2). Specifically, site-related VOCs such as vinyl chloride, trichloroethene (TCE) and 1,1-dichloroethene were detected in potable wells at concentrations in excess of their respective New Jersey Groundwater Quality Criteria (NJGWQC). Vinyl chloride was detected in potable well water at concentrations up to 2.3 micrograms per liter (ug/L), in excess of its NJGWQC of 1 ug/L. In addition, TCE and 1,1-dichloroethene were detected at concentrations up to 3.6 ug/L and 6.3 ug/L, in excess of their respective NJGWQC of 1 ug/L and 2 ug/L.

SCOPE AND ROLE OF THE ACTION

EPA has addressed the cleanup of this Site by implementing immediate actions to address situations which present an imminent threat to human health, and a long-term cleanup. Immediate actions, known as removal actions, which have been implemented to date include: the removal of 435 drums, eleven compressed gas cylinders and approximately 28,000 cubic yards of contaminated soil from the disposal area of the Site; the connection of 36 residences threatened by Site-related groundwater contamination to the municipal water supply, and the replacement of 9 residential wells threatened by site-related groundwater contamination

The long-term cleanup has been conducted in two discrete phases, or Operable Units. Operable Unit One (OU1), which was the subject of a 2003 Record of Decision, provided for implementation of an interim groundwater remedy to control further off-site migration of groundwater contaminants near the disposal area of the Site while the site-wide remedy was being designed and constructed. Construction of the OU1 interim groundwater extraction and treatment system was completed in September 2010. Operable Unit Two (OU2), provided for implementation of a remedy to address PCB-contaminated surface soils located near the disposal area of the Site, as well as a final remedy for the VOC-contaminated groundwater in the OU2 study area. The removal of PCB-contaminated soil from the Site was completed in September 2011. The OU2 final groundwater extraction and treatment system has been operating at the Site since the Fall of 2012.

The scope and role of the Preferred Alternative is to modify the remedy selected in the OU2 ROD to provide for the replacement of additional potable wells which are impacted or threatened by site-related groundwater contamination. All other components of the OU2 remedy will remain unchanged.

SUMMARY OF RISKS

Prior to issuance of the OU2 ROD, a baseline human health risk assessment was conducted to analyze the potential adverse human health effects caused by exposure to hazardous substances at the Site in the absence of any actions to control or mitigate exposure under current and future land uses.

A four-step human health risk assessment process was used for assessing site-related cancer risks and noncancer health hazards. The four-step process is comprised of: Hazard Identification of Chemicals of Potential Concern (COPCs), Exposure Assessment, Toxicity Assessment, and Risk Characterization (see adjoining box “What is Risk and How is it Calculated”).

The baseline human health risk assessment began with selecting COPCs in the various media (i.e., on-site soil and off-site groundwater) that could potentially cause adverse health effects in exposed populations. These populations included on-site visitors, recreational visitors (dirt bike riding and horseback riding), and construction workers who may be exposed to contaminants in the soils by ingestion, inhalation, and dermal contact, and also off-site adult and child residents who may be exposed through ingestion and inhalation of groundwater used as a potable water supply or by inhalation through vapor intrusion. In this assessment, exposure point concentrations were estimated using either the maximum detected concentration of a contaminant or the 95th-percent upper-confidence limit (UCL) of the average concentration. Chronic daily intakes were calculated based on the reasonable maximum exposure (RME), which is the highest exposure reasonably anticipated to occur at the site. The RME is intended to estimate a conservative exposure scenario that is still within the range of possible exposures. Central tendency exposure (CTE) assumptions, which represent typical average exposures, were also developed.

For groundwater, future exposure to groundwater through ingestion, dermal contact and inhalation of contaminated groundwater was evaluated for both future off-site adult and child residents. The estimated cancer risks for off-

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 releases 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 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 (dose) and severity of adverse effects (response) 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 exposure information 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). 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.

site adult residents (5×10^{-3}) and off-site child residents (4×10^{-2}) were above the EPA acceptable cancer risk range from exposure to VOCs in the groundwater, primarily trichloroethene, vinyl chloride, 1,1,2-trichloroethane, and 1,2-dichloroethane. In addition, the non-cancer hazard for the adult resident (12) and child resident (101) exceeded EPA's acceptable hazard index of 1 due to concentrations of VOCs (1,1,2-trichloroethane, 1,2-dichloroethane, 1,4-dichlorobenzene, chloroform, tetrachloroethene, trichloroethene, and vinyl chloride) and mercury. Based upon these findings, EPA determined that implementation of the remedy selected in the OU2 ROD was necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

As part of the Residential Well FFS, an updated human health risk evaluation for residential use of groundwater was conducted using more recent data collected from the distal part of the groundwater contaminant plume which was not previously evaluated as part of the baseline human health risk assessment. The estimated cancer risks for residential use of groundwater in the distal part of the groundwater contaminant plume (1×10^{-4}) falls at the upperbound of the EPA's risk management range of 10^{-4} to 10^{-6} . The non-cancer hazard for residential use of groundwater (13.3) exceeds EPA's acceptable hazard index of 1 due to concentrations of VOCs.

Conclusion of the Risk Evaluation

It is the EPA's current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

The OU2 ROD identified Remedial Action Objectives (RAOs) for contaminated soil and groundwater to address the human health risks and environmental concerns posed by site-related contamination.

Soil Remedial Action Objective

- Prevent or minimize potential human and ecological receptor exposure to contaminated surface soil that presents an unacceptable risk to human health and the environment.

Groundwater Remedial Action Objectives

- Prevent ingestion and dermal contact with contaminated groundwater which may present an unacceptable risk to current and potential users of groundwater in the vicinity of the Site.
- Restore the aquifer, within a reasonable time frame, to Class I-PL Ground Water Quality Standards (GWQSs) for groundwater west of the Garden State Parkway (GSP), and to Class II GWQSs for groundwater east of the GSP.

The excavation of PCB-contaminated soil from the Site, which was completed in September 2011, addressed risks presented by contaminated surface soil. Furthermore, implementation of the OU2 groundwater extraction and treatment system satisfies the groundwater RAOs for the majority of the Site. However, impacted groundwater located outside of the capture zone of the OU2 groundwater remedy has either impacted or threatens to impact additional residential wells. Therefore, the groundwater RAO for this area is:

- Prevent ingestion and dermal contact with contaminated groundwater which may present an unacceptable risk to current and potential users of groundwater in the vicinity of the Site.

SUMMARY OF REMEDIAL ALTERNATIVES

Three remedial alternatives for threatened or impacted residential wells were assembled based upon engineering judgement and experience at other similar sites.

Alternative 1 – No Action

No corrective action of any kind would be implemented under this alternative. The No Action Alternative was retained, as required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and provides a baseline for comparison with the other alternatives.

Total Capital Cost	\$0
Operation and Maintenance	\$0 (Total)
Total Present Net Worth	\$0
Construction Duration	0 months

Alternative 2 – Replace Residential Wells

This alternative consists of installing new residential wells for homes which are threatened or impacted by VOC-contaminated groundwater at the Site. It is currently estimated that 14 residential wells would need to be replaced. The replacement wells would be drilled

to a depth of approximately 350 feet bgs into the Rio Grande water bearing unit. The shallower contaminated groundwater is separated from the Rio Grande unit by a 50 to 100 feet thick clay unit. Water samples collected from the Rio Grande unit have demonstrated that water below the clay is not impacted by contamination. The replacement wells would be double cased to prevent downward migration of groundwater contaminants. After construction, each well would be connected to the existing service line. The property owner would be responsible for future maintenance of the replacement well. The existing shallow residential wells would then be decommissioned in accordance with NJDEP requirements. If necessary, additional potable wells could be replaced in the future if threatened or impacted by site-related contamination.

Total Capital Cost	\$1,075,757
Operation and Maintenance	\$0 (Total)
Total Present Net Worth	\$1,075,757
Construction Duration	6 months

Alternative 3 – Connection to Public Water Supply

Under this alternative, over 2 miles of waterline would be installed, beginning at the New Jersey American water main located on East Moss Mill Road. The water main would extend to the intersection of East Moss Mill Road and Pomona Road and southwest down Pomona Road and northeast up English Creek Road and Riverside Drive. Over 2200 feet of service connections would then be installed for properties in the threatened area. It is estimated that 14 potable wells would also be decommissioned in accordance with NJDEP requirements as part of this alternative. Residents connected to the waterline would be responsible for paying future New Jersey American water bills.

Total Capital Cost	\$3,302,845
Operation and Maintenance	\$0 (Total)
Total Present Net Worth	\$3,302,845
Construction Duration	1-2 years

EVALUATION OF REMEDIAL ALTERNATIVES

Nine criteria are used to evaluate the different remedial alternatives individually and against each other in order to select the best alternative. This section of the Proposed Plan profiles the relative performance of all alternatives against the nine criteria, noting how they compare to the other options under consideration. The nine evaluation criteria are discussed below. A more detailed analysis of the presented alternatives can be found in the Residential Well FFS Report.

THE NINE SUPERFUND EVALUATION CRITERIA

- 1. Overall Protectiveness of Human Health and the Environment** evaluates whether and how an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
- 2. Compliance with Applicable or Relevant and Appropriate Requirements (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.
- 3. Long-term Effectiveness and Permanence** considers the ability of an alternative to maintain protection of human health and the environment over time.
- 4. Reduction of Toxicity, Mobility, or Volume (TMV) 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.
- 5. Short-term Effectiveness** considers the length of time needed to implement an alternative and the risks the alternative poses to workers, the community, and the environment during implementation.
- 6. Implementability** considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
- 7. 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. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
- 8. State/Support Agency Acceptance** considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.
- 9. 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.

Overall Protection of Human Health and the Environment

Alternative 1 would not provide for protection of human health and the environment as it does not prevent ingestion and dermal contact with contaminated groundwater which may present an unacceptable risk to current and potential future users of groundwater. Alternatives 2 and 3 would both be protective of human health as both alternatives prevent ingestion and dermal

contact with contaminated groundwater by providing an alternate water supply for current and potential users of groundwater in the threatened area.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Alternative 1 would not comply with ARARs in that residential well water in the impacted and threatened area would continue to exceed Federal and New Jersey Drinking Water Standards. Alternatives 2 and 3 would both comply with ARARs because they would supply an alternate water source which would meet Federal and New Jersey Drinking Water Standards.

Long-Term Effectiveness and Permanence

The No Action Alternative would not be effective in the long-term because this alternative would not provide adequate controls of risk to human health over the long-term as there are no mechanisms to prevent future exposure.

Alternatives 2 and 3 would both be effective in the long-term because both alternatives control risk by providing an alternate water supply. In addition, both alternatives would permanently eliminate exposure to contaminated groundwater by requiring that shallow potable wells are decommissioned.

Reduction of Toxicity, Mobility, or Volume Through Treatment

The implementation of Alternatives 1,2 and 3 would not treat groundwater contaminants and would not reduce their toxicity, mobility, or volume. However, this criterion is met through operation of the OU2 groundwater extraction and treatment system.

Short-Term Effectiveness

The No Action Alternative includes no construction and would have no short-term impacts at the Site. However, this alternative would not achieve the RAO.

Alternative 2 would be expected to have short-term impacts on the residents and local community during construction of the remedy, which is estimated to take approximately 6 months. These impacts would be expected to include additional noise and truck traffic during construction. Implementation of Alternative 3 would be expected to have the same impacts on the local community but for a longer duration, given the estimated 1 to 2 years required to construct this remedy.

Implementability

Alternative 1 is the most readily implementable as no action would be required. Alternatives 2 and 3 are also implementable as no special techniques, materials or labor are required to implement these alternatives. However, under Alternative 3, the water main would be extended from a nearby New Jersey American Water Public Supply Main in Galloway Township into portions of the threatened area which are located in the City of Port Republic. New Jersey American Water Company's franchise area does not include the City of Port Republic and the franchise area would require expansion to fully implement this alternative. In addition, Alternative 3 would require extensive excavation of 2 miles of existing roadways in order to install the water main and service connections. Therefore, Alternative 2 is easier to implement compared to Alternative 3.

Cost

The No Action Alternative would have no cost as no action would be required. The total estimated present worth cost for Alternative 2 is \$1,075,757 to install 14 new residential wells and decommission the existing potable wells. Alternative 3 is estimated to have a present worth cost of \$3,302,845 to install over 2 miles of water main, 2,200 feet of service connections and to decommission the existing potable wells in the impacted and threatened area.

State/Support Agency Acceptance

The State of New Jersey agrees with the preferred alternative which is presented in this Proposed Plan.

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 OU2 Record of Decision Amendment. The Record of Decision Amendment is the document which will formalize the modification of the OU2 remedy for this Site.

SUMMARY OF THE PREFERRED ALTERNATIVE

EPA's Preferred Alternative to modify the remedy selected in the OU2 ROD is Alternative 2, Replace Residential Wells. As part of this alternative, new residential wells would be installed for homes which are threatened or impacted by VOC-contaminated groundwater from the Site. It is currently estimated that

14 residential wells would need to be replaced. The replacement wells would be drilled to a depth of approximately 350 feet bgs into the Rio Grande water bearing unit. The shallower contaminated groundwater is separated from the Rio Grande unit by a 50 to 100 feet thick clay unit. Water samples collected from the Rio Grande unit have demonstrated that water below the clay is not impacted by contamination. Furthermore, the replacement wells would be double cased to prevent downward migration of groundwater contaminants. After construction, a pump would be installed and the well would be connected to the existing service line. All replacement wells would be sampled to ensure that they meet drinking water standards. Finally, the existing shallow residential wells would then be decommissioned in accordance with NJDEP requirements. The EPA estimates that replacement of these residential wells would cost \$1,075,757 and can be completed in 6 months. The EPA is not proposing to amend any other components of the remedy selected in the OU2 ROD.

Based on information currently available, the EPA believes that its Preferred Alternative to amend the OU2 ROD meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The 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 or explain why the preference for treatment will not be met.

Consistent with the EPA Region 2's Clean and Green policy, the EPA will evaluate the use of sustainable technologies and practices with respect to the remedial alternative selected for the Site.

Geochemical modeling conducted in support of the remedy selected in the OU2 ROD estimated that it will take approximately 25 years to achieve the remediation goals throughout the groundwater contaminant plume. Therefore, it was determined that, per EPA policy, Five-Year Reviews would be performed until remediation goals are achieved. Five-Year Reviews will continue to be conducted until remediation goals are achieved.

COMMUNITY PARTICIPATION

EPA provided information regarding the cleanup of the Emmell's Septic Landfill Site to the public through public meetings, the Administrative Record file for the Site and announcements published in the Press of Atlantic City

New Jersey newspaper. EPA encourages the public to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted there.

For further information on EPA's preferred alternative for the Emmell's Septic Landfill Superfund Site:

Joe Gowers
Remedial Project Manager
(212) 637-4413

Cecilia Echols
Community Relations
(212) 637-3678

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

The dates for the public comment period; the date, the location and time of the public meeting, and the locations of the Administrative Record files, are provided on the front page of this Proposed Plan.

GLOSSARY

ARARs: Applicable or Relevant and Appropriate Requirements. These are Federal or State environmental rules and regulations that may pertain to the Site or a particular alternative.

Carcinogenic Risk: Cancer risks are expressed as a number reflecting the increased chance that a person will develop cancer if exposed to chemicals or substances. For example, the EPA's acceptable risk range for Superfund hazardous waste sites is 1×10^{-4} to 1×10^{-6} , meaning there is 1 additional chance in 10,000 (1×10^{-4}) to 1 additional chance in 1 million (1×10^{-6}) that a person will develop cancer if exposed to a Site contaminant that is not remediated.

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act. A Federal law, commonly referred to as the "Superfund" Program, passed in 1980 that provides for response actions at sites found to be contaminated with hazardous substances, pollutants or contaminants that endanger public health and safety or the environment.

COPC: Chemicals of Potential Concern.

FFS: Focused Feasibility Study. Analysis of the practicability of multiple remedial action options for the Site.

Groundwater: Subsurface water that occurs in soils and geologic formations that are fully saturated.

HHRA: Human Health Risk Assessment. An evaluation of the risk posed to human health should remedial activities not be implemented.

HI: Hazard Index. A number indicative of noncarcinogenic health effects that is the ratio of the existing level of exposure to an acceptable level of exposure. A value equal to or less than one indicates that the human population is not likely to experience adverse effects.

HQ: Hazard Quotient. HQs are used to evaluate noncarcinogenic health effects and ecological risks. A value equal to or less than one indicates that the human or ecological population are not likely to experience adverse effects.

Nine Evaluation Criteria: See text box on Page 6.

Noncarcinogenic Risk: Noncancer Hazards (or risk) are expressed as a quotient that compares the existing level of exposure to the acceptable level of exposure. There is a level of exposure (the reference dose) below which it is unlikely for even a sensitive population to experience adverse health effects. The USEPA's threshold level for noncarcinogenic risk at Superfund sites is 1, meaning that if the exposure exceeds the threshold; there may be a concern for potential noncancer effects.

NPL: National Priorities List. A list developed by the USEPA of uncontrolled hazardous substance release sites in the United States that are considered priorities for long-term remedial evaluation and response.

Operable Unit (OU): a discrete action that comprises an incremental step toward comprehensively addressing site problems. This discrete portion of a remedial response manages migration, or eliminates or mitigates a release, threat of a release, or pathway of exposure. The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with the site.

Present-Worth Cost: Total cost, in current dollars, of the remedial action. The present-worth cost includes capital costs required to implement the remedial action, as well as the cost

of long-term operations, maintenance, and monitoring.

Proposed Plan: A document that presents the preferred remedial alternatives and requests public input regarding the proposed cleanup alternatives.

Public Comment Period: The time allowed for the members of a potentially affected community to express views and concerns regarding the USEPA's preferred remedial alternative.

RAOs: Remedial Action Objectives. Objectives of remedial actions that are developed based on contaminated media, contaminants of concern, potential receptors and exposure scenarios, human health and ecological risk assessment, and attainment of regulatory cleanup levels.

Record of Decision (ROD): A legal document that describes the cleanup action or remedy selected for a site, the basis for choosing that remedy, and public comments on the selected remedy.

Remedial Action: A cleanup to address hazardous substances at a site.

RI: Remedial Investigation. A study of a facility that supports the selection of a remedy where hazardous substances have been disposed or released. The RI identifies the nature and extent of contamination at the facility and analyzes risk associated with COPCs.

TBCs: "To-be-considereds," consists of non-promulgated advisories and/or guidance that were developed by the EPA, other federal agencies, or states that may be useful in developing CERCLA remedies.

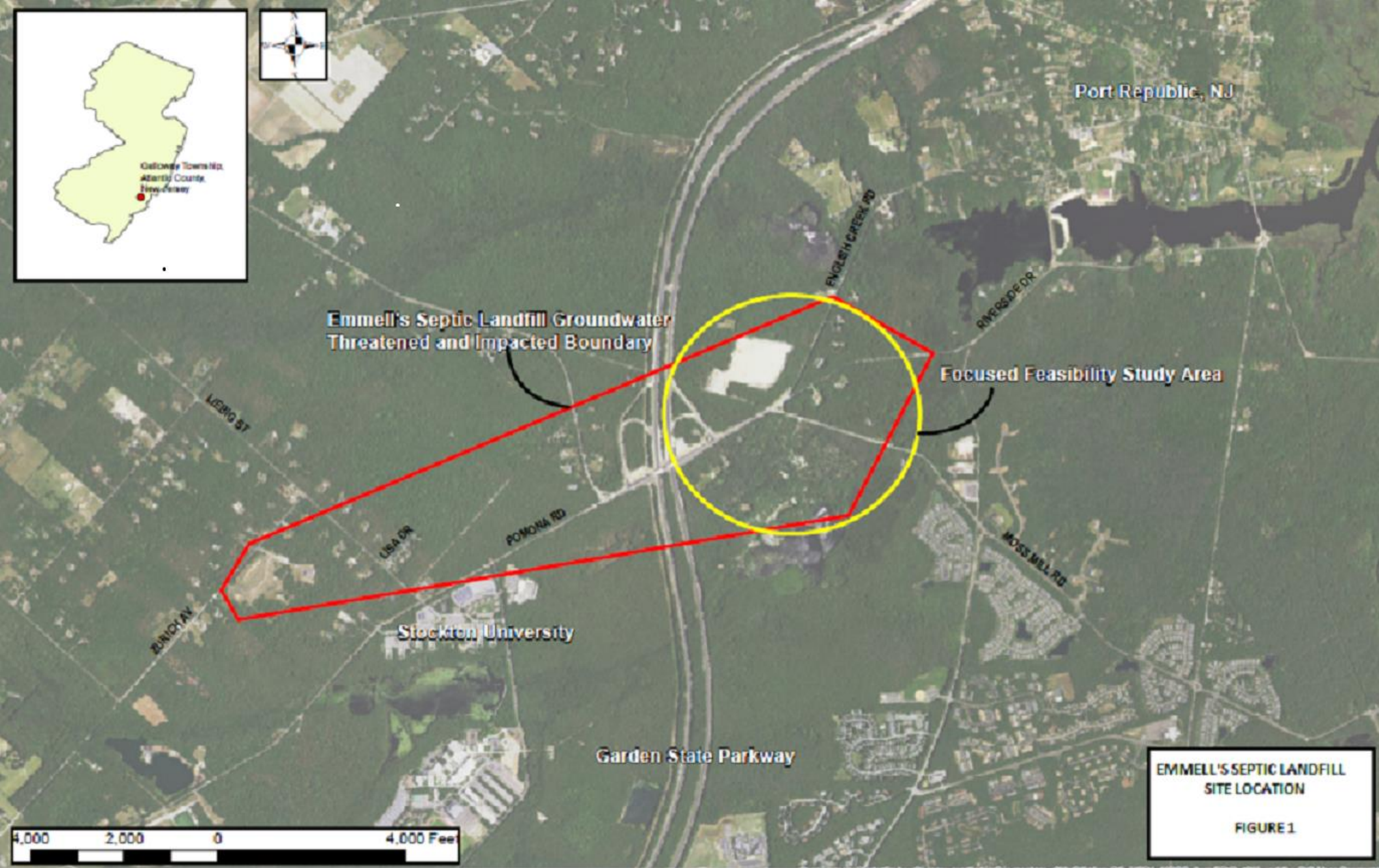
USEPA: United States Environmental Protection Agency. The Federal agency responsible for administration and enforcement of CERCLA (and other environmental statutes and regulations), and final approval authority for the selected ROD.

VOC: Volatile Organic Compound. Type of chemical that readily vaporizes, often producing a distinguishable odor.

Water Table: The water table is an imaginary line marking the top of the water-saturated area within a rock column.

TABLE 1
COMPOUNDS DETECTED ABOVE STANDARDS IN POTABLE WELLS

Compound	Federal Maximum Contaminant Level (ug/L)	New Jersey Ground Water Quality Standard (ug/L)	Maximum Concentration Detected (ug/L)
1,1,2-Trichloroethane	5	3	6.7
1,2-Dichloroethane	5	2	3.3
Trichloroethene	5	1	3.6
1,1-Dichloroethene	7	1	6.3
Vinyl Chloride	2	1	2.3



EMMELL'S SEPTIC LANDFILL
SITE LOCATION

FIGURE 1

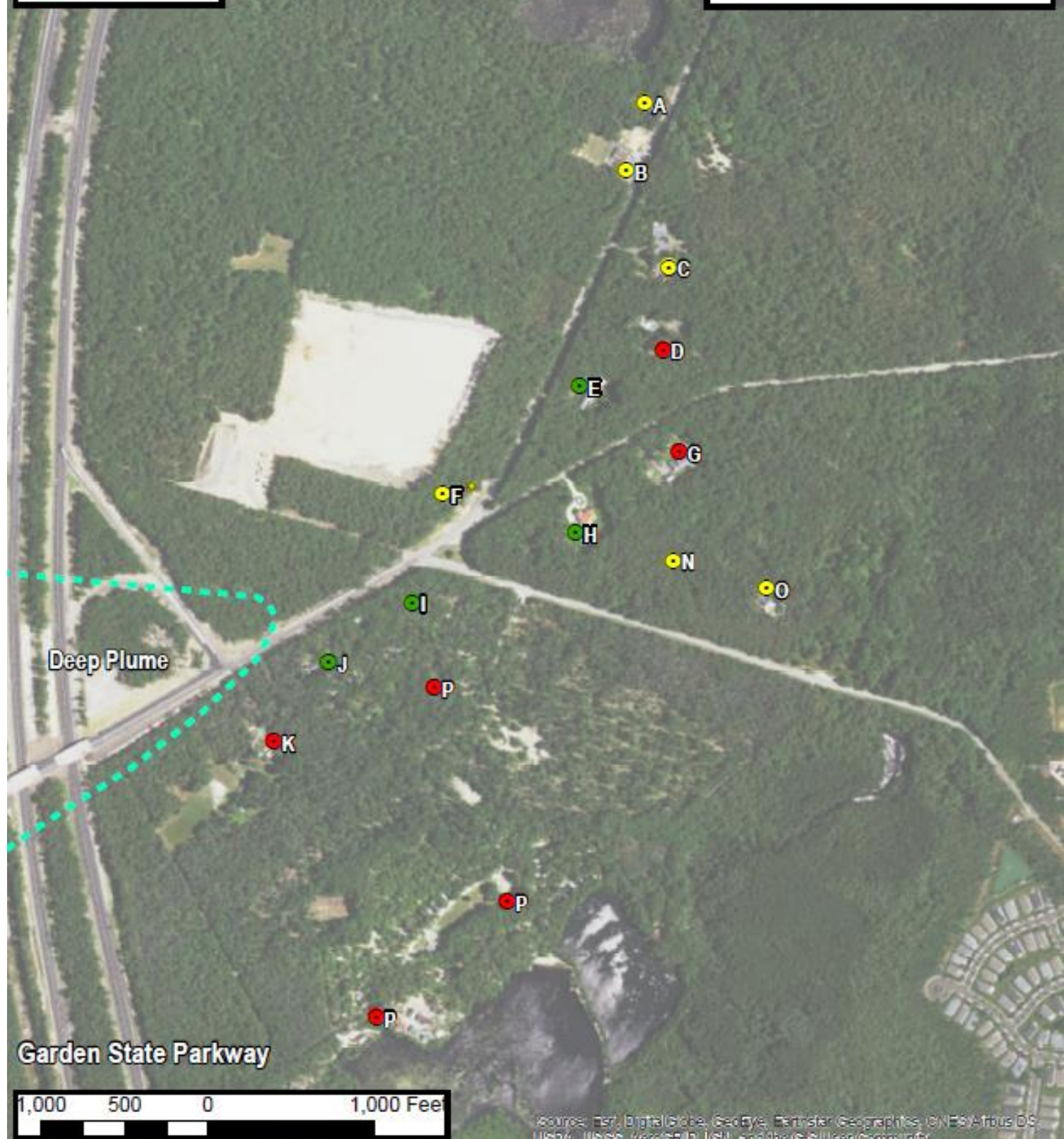
Legend

- Irrigation Well
- Above NJDEP GWQS
- Below NJDEP GWQS
- Not Sampled
- Plume Limit Estimated*



EMMELL'S SEPTIC LANDFILL SITE
RESIDENTIAL WELL LOCATIONS &
SAMPLING RESULTS

FIGURE 2



ATTACHMENT B

PUBLIC NOTICE

IN YOUR TOWN

Atlantic City

Community walk and cookout: The Coalition for a Safe Community will hold its rescheduled free community walk and cookout Friday in the Marina District. The walk will begin 6 p.m. at 818 N. Maryland Ave., followed by a cookout with members of the police department. For information, visit cscatlantic.org.

Benefits enrollment help: Representatives from the Benefits Enrollment Center will be available from 9:30 to 10:30 a.m. Thursday at Baltic Plaza Apartments, 1313 Baltic Ave., to help residents determine if they are eligible for PAAD, LIHEAP, SNAP, Medicaid and Medicare savings programs. For information, call 609-822-1108 or visit JFSAtlantic.org.

Brigantine

Farmers market: The city's farmers market is held from 8:30 a.m. to noon Saturdays through Sept. 2 at Haneman Park, 15th Street and Revere Boulevard. The market is pet-free and smoke-free. Bring your own bags and water bottles. For information, visit the Facebook page or email brigantinefarmersmarket@gmail.com.

Cape May Court House

Free blood-pressure screenings: The community is invited to receive free

blood-pressure screenings from 9 a.m. to noon Friday at Cape Regional Medical Center. For more information, call 609-463-4043.

Egg Harbor Township

Knitting Club: Knitters and crocheters of all skill levels are invited to meet from 10 a.m. to noon Fridays through Aug. 25 at the Atlantic County Library, 1 Swift Ave. Bring current projects. It's free to attend. For information, call 609-927-8664.

Folsom

Family movie night: The community is invited to watch "Secret Life of Pets" at

the borough's first free family movie night from 8 to 11 p.m. Friday at Falcon's Nest Park, Mays Landing Road. There will be a concession stand and popcorn. Rain date is Saturday. For information, call 609-561-3178.

Ocean City

Meet the author: "The Forever Summer" author Jamie Brenner will talk about her book and sign copies 7 p.m. Thursday at the Ocean City Library, 1735 Simpson Ave. The free program is hosted by Sun Rose Words & Music, the Asbury Avenue bookstore and the library. Books will be available for purchase. For information, call Sun Rose Words & Music at 609-399-9190.

Pleasantville

NAACP meeting: The local branch of the NAACP will meet from 6:30 to 8 p.m. Thursday at the Atlantic County Library, 33 Martin Luther King Jr. Ave. The public is invited. For information, call 609-415-0275 or visit MLPNAACP.org.

Stafford Township

Elks clam bake: Manahawkin Elks Lodge 2340 at 520 Hillard Blvd. will hold its annual community event from 1 to 5 p.m. Saturday. Tickets are \$30 in advance, \$35 at the door for adults, \$20 for young adults and free for ages 12 and younger. Advance purchase

is recommended. For information, call 609-597-1107.

Ventnor

Farmers market: The seasonal farmers market is open from 8:30 a.m. to noon Fridays through Sept. 1 at Atlantic and Newport avenues. For information, call 484-343-3147.

Vineland

Women's conference: New Bethel AME Church, 414 N. Seventh St., will hold its annual Women's Worship Conference from 8:30 a.m. to 1 p.m. July 29. There will be guest speakers, a Continental breakfast and light lunch. Registration is \$25 at the door. For information, call 609-805-2292.

COMMUNITY CALENDAR

Events

THURSDAY, JULY 20

ADULT COLORING: 11 a.m. to noon; Cumberland County Library, 800 E. Commerce St., Bridgeton. 856-453-2210 or CCLNJ.org.
ADULT GAME NIGHT: 6 to 8 p.m.; Thursdays; learn new games or play your favorites for ages 18 and older; Cape May County Library, 30 W. Mechanic St., Cape May Court House. 609-463-6366.

LEARN AMERICAN SIGN LANGUAGE: 4 to 5:30 p.m.; Thursdays through Aug. 31; Public Library, 235 32nd St., Avalon, registration required. 609-967-7155 or AvalonFreeLibrary.org.

BALLROOM DANCE LESSONS: 7:30 to 9 p.m.; Mondays and Thursdays; all welcome; Seashore Gardens Living Center, 22 W. Jimmie Leeds Road, Galloway Township. 56. 609-645-3269.

CHRISTMAS IN JULY DROP-IN CRAFT: 2 to 4 p.m.; for anyone who celebrates a winter holiday; design a card, drink iced hot chocolate; Ocean County Library, 380 Bay Ave., Tuckerton. 609-296-1470.

DOWNTOWN WILDWOOD MARKETPLACE: 4 to 9 p.m.; July 20, Aug. 3, 17, 3501 Pacific Ave. 609-523-1602 or DOOWW.com.

GHOST WALKS: 8 to 8:45 p.m.; Thursdays through Aug. 31; 45-minute walking tour; meet at Cold Spring Brewery; Historic Cold Spring Village, 720 S. Route 9, Cape May. \$15. \$12 ages 3 to 12. 609-898-2300 or HCSV.org.

NEW JERSEY WRITERS SOCIETY GATHERING: 5 to 7:30 p.m.; in-depth discussion and writing critiques; Public Library, 1058 E. Landis Ave., Vineland. 856-794-4244, ext. 4243, or VinelandLibrary.org.

SOCIAL SECURITY WORKSHOP: 6 to 7 p.m.; open to adults; learn how to maximize your social security benefits; Atlantic County Library, 1 Swift Ave., Egg Harbor Township, registration required. 609-927-8664 or AtlanticLibrary.org.

STARFISH CRAFT: 6 to 7 p.m.; open to adults; light refreshments provided; Atlantic County Library, 201 S. 15th St., Brigantine, registration requested. 609-266-0110.

THURSDAYS ON DUNE: 5:30 to 8:30 p.m.; Thursdays through Aug. 24; hosted by the Chamber of Commerce; family activities, live music; Veterans Plaza, 21st Street and Dune Drive, Avalon. 609-967-3936.

YOGA & ICE CREAM AT THE LIGHTHOUSE: Thursdays through Aug. 31; 6:30 p.m. free yoga classes, 6 to 7:45 p.m. ice cream available for purchase; Absecon Lighthouse, 31 S. Rhode Island Ave., Atlantic City; climbs are \$7 adults, \$5 seniors, \$4 ages 4 to 12, \$3 Atlantic City residents. 609-449-1360 or AbseconLighthouse.org.

FRIDAY, JULY 21

BALLROOM DANCING: 9 to 10:30 p.m.; Fridays through

Sept. 1; music by Fred Hall Orchestra; for ages 18 and older; Convention Hall, 714 Beach Ave., Cape May. 609-884-9565.

MARINE MAMMALS AND SEA TURTLES: 1 to 2 p.m.; learn about the Marine Mammal Stranding Center; Atlantic City Free Public Library, 1 N. Tennessee Ave. 609-345-2269 or ACFPL.org.

RESUME ASSISTANCE: 2 p.m.; make a new resume or update an old one; Ocean County Library, 290 Mathistown Road, Little Egg Harbor Township. 609-294-1197.

'ROWING ACROSS THE ATLANTIC': 7 to 8 p.m.; George Pagano will discuss and show pictures of his journey across the Atlantic Ocean; Public Library, 235 32nd St., Avalon. 609-967-7155 or AvalonFreeLibrary.org.

WILDWOOD BOARDWALK FIREWORKS: 10 to 10:15 p.m.; Fridays through Sept. 1, beach at Pine Avenue, Wildwood. 609-523-1602 or DOOWW.com.

Dining out

FRIDAY, JULY 21

VFW FRIDAY NIGHT DINNERS: 5 to 8 p.m.; stuffed shells and meatballs; VFW Post 6257, 556 Woodbine Ave., Belleplain. 510. 609-861-2298.

SATURDAY, JULY 22

BONELESS TURKEY DINNER: 4:30 to 7 p.m.; take-outs available; Episcopal Church of the Advent, 612 Franklin St., Cape May. \$13 adults, \$6 kids advance, \$15 adults at the door. 609-884-3065.

Golf

THURSDAY, JULY 27

PRO-AM TOURNAMENT: 11:30 a.m. lunch and registration, 1 p.m. shotgun start; hosted by Shirat

Hayam; awards dinner to follow; Linwood Country Club, 500 Shore Road, Linwood. 5250. 609-822-7116, ext. 121, or ShiratHayamNJ.org.

Groups

THURSDAY, JULY 20

ADULT CHILDREN OF ALCOHOLICS: 5:30 to 7 p.m.; Thursdays through Dec. 28; United Methodist Church, basement youth room, 100 Pitney Road, Absecon. 609-641-2266 or AdultChildren.org.

AL-ANON: 8:30 p.m.; Thursdays; for anyone affected by someone's drinking; Presbyterian Church of Mays Landing. 6091 Main St. 609-226-1096.

DEPRESSION AND ANXIETY SUPPORT GROUP: 3 to 4:30 p.m.; Thursdays; hosted by the Mental Health Association in Atlantic County; AtlanticCare, 501 Scarborough Drive, 3rd floor, Egg Harbor Township. 609-652-3800 or MHAAAC.info.

ROWAN OF CAPE MAY COURT HOUSE: 6:30 p.m.; first and third Thursdays; Avalon Golf Club & Links Restaurant, 1510 Route 9 North, Cape May Court House. 609-465-7406.

SATURDAY, JULY 22

ALCOHOLICS ANONYMOUS: 6:30 to 7:30 p.m.; Saturdays through Dec. 30; St. James Lutheran Church, 1341 Mays Landing Road, Folsom. 609-335-3083.

CANCER AWARENESS EXPO: 10 a.m. to 1 p.m.; volunteers from the American Cancer Society's Relay for Life of Cumberland County will provide pamphlets and information; Public Library, 1058 E. Landis Ave., Vineland, free. 856-794-4244 or VinelandLibrary.org.

COMMUNITY HELPERS



The Christopher Macchio concert July 15 at Resorts Casino Hotel raised more than \$75,000 for the Schultz-Hill Foundation, a nonprofit that provides music and arts education programs for students and seniors in Atlantic City and the surrounding communities. Shown from left are foundation co-founder Gary Hill, soprano Jackie DiMaggio, Macchio and board member David Spatz.

NEIGHBORS

Navy Capt. Michael O'Leary assumed command of Naval Support Activity South Potomac during a change of command ceremony June 21 at the Virginia naval base. O'Leary is the son of Francine and Tim O'Leary, of North Wildwood.



He is a 1990 graduate of Wildwood High School and earned a bachelor's degree in 1994 from Drexel University.

Improve Your Home Now! Pay Later!

18 Months
0 Interest Available*

SAVE \$400

ON ANY ROOFING OR SIDING JOB

SAVE \$50

PER WINDOW MINIMUM 4 WINDOWS

*Term job \$4000. Cannot be combined with other offers. Exp 8/1/17

Save Energy this Summer!

WINDOWS ~ ROOFING ~ SIDING ~ DOORS

Frank Vincent...

QUALITY • PRICING • REPUTATION

VISIT OUR SHOWROOM!
201 Tilton Road, Northfield • London Square Mall

609-641-2389

FrankVincentWindows.com

60 YEARS IN BUSINESS

*Call for details. Quotes required

EPA Invites Public Comment on the Proposed Plan for the Ensmall's Septic Landfill Superfund Site Operable Unit Two

Galloway Township, Atlantic County, New Jersey

The U.S. Environmental Protection Agency (EPA) announces the opening of a 30-day public comment period on the preferred plan to provide an alternate water supply for residences threatened by groundwater contamination related to the Ensmall's Septic Landfill site in Galloway Township, Atlantic County, New Jersey. The preferred remedy and other alternatives are identified in the Proposed Plan.

The 30-day comment period begins on Thursday, July 20, 2017 and ends on Monday, August 21, 2017. As part of the public comment period, EPA will hold a public meeting on Thursday, August 3, 2017 at 7:00pm at the Galloway Township Middle School, 100 South Reed Road, Galloway, NJ 08035.

The EPA's preferred cleanup plan consists of: Replacing Residential Wells.

The Proposed Plan is available at www.epa.gov/region9/ensmall, or by calling Cecilia Nichols, EPA Community Involvement Coordinator, at (212) 637-9678 and request a copy by mail.

Written comments on the Proposed Plan, postmarked no later than August 21, 2017, may be mailed to Joe Gowers, EPA Project Manager, U.S. EPA, 290 Broadway, 19th floor, New York, NY 10007-1866 or emailed no later than August 21, 2017 to joe.gowers@epa.gov.

The Administrative Record file containing the documents used or relied on in developing the alternatives and preferred cleanup plan is available for public review at the following information repositories: Atlantic County Library, Galloway Township Branch, 306 East James Lewis Road, Galloway, NJ 08035 or the EPA Records Center, Region 2, 290 Broadway, 18th Floor, New York, NY 10007-1866.

ATTACHMENT C

PUBLIC MEETING TRANSCRIPT

U.S. ENVIRONMENTAL PROTECTION AGENCY
SUPERFUND PROGRAM
REGION 2

IN THE MATTER OF:
PROPOSED REMEDIAL ACTION PLAN
EMMELL'S SEPTIC LANDFILL SUPERFUND SITE
OPERABLE UNIT TWO

PUBLIC MEETING

H E L D:

GALLOWAY TOWNSHIP MIDDLE SCHOOL
100 South Reeds Road
Galloway, New Jersey 08201
Thursday, August 3, 2017
7:00 p.m.

B E F O R E:

CECILIA ECHOLS
EPA Community Involvement
Coordinator

JOE GOWERS
EPA Project Manager

Transcription by:
Nancy Ambrose, C.C.R.

1 MS. ECHOLS: Good evening. Hello,
2 everyone. Thank you so much for coming out
3 tonight to learn more about the Emmell's Septic
4 Landfill Superfund Site.

5 I am Cecilia Echols, and I'm the
6 community involvement coordinator for this site.
7 This is Joe Gowers. He is the remedial project
8 manager. You'll have a lot of time to spend with
9 him.

10 We're going to go through the
11 presentation, then we'll open it up for
12 questions. This way you get a little bit familiar
13 with the project.

14 The purpose of this meeting is to
15 present EPA's preferred alternative to amend
16 Operable Unit Two, which means OU2 pretty much,
17 record of decision, in order to address impacted
18 and threatened potable wells located at the distal
19 end of the contaminated groundwater plume
20 associated with the site.

21 Community involvement is the decision
22 making process which brings residents into the
23 fold of learning what EPA intends on doing, but we
24 also want you all to know what we plan to do and
25 ask for your input. That's why we're having

1 public comment.

2 The public comment period started on
3 July 20 and ends on August 21. It was advertised
4 in the Press of Atlantic City, and the documents
5 tonight can be found online. We'll have that web
6 page on the last page of the presentation, along
7 with it being at the Atlantic County Library.

8 We have a stenographer here. She is
9 going to jot down all of our conversations
10 tonight, all the questions that are going to be
11 asked. Once the public comment period closes, we
12 will have a responsiveness summary prepared, which
13 becomes part of the Record of Decision, and then
14 the Record of Decision is signed by the regional
15 administrator.

16 We want to thank the Galloway
17 Township Middle School for allowing us the
18 opportunity to use their beautiful facility here.
19 And if you can hold off asking any questions until
20 Joe's presentation is over, we would appreciate
21 it. Thank you.

22 MR. GOWERS: Hi. My name is Joe
23 Gowers, I'm the project manager for the Emmell's
24 Septic Landfill Superfund Site. We're here, as
25 she has stated, because we wanted to amend a

1 decisional document to allow us to address
2 residential wells that we feel are currently
3 threatened by contamination related to the
4 Emmell's Septic Landfill Superfund Site.

5 But before actually discussing our
6 proposed or preferred remedy for that, we just
7 wanted to go through a few things in regards to
8 the general superfund process and the history of
9 the superfund site.

10 As far as the superfund site, the
11 first step in the process of a superfund site is
12 discovery, usually by information from concerned
13 citizens provided to us either from the local or
14 state authorities.

15 We then do a preliminary assessment
16 of the information, the background information
17 that we have on the site to evaluate the potential
18 risks. Give a site inspection to see, collect
19 additional information to help us evaluate the
20 risks related to the site.

21 Taking that video we run it through
22 our hazard ranking system to rank the site, and if
23 the potential hazard ranks high enough the site is
24 put on the National Priorities List, which allows
25 us to fund it through the superfund program.

1 Then we, of course, investigate the
2 nature and extent of the contamination at the site
3 through what we call remedial investigation, and
4 then evaluate alternatives or address that
5 contamination through a feasibility study.

6 Then we select a remedy in a document
7 that we call a Record of Decision. The next step
8 is to essentially design that remedy, to develop
9 the detailed technical specification for that
10 remedy. And then we take those detailed
11 specifications, and then the contractor implements
12 that remedy, constructs that remedy.

13 When the remedy meets all the site
14 cleanup goals, all the site cleanup goals on that
15 particular site, then the site is subject to
16 proposal to be deleted from the National
17 Priorities List.

18 Now, as far as the site history here,
19 the site is actually located at 128 South Zurich
20 Avenue in Galloway Township. If we look on this
21 figure, we can see where the site is, near the
22 intersection of Zurich and Liebig.

23 Now, the site was used from 1967
24 through 1979 for the disposal of septic waste.
25 But unfortunately at the same time there was a

1 disposal of chemical waste at the site.

2 Disposal activities ended in August
3 of 1979. And the site was actually put on the
4 National Priorities List making it eligible for
5 superfund cleanup in 1999.

6 The first thing we did when the site
7 was on the list was get our removal action branch,
8 our emergency branch, out there to essentially
9 address contamination at the site, and the source
10 of the contamination.

11 That resulted in a removal action
12 conducted from July of 1999 through February 2000,
13 which involved the removal of 435 drums of waste,
14 11 compressed gas cylinders, and 28,000 cubic
15 yards of contaminated soil.

16 Then from 2000 to 2003 we did an
17 investigation we call a focused feasibility study
18 to collect data to evaluate whether or not it was
19 warranted to implement an interim groundwater
20 remedy at the site.

21 During that study we found that
22 residential wells in close proximity to the site
23 were threatened by groundwater contamination from
24 the site. And therefore, we connected 36
25 residents to the water company's water supply in

1 the summer of 2003.

2 In September 2003 we actually
3 selected our first remedy for the site in a Record
4 of Decision. We selected an interim groundwater
5 remedy at that time. And that interim groundwater
6 remedy called for the extraction and treatment of
7 groundwater from beneath the site property.

8 MR. MORELLI: May I interrupt? How
9 do you define what groundwater is?

10 MR. GOWERS: Groundwater is
11 basically, when it rains the water percolates
12 down. It collects above an impermeable or
13 non-permeable or alternative clay layer.

14 So basically when you sink a well,
15 that's what you're essentially drinking. You're
16 drinking groundwater, you're pulling water from
17 the ground.

18 MR. MORELLI: It could be anywhere
19 from the surface down through any number of feet
20 below the surface?

21 MR. GOWERS: That's correct. It
22 could be anywhere. The area of the site is about
23 ten feet below ground surface where the top of the
24 water table is, and then from there down there is
25 various aquifers.

1 MR. MORELLI: Okay.

2 MR. GOWERS: From 2002 to 2008 we
3 actually conducted detailed site investigation, a
4 remedial investigation, to define the nature and
5 extent of contamination at the site, and in the
6 vicinity of the site, that includes soil and
7 groundwater contamination.

8 That led to an issuance of a second
9 Record of Decision and selection of a second and
10 final remedy of the site, which provided for the
11 excavation of PCB-contaminated soil at the site,
12 and essentially expansion of the groundwater pump
13 and treat system there, to address groundwater
14 contamination that had actually left the site
15 property.

16 In 2008, 2010 and 2017 we identified
17 additional residential wells which were threatened
18 by site related groundwater contamination.
19 Actually nine wells were replaced in three
20 different events to address that threatened
21 impact, potential impact to those wells. And
22 those wells are installed in a deeper clean
23 water-bearing zone.

24 Now, the construction of the interim
25 groundwater remedy was actually completed in

1 September 2010. That groundwater remedy was
2 designed to capture and/or treat 100 gallons per
3 minute of groundwater from beneath the site
4 property.

5 In September 2011 we actually
6 completed the removal of the PCB-contaminated soil
7 at the property, 26,000 cubic yards of soil was
8 removed.

9 And then finally in the fall of 2012
10 we put into operation the expanded final
11 groundwater remedy for the site, which provided
12 for the capture of 250 gallons per minute of
13 contaminated groundwater from the site and from
14 areas downgrade of the site.

15 Now, if you look at this figure here
16 we can see the location of the site outlined in
17 red. We see a red dotted area here. This is the
18 extent of the shallow groundwater contamination,
19 that's the contaminated groundwater down through a
20 depth of 80 feet.

21 The purple area here, outlined here,
22 is what we consider the groundwater contamination
23 in the deep zone, and that's the groundwater
24 contamination that falls in the area of 110 to 140
25 feet below ground surface.

1 MR. MORELLI: That's the plume.

2 MR. GOWERS: That is the groundwater
3 plume. This is the extent of groundwater
4 contamination that could potentially threaten
5 wells in this area over here.

6 And on this figure we can see that
7 we've determined that the area outlined in red is
8 either impacted by groundwater contamination from
9 the site, or threatened by contamination related
10 to the site.

11 And the area outlined in yellow is
12 the area that we're focusing on today, the area
13 that we feel is currently threatened by site
14 related groundwater contamination, the area where
15 we're proposing to take an alternate, or basically
16 replace the existing water supply with an
17 alternate water supply.

18 Now, we've been basically sampling
19 wells in that yellow area essentially from 2006
20 through 2016, to keep track and make sure that the
21 wells were not being impacted by site related
22 groundwater contamination.

23 The result of the 2016 sampling,
24 though, indicated that we had some contaminants
25 that were in some of those wells, and some of

1 those contaminants were detected at levels of
2 concern.

3 And therefore, the EPA has evaluated
4 the data that's been collected and determined that
5 there is a potential for long term residential
6 exposure to those contaminants, and that they
7 present unacceptable risks.

8 Therefore, we developed a number of
9 alternatives, alternate water supply alternatives
10 to address that issue. The first alternative that
11 we looked at is the no action alternative. And
12 under that alternative it indicates we do
13 nothing.

14 Now, we look at that alternative
15 because that's what our regulations require,
16 because it's supposed to be used as a baseline to
17 compare other alternatives against.

18 The second alternative is basically
19 to replace the threatened residential wells. And
20 under this alternative the new residential wells
21 would be installed obviously at the residences
22 that are threatened.

23 The replacement wells will be drilled
24 to a depth of approximately 350 feet below ground
25 surface into the Rio Grande water bearing unit,

1 which has been determined to be a clean water
2 bearing unit.

3 And the replacement wells would be
4 double cased in order to prevent any sort of
5 downward migration of contamination. In addition,
6 the existing wells on the residential properties
7 will then be decommissioned in accordance with the
8 State of New Jersey's requirements.

9 And the property owners would then be
10 responsible for maintaining or future maintenance
11 of the replacement wells.

12 And the final alternative that we
13 evaluated was to connect the threatened residences
14 to the public water supply or more accurately the
15 water company water supply.

16 So under this alternative, though, we
17 would have to install over two miles of water line
18 beginning at the New Jersey American Water main on
19 East Moss Mill Road.

20 In addition we then have to connect
21 all those residences to the water line, so we need
22 to install, or we estimate about 2200 feet of
23 service lines -- yes, 2200 feet when you add up
24 all the service lines to all the properties that
25 would have to be connected to the water line.

1 And then the existing wells on those
2 properties would be decommissioned in accordance
3 with state requirements. And then of course, the
4 residents would then have to pay water bills
5 routinely, if you're connected to the water
6 company line.

7 Now, we have a process where we
8 essentially put all those alternatives, evaluate
9 every set of criteria, and basically determine the
10 pros and cons for each of the alternatives. And
11 based upon that evaluation and the remedy that EPA
12 has recommended is to replace the threatened
13 residential wells.

14 And that alternative, just as we had
15 discussed, would replace the residential wells
16 with a deeper well in a clean water bearing unit
17 about 350 feet below ground surface.

18 The existing wells would then be
19 decommissioned, and then ultimately the property
20 owner would then be responsible for maintaining
21 those wells.

22 And this is just a cost comparison of
23 the three alternatives. As you can see, that the
24 recommended alternative, Alternative Two, we
25 estimate would cost a little over a million

1 dollars.

2 Now, as Cecilia has stated, public
3 commentary period started on July 20, ends on
4 August 21. You can provide comments to me via
5 email. You can mail it to me at the address
6 indicated here.

7 And of course, any comments you
8 provide verbally are going to be captured in the
9 transcript of tonight's meeting, and we would then
10 address those comments.

11 And the last line on this of course
12 is the EPA's public site for the Emmell's Septic
13 Landfill Site, where you can find the documents
14 here tonight, the proposed plan, as well as other
15 supporting documents related to the site.

16 So I guess at this point in time I
17 guess we would like to open this up to questions
18 and answers for the public.

19 MS. ECHOLS: Please stand and your
20 state your name.

21 MR. WESSLER: My name is Kevin
22 Wessler. My question is, your plume is coming
23 into Port Republic. In 20 years from now, how
24 much further will it be, and would those wells be
25 replaced, also?

1 MR. GOWERS: Well, again, basically
2 that's what -- in order for us to take an action
3 now to replace these wells properly, we have to go
4 through amending the laws to provide for the
5 replacement of residential wells, written in the
6 correct way it will allow us to replace not just
7 the wells you see here, but additional wells that
8 might become impacted over time.

9 I mean, taking into consideration,
10 though, that that area that we're potentially
11 looking at being impacted as the retreating
12 groundwater at the site captures the highest, most
13 contaminated water.

14 As that water migrates the levels are
15 going to be dropping from dilution and
16 degradation. So we're not anticipating that this
17 is going to keep ongoing and going to impact
18 additional wells. But if something like that does
19 happen, we would, of course, take care of that.

20 MS. ECHOLS: State your name, sir.

21 MR. MORELLI: Anthony Morelli, Port
22 Republic citizen. And there's a concern about the
23 shape of that plume that's superimposed on the
24 map, how do you know where the 14 homes, I think
25 you said are going to replace the wells? Which

1 homes are involved that need replacement?

2 In case you're my neighbor, and one
3 of us is in danger by this plume that's coming by,
4 how fast does it move, who's gonna get the new
5 well? How long will it take before my neighbor is
6 imposed or impacted by this?

7 MR. GOWERS: Our intention is
8 basically to try to replace all the wells in that
9 area, basically any well that falls within that
10 yellow boundary, we would like to try to replace
11 any of those. If it's not impacted now, there's a
12 potential that it can be impacted in the future.

13 MR. MORELLI: From the written
14 description it's not a map precisely, but it
15 describes what I think are the roads in Port
16 Republic that can be affected.

17 So there's some properties where
18 there's sort of a fork in the road, and the house
19 may front on this road, and the next guy is on the
20 next road. Who's gonna get -- is the guy across
21 the street gonna be needing a new well and the guy
22 on this side of the street doesn't get one?

23 So I'm concerned about the proximity
24 of where the plume is and how much time does it
25 take before it involves the next, the adjacent

1 neighbor.

2 When you mentioned that you take
3 samples from wells, which wells? Residential
4 wells, or those things that are scattered all
5 around between my property and the Garden State
6 Parkway?

7 And I ask you, why don't you bring it
8 in my yard and sample the water? 'Cause it's
9 coming my way. So are you gonna send me a flare
10 or something when it gets there?

11 MR. GOWERS: The reality is in the
12 past we sample both wells, we sample both our
13 monitored wells and we also sample residential
14 wells to try to keep on eye whether or not the
15 plume impacts those wells.

16 And again we started in 2006, started
17 sampling in that yellow area. We have sampled
18 obviously wells for both sites earlier than that.

19 But as far as which wells, again,
20 before we look in that yellow area, we're really
21 going to be looking at closely and we're going to
22 want to replace those wells.

23 But if the data that we collect
24 indicates that additional wells further
25 downgradient may be impacted, we would then take

1 action for those wells, also.

2 (An off-the-record discussion takes
3 place.)

4 (Inaudible.)

5 AUDIENCE MEMBER: We've been thinking
6 about that well for 20 years now. I'm very
7 concerned.

8 MR. GOWERS: Let me explain a little
9 bit. Groundwater, it doesn't move like a river,
10 it basically moves much, much slower.

11 Basically you're generally looking at
12 movement of maybe one to two feet a day. That's
13 the general speed of groundwater. So it varies
14 from aquifer to aquifer. But in general, that's
15 the magnitude of movement that we generally see.

16 MS. ECHOLS: Stand up and state your
17 name.

18 MR. MARTIN: My name's Joe Martin,
19 Port Republic, also.

20 You mentioned several chemical issues
21 with the plume at Emmell's. But I think I'm
22 correct in stating that there's a lot of other
23 chemicals that are present, possible carcinogenic
24 chemicals, one being dichloropropene, others
25 being, pardon me, chloroform.

1 Coincidentally about two months ago I
2 had my water tested, just because I thought it
3 would be a good idea. And I also had my son's
4 water tested. We live at opposite ends of Port
5 Republic.

6 We both have, I have on our property,
7 nine times the acceptable level of
8 dichloropropene. He has about five times the
9 acceptable level. He has a deep well, I have a
10 shallow well.

11 MR. GOWERS: Yes. The issue of
12 dichloropropene is that that's not related to the
13 Emmell's Septic Landfill Site. It's not something
14 we see related to that.

15 That was, my understanding was the
16 state that handled the site they called the GENOA
17 groundwater issue years ago. And I believe it was
18 related to that issue.

19 So looking at Galloway Township, I
20 understand there's a number of different
21 groundwater issues within the township.

22 MR. MARTIN: Well, I guess my concern
23 is, since I don't know the form of the EPA here,
24 is that presently there will be 132 state provided
25 or EPA provided filter systems put in properties

1 in Port Republic. I found out by accident.

2 So there's 900 properties in Port
3 Republic. How about the other 750 that aren't
4 aware that they probably have a carcinogenic in
5 the water system? What's happening with them, and
6 who should be telling them?

7 Atlantic County Health Department
8 isn't. I questioned them, 'cause I had them do my
9 testing. You guys apparently aren't. I find that
10 alarming myself. My wife and I are extremely
11 alarmed.

12 And it's also not a requirement when
13 you buy a property to have these chemicals
14 tested. That could seriously affect our buying a
15 house, and certainly affected him buying his
16 house. That's all. Thank you.

17 MR. TURNER: Good evening. My name
18 is Stuart Turner, Port Republic. We had the same
19 problem. I live on Pomona Avenue. We have what
20 you call a point of use system.

21 And basically (inaudible), I have,
22 this is going back 16 years. Contact the state,
23 for the life of me I can't remember, but they
24 provide, they'll do it for free.

25 AUDIENCE MEMBER: A filtration

1 system?

2 MR. GOWERS: You can get that address
3 through the state's spill funds. Basically what
4 they generally require is they require proof,
5 essentially two sampling rounds which show that
6 you're exceeding the groundwater standard for the
7 state.

8 And you can contact that program or
9 go through that program they may be able to
10 compensate you for the cost.

11 MR. MARTIN: We are doing all of
12 that. Next week our system's being installed.
13 But we found out by accident. No one told us this
14 problem existed. We had to trip over it
15 ourselves. Why isn't everyone made aware there's
16 a problem there?

17 MR. GOWERS: I know that that
18 dichloroform may be associated with the Genoa
19 Avenue site, which was addressed years ago. I
20 don't know what the state's notification
21 requirements are.

22 But this is one of the reasons why we
23 always recommend to residents in the State of New
24 Jersey, if you're on your own residential well,
25 have it sampled annually, and not for just

1 bacteria, but also for volatile organic
2 contaminants, which would capture a lot of these
3 solvents in that scan.

4 MR. MARTIN: Well, there's 800 people
5 who aren't going to do that, 800 homes in that
6 scan, who probably have the same.

7 AUDIENCE MEMBER: It isn't something
8 you can bring up at the next city council
9 meeting?

10 AUDIENCE MEMBER: It cost \$120 to do
11 it, 115 to do the site, confirm the site. A lot
12 of people don't have \$120. That's a fact, you
13 know.

14 (Inaudible.)

15 MS. MULDER: Janet Mulder, Port
16 Republic. I have the same problem,
17 dibromopropane, chloropropane, and
18 trichloropropane, and I understand they're all
19 agricultural wastes.

20 MR. GOWERS: That was my
21 understanding of one of the uses.

22 MS. MULDER: I know you had a third
23 solution. Wouldn't it be more cost effective to
24 have the third solution, and have public water in
25 light of the fact that so many of us have this

1 other problem?

2 And I know the school has a public
3 system on it. You know, there's quite a few
4 people in town --

5 MR. GOWERS: So you're looking for a
6 public system or a public water supply?

7 MS. MULDER: I have the system, and
8 the government's paying for it. It's a very
9 expensive system. They come in every so often and
10 they check my water and update the system. It's
11 great. I'm happy I don't live in Flint, Michigan.

12 But wouldn't it be more cost
13 effective to do the third approach, in light of
14 this other problem we have, not just the Emmell's
15 site?

16 MR. GOWERS: Okay. We work at the
17 superfund program, we can only address issues that
18 are related to the superfund site. So what we're
19 here today is to basically address the residential
20 properties which we believe could be impacted or
21 have it impacted, but not drinking water levels
22 yet by contamination related to the Emmell's
23 Septic Landfill Site.

24 This other issue of addressing the
25 Township of Port Republic where other homes may be

1 impacted, that's something I don't have the
2 authority to do. I can only address what's
3 related to the Emmell's Septic Landfill Site.

4 MS. MULDER: And could you tell us
5 where those 14 homes are? I know you have them on
6 the map, and the streets?

7 MR. GOWERS: Yeah. You can look at
8 the map you can make it out which streets they
9 are. I mean, I'm not giving out addresses of
10 homes, we kind of have privacy laws, privacy
11 issues, not to provide addresses. These are the
12 homes.

13 MS. MULDER: What street is it, Main
14 Street or Moss Mill Road?

15 MR. GOWERS: It's part of Riverside
16 Drive, English Creek and East Moss Mill Road, that
17 intersection there.

18 (Inaudible.)

19 (An off-the-record discussion takes
20 place.)

21 AUDIENCE MEMBER: I can tell you, I
22 live on the corner of Zurich and Liebig. And my
23 house was contaminated. Believe me, I'm on city
24 water. I'm right down the road. You know me,
25 I've seen you down through there several times and

1 all that.

2 So my recommendation, I know about
3 what they're saying they're gonna drill this well
4 and all. My whole thing is, I'm on city water.
5 You guys really want to take a chance on getting
6 down -- what did you say, 350 feet -- what
7 guarantee do these people have or anybody have
8 that this water ain't gonna get contaminated
9 again?

10 AUDIENCE MEMBER: How deep is the
11 city though?

12 AUDIENCE MEMBER: It's a whole other
13 area.

14 AUDIENCE MEMBER: It's a whole other
15 area, it's not even around there. They ran a pipe
16 down through there. I mean, we were really bad.
17 We couldn't drink anything. We were really
18 contaminated.

19 MR. GOWERS: Yeah. In terms of the
20 wells that we're looking to install here, these
21 wells are going to be installed between the lower
22 aquifer and basically a low permeable layer of
23 clay between 50 and 100 feet thick.

24 So as far as impact from the site,
25 no, we don't expect it to impact the site at that

1 depth. The wells are going to be double-cased,
2 the outer case goes through the clay layer,
3 there's not going to be any leakage into that
4 lower layer either.

5 But, you know what, if you're on your
6 own residential well, your own potable water, your
7 own well in the back yard in the State of New
8 Jersey, the most densely populated state in the
9 nation, like I said, we recommend if you're on
10 that type of well to sample it annually.

11 I mean, take a look at the cost
12 savings in terms of if you were on city water you
13 know what you pay, it would cost \$100, \$200
14 compared to paying for city water.

15 AUDIENCE MEMBER: City water really
16 ain't that expensive though.

17 MR. GOWERS: Yeah, but you pay for it
18 for 12 months.

19 MR. TURNER: Stuart Turner, Port
20 Republic. Could you go into a little bit of
21 detail about the depths of the plume? There's two
22 plumes. Right? A shallow plume and a deeper
23 plume.

24 MR. GOWERS: Yes, yes.

25 AUDIENCE MEMBER: Could you sort of

1 define the thickness of the plumes for us? I'm
2 listening from a depth of 240 feet with my well.

3 MR. GOWERS: You're in the circle of
4 240 feet. That's good. Because basically the
5 depth of the plume, the shallow plume we're
6 looking at is less than 80 feet.

7 So generally at the site we're seeing
8 it anywhere from 24 feet right near the source, 50
9 feet, to that 80 feet you see the deepest part of
10 the shallow plume basically encounters a clay
11 layer, and that's as far as it goes.

12 The deep plume ranges from our
13 sampling from anywhere from 110 to 140 feet. Then
14 at about 200 feet we hit the top of that clay
15 layer that we're talking about.

16 And we want to put the wells below
17 that clay layer, to make sure that they're not
18 impacted by the site contamination.

19 AUDIENCE MEMBER: We hit the clay at
20 about 190, and punched out of it at about 235, and
21 then we shoved another 12 feet down just to get
22 the water. That's basically our deepest, almost.

23 MR. GOWERS: So I mean, we'll have to
24 as we go, go out to replace the wells, in the
25 future we'll have to look at the details, may be a

1 situation that your well was installed, I don't
2 know if it was double cased, which, that adds to
3 the concern.

4 MR. TURNER: Can you go back to the
5 site and show the plumes in the yellow circle?

6 MS. ECHOLS: What is your name again,
7 sir?

8 MR. TURNER: Stuart Turner. That's
9 it.

10 MR. GOWERS: Okay.

11 MS. DANIELS: My name is Betsy
12 Daniels. I have a question for those of us who
13 are in that yellow circle.

14 What determines the order in which
15 your well will be replaced? Is it by person who
16 has the most problem? My neighbor has this
17 already, we're next door, and I just was
18 wondering.

19 MR. GOWERS: The issue here is the
20 superfund program is -- there's actually two
21 components to the superfund program. There's the
22 long term cleanup program, which is the remedial
23 program that addresses all the work.

24 And then there's also emergency
25 response group, the people who deal with the

1 really, you know, the real threats, the immediate
2 threats. That's our removal branch.

3 In a situation if they had their well
4 replaced, you know, a couple of wells had been
5 replaced by our removal branch or emergency branch
6 essentially, because drinking water standards were
7 exceeded in that well.

8 So we were able to authorize that
9 branch, actually go out and install the well
10 without having to go through this type of process.

11 MS. DANIELS: So the answer is --

12 MR. GOWERS: The answer is that's the
13 reason why they had their well installed.

14 MS. DANIELS: I mean in the future.

15 MR. GOWERS: In the future if we
16 sample your well, we'll come around and sample
17 again, and you're not exceeding the drinking water
18 standard, you will be handled under the remedial
19 process here when we go out to replace wells,
20 which we're anticipating at this point will be
21 some time in 2018, assuming we get it funded.

22 In the meantime, if we sample your
23 wells and certain standards are exceeded which are
24 high enough to allow a removal program to replace
25 your well, then that program will come out and

1 replace your well before we can essentially get to
2 it.

3 MS. DANIELS: Thank you.

4 PAUL: I have a number of questions,
5 and if I ask too many I'll sit down and let
6 somebody speak.

7 MS. ECHOLS: Would you state your
8 name?

9 PAUL: My name is Paul (inaudible), I
10 live in Port Republic.

11 I put a well in within the past year,
12 without having any knowledge that there was a
13 situation or that I might be creating a path for
14 this to migrate down in any way.

15 I'm building a house not knowing that
16 potentially, potentially I'm risking my son's
17 health, I have a two-year-old son. I don't want
18 him exposed to anything obviously.

19 I looked into this a little bit and
20 it appears to me that based on some records I
21 found that one of the things they tried
22 immediately surrounding that site, was to get
23 people down to 240 or so feet in 2002 to see if
24 that would do the trick. And then after that
25 people were hooked up to city water.

1 I found that seemingly was documented
2 on the EPA site I'm not sure if that was correct
3 or not, maybe that was just a suggestion. It
4 looked like (inaudible).

5 MR. GOWERS: No. That was tried at
6 that point in time. But what did happen and this
7 might be where the confusion might be, apparently
8 some of the wells out there in the early to
9 mid-'80's maybe the town made on Lisa Drive. I
10 think those wells were --

11 PAUL: There were five wells.

12 MR. GOWERS: Yeah, they were located
13 in the shallow zone, which is 80 feet, above 80
14 feet, that's where those wells were.

15 The Atlantic County Health Department
16 or the State of New Jersey at that point in time
17 had actually re-sampled and had basically replaced
18 those wells with deeper wells. But those deeper
19 wells were only screened in the area of about 120,
20 130 feet.

21 They were all in a clay layer, the
22 first clay layer. But the clay layer is not
23 continuous in the site, and the groundwater
24 contamination flowed down under that clay layer.

25 What we're doing is looking to now

1 replace even deeper wells in a continuous clay
2 layer at about 200 feet, starts at about 200 feet
3 and goes in some areas up to 300 feet.

4 PAUL: Okay. Thanks for that. And
5 one thing I would say that you brought up, and in
6 the documents that may be a hardship for us that
7 we would have to pay for water if a water system
8 is installed.

9 But it's recommended that if we had a
10 well we'd still have to test the well for these
11 harsh chemicals, as well as other organic
12 chemicals and other things that could come
13 through, as well as treat the water, which has low
14 pH, and possibly filter sediment, plus the cost of
15 us keeping up these wells.

16 So in terms of the monetary cost, it
17 does cost us more money I think in the long run to
18 have the wells than to have water. Unless of
19 course this remedy also indeed includes sewer
20 line. I assume that it's just water.

21 MR. GOWERS: Yeah. This remedy is
22 looking at just drinking water. We're not looking
23 at anything about sewerage.

24 PAUL: Sure. Okay. And another
25 thing I did notice, and maybe this has changed in

1 the past, I saw before when I was looking
2 (inaudible), I looked to see if there were any
3 plans to put water in the street on Moss Mill. I
4 live right basically in the middle of that
5 circle.

6 And there was Galloway -- I'm not
7 sure if it was the county or Galloway, but there
8 was a master plan that showed that they were
9 putting water and sewerage all the way down that
10 road on Moss Mill. It was supposed to be done by
11 2013. So obviously that didn't happen.

12 But in the case we're talking about
13 our costs, if the town is looking to extend the
14 water line down that street anyway, and they might
15 be doing that in the next few years potentially,
16 you know, rather than us dig a bunch of wells and
17 they're still gonna put the line in at their cost
18 solely, you might be able to pitch in a little bit
19 to help with some of the funding.

20 MR. GOWERS: Yeah. I mean at this
21 point we're not aware, we've spoken to the water
22 company and there's been no indication that there
23 were plans to extend the line.

24 PAUL: And frankly, when they did
25 come to mark out the property, the water company

1 did a straight line in front of one of my
2 driveways that indicated they had something in the
3 road there.

4 I tried to call the town to find out
5 if there was water there, and whether we would be
6 able to hook up to it. And essentially they said,
7 well, whether it's there or not you can't have it
8 because nobody else has it. So I didn't pursue it
9 any further.

10 MR. GOWERS: They did tell us they
11 didn't have any lines there. I would have to
12 check.

13 PAUL: I thought it was strange,
14 because I didn't know if there was water there.
15 They sprayed something that said water company. I
16 didn't know why.

17 MR. GOWERS: I don't know.

18 PAUL: And another thing I saw listed
19 on, and it's a little tricky because the state EPA
20 site uses a different name. It only shows five
21 people affected on Lisa Avenue way back when. It
22 doesn't really show this full site.

23 So anybody looking on the state
24 website, if you're looking to build in this area
25 you would think, it's listed under inactive and it

1 looks like a tiny amount of people and it was
2 closed a long time ago.

3 Whereas the only way you're gonna
4 really know about it is looking at the federal EPA
5 website. And that indicated that there was an
6 issue of mercury there as well. Is that anything,
7 is that a factor in this plume at all?

8 MR. GOWERS: No, it's not. We've
9 sampled near the site, at the site, mercury hasn't
10 been an issue.

11 As far as the issue of not knowing
12 where the site is, we're also currently in the
13 process of establishing what's known as a CEA
14 through the State of New Jersey, Classification
15 Exception Area. Once that's established, that
16 will be public information through the state site
17 the areas referenced.

18 AUDIENCE MEMBER: Is this going to be
19 information made to the public soon?

20 MR. GOWERS: That will be public
21 information, yes. You'll be able to look at it,
22 and the state will actually have it, too. So when
23 people apply to or go to install a well and
24 prepare the application, they'll be able to
25 determine whether or not there is a concern there.

1 PAUL: So previously, you know, this
2 is going back obviously over a long period of
3 time, and you or the people at the EPA didn't
4 think it was necessarily going to get quite this
5 far, and right now we see that the water issue is
6 fine.

7 But it's hard for people who didn't
8 think there was any problem with the water before
9 to assume that there's not going to be any
10 problems with the water later.

11 Like I said, I didn't know that there
12 was issues with people in 2016, 2017 when I dug a
13 well in 2016. Especially didn't know that a
14 double-cased well was needed to keep myself from
15 possibly spreading contaminates downward to myself
16 and my neighbor.

17 MR. GOWERS: You're indicating that
18 you dug a well. How long ago did you install your
19 well?

20 PAUL: About a year ago.

21 MR. GOWERS: And how deep is your
22 well?

23 PAUL: 130 feet.

24 MR. GOWERS: 130 feet, okay. So
25 you're not into the zone that we're looking to

1 install new wells. So your well is actually
2 installed in the zone where the contamination is.

3 PAUL: Yes, yes. And I knew nothing
4 about this. And it looks as if there were tests
5 done in 2016 that indicated that there were
6 issues. And I just don't understand why I was
7 able to put a well in basically where the
8 contamination is, through the permitting process
9 with the county.

10 And they made me jump through a
11 thousand hoops to make sure that I don't have any
12 runoff, potentially to put anything in the
13 groundwater. But the groundwater's going to be
14 putting things in me.

15 MR. GOWERS: And that's why we're in
16 the process now of establishing this
17 classification exception area, because that will
18 alert the state that this is something that's
19 filed with the State of New Jersey, they approved
20 the whole process, and it becomes sort of a
21 notification mechanism.

22 So in the future when somebody goes
23 to install a well, it's going to be flagged that
24 this is an area where they are seeing this.

25 PAUL: And that is, for anyone who

1 lives in that area, and I'm not sure how this
2 works for people, I don't intend to sell my
3 house. We built the house on the hopes that we
4 would stay there forever. But if we were to try
5 to sell our house, you know, what kind of effect
6 is this going to have?

7 You know, if you can't build on the
8 properties next to us because there are possibly
9 tainted water, or someone gets permits to build
10 and put wells, you know, I have a concern that you
11 spend months trying to find someone to buy your
12 house, and then you get it tested, oh, well, we
13 didn't think there was going to be contaminants
14 here, but there is now, no one will buy it ever.

15 I understand that it costs less, but
16 I think for us in terms of maintenance and safety
17 and moving forward, I think in the event that this
18 does move farther, that we would have already
19 extended the water supply down a little farther,
20 it wouldn't be as difficult to get a little
21 farther into town if anyone else needed it.

22 Is there any possibility, I guess is
23 my question here, that remedy three could come
24 about without someone getting caught in the
25 environmental laws, public comment might lead to,

1 if we really feel that the water company solution
2 is the best solution, is there any chance that
3 could take shape?

4 MR. GOWERS: One of the factors we
5 take into consideration is basically, you know,
6 public input in the process, one of the factors we
7 look at. But your comment will be part of the
8 record, we will be required to address that
9 comment or that concern.

10 But no, when we show this we're only
11 looking at the cost and other factors, it's a hell
12 of a lot more easier and less troublesome to
13 basically install a double cased well on a
14 property, than have to dig up the entire road
15 there and install water main, inconvenience
16 people.

17 I mean, if we look at the time frame,
18 we can replace all these wells in six months
19 versus it would take two or three years to
20 actually go through the whole process of supplying
21 water to all the residents in that area.

22 PAUL: But as you indicated, it's six
23 months, but it won't be for another year before it
24 starts anyway. Wouldn't that be in either case?

25 MR. GOWERS: In either case. That's

1 right. The issue for us basically is getting the
2 funding and getting the contractors.

3 PAUL: I guess my main comment is now
4 that we know about this, it's going to, for anyone
5 really concerned about the drinking water, it's
6 going to cost us a lot more money for the rest of
7 our lives to continue treat and filter and test
8 this water.

9 So, you know, to us it's a much more
10 costly solution, and you still have to worry about
11 our health. Even though I trust that you're
12 assuring us that it's going to be safe, but we're
13 the ones that have to drink the water and worry
14 about whether or not it's an issue for our kids
15 and grandkids.

16 MR. GOWERS: Regardless of
17 Alternative Two or Alternative Three, we consider
18 both of those alternatives to be safe.

19 And just to be quite honest, I've
20 actually heard say that it's going to cost us more
21 to maintain their own well than to get public
22 water. We should be hearing other comments
23 (inaudible).

24 PAUL: Yeah. Well, water's not that
25 expensive, it's the sewer that's expensive. We

1 already have septic. And people across Port
2 Republic have other issues, and they have other
3 issues of groundwater contamination that isn't
4 addressed by this plan.

5 It may be a step in the direction for
6 solving a lot of people's problems. I think
7 that's all.

8 MR. MORELLI: I have a question. Why
9 do we have to shut down the well in order to --
10 what's the word I'm looking for -- because of the
11 water, cancelling water? But I've got a big yard,
12 I have a tree farm. I use a lot of water.

13 We live in an agricultural zone,
14 which we got sprinklers going out, lots of water
15 going out there. Why should we use potable water
16 from the water company when I have a well that I
17 can use for my lawn?

18 MR. GOWERS: That's basically
19 watering, lawn irrigation. That's something we
20 commonly hear. The concern is that the water
21 could be potentially contaminated in the future.

22 And also, there's an issue of, well,
23 if you go to sell your house, if you leave that
24 well open, is the next property owner going to
25 know that that water shouldn't be used for

1 drinking.

2 So generally our policy is to require
3 when you do connect to the water company, the
4 water alliance requires that the wells be sealed.
5 However, there are times when there are variances
6 granted. But generally that's what our procedure
7 is, we like to have the wells closed.

8 MR. MORELLI: I wonder what kind of
9 water bill there'd be if you had to use a
10 considerable amount of water just to water plants.

11 MR. GOWERS: That's a concern.

12 MR. MORELLI: Tremendous amount of
13 money.

14 MR. MARTIN: Joe Martin again. You
15 had mentioned the Mannheim Avenue site.

16 MR. GOWERS: Yeah, I did mention it,
17 the Genoa Avenue site. I think it was the
18 Mannheim Avenue site.

19 MR. MARTIN: That was a superfund
20 site.

21 MR. GOWERS: That was a superfund
22 site at one point, yes.

23 MR. MARTIN: If Port Republic is
24 polluted with dichloropropane, the whole town, why
25 isn't that being addressed? That's what I don't

1 understand. I know we talked about the circle
2 here, but we got a whole town amount of houses.

3 MR. GOWERS: Okay. But if I
4 indicated that here, it has to be in Port Republic
5 public. My understanding of it, there had been a
6 lot of wells installed --

7 MR. MARTIN: 132 out of 900.

8 MR. GOWERS: It was the City of Port
9 Republic who basically addressed the groundwater
10 impact from dichloropropane.

11 MR. MARTIN: How are we supposed to
12 handle these chemicals if they were to infiltrate
13 our wells?

14 MR. GOWERS: That I would have to
15 look into it. My guess it would be, but I'm not
16 looking to be specific, but a treatment system
17 being used.

18 But again, we're intending to handle
19 any other properties that are impacted by the
20 Emmell's site. So if additional wells become
21 contaminated with it, the contaminants related to
22 the Emmell's site, then we would be handling that
23 as part of the superfund process.

24 MR. MARTIN: Does the EPA have plans
25 to handle the pollution that we're getting from

1 it?

2 MR. GOWERS: The dichloropropane is
3 not related to the Emmell's site. We would not be
4 handling that. My understanding is that the state
5 had done some work in the past to try to address
6 the concerns related to that.

7 And of course, if the wells do become
8 contaminated through sampling rounds, you know,
9 sampling through the Atlantic County Division of
10 Public Health, then you could be potentially
11 eligible for compensation through the state's
12 spill fund.

13 MS. MULDER: Janet Mulder again. Do
14 you have any concept of how fast that plume is
15 moving?

16 MR. GOWERS: Yeah. Groundwater,
17 again, groundwater generally moves in the area of
18 -- I'm not talking about flowing like a river --
19 again, we're looking at one to two feet a day
20 groundwater moves.

21 But that doesn't necessarily mean
22 that the contaminants will be moving, because
23 there are factors which occur in groundwater such
24 as dilution, degradation, absorption to the
25 particles. So it may move actually slower.

1 MS. MULDER: If we're all eventually
2 going to get hit, does it go out to the bay?

3 MR. GOWERS: Well, again, what's
4 occurring is that these levels of contaminants in
5 any event are already degrading. Basically where
6 we're seeing residential properties essentially
7 being impacted here, we're looking at levels being
8 less than ten parts per billion in those
9 contaminants.

10 If we go back to our superfund site,
11 we're looking at thousands of parts per billion.
12 So as it moves it's diluting through natural
13 processes that are taking place to essentially
14 reduce the level of those contaminants.

15 MS. MULDER: So we don't know when
16 it's gonna end?

17 MR. GOWERS: We don't know exactly
18 where or if all these residential properties here
19 are going to be ultimately impacted.

20 We're just concerned that it could
21 potentially happen over the next few years, given
22 the fact that we've seen a couple of wells already
23 impacted at levels just above the drinking water
24 standards.

25 MS. MULDER: Thank you.

1 MS. ECHOLS: Any more questions?

2 MR. MORELLI: I have one more. Can
3 you detect other contaminants other than the type
4 you found from Emmell's dump? Can you find stuff
5 that comes off the Parkway? Because they just
6 widened the Parkway by 50 percent, and there's a
7 tremendous amount of water that comes onto our
8 property.

9 They got huge concrete culverts that
10 direct their water overflow onto my property in
11 two locations. And I think they repeat that all
12 along the Parkway.

13 If you just drive along and see how
14 they manage that, how does one know what's the
15 amount of contaminants that are developed from the
16 Parkway itself?

17 Things that are thrown out the window
18 -- diapers, cigars, cigarettes, bottles, and
19 whatever else can be thrown out of a window, can
20 they come floating down and kind of wash into the
21 storm groundwater and eventually contaminate?

22 MR. GOWERS: Yeah. We're sampling
23 right now for volatile organic contaminants. That
24 is a large group of contaminants which are
25 contaminants that tend to move through the soils

1 to groundwater very quickly, and then move the
2 groundwater.

3 So anything that is going to run with
4 the groundwater, that's one of our most likely
5 types of contaminants that would do that. So we
6 are sampling that. And regardless whether it
7 comes from the Emmell's Septic Landfill Site or
8 some other discharge, we will be able to pick that
9 up in the sampling that we do.

10 Again, we're not just sampling the
11 residential zones. We do have monitoring wells in
12 that area. We actually have one that's sort of
13 outside this yellow area, also downgradient of the
14 sensor wells, let us know how far the
15 contamination is moving.

16 MR. MORELLI: If there's something
17 other than what you get out of Emmell's shows up
18 in one of your test cells, you can find that, you
19 can note it.

20 MR. GOWERS: You could, if that could
21 potentially show up. That's correct.

22 KATHY: Kathy (inaudible), Port
23 Republic. Are the residential wells within the
24 yellow circle under your proposed plan definitely
25 going to be replaced?

1 MR. GOWERS: The ones within the
2 yellow circle would be the ones that we would be
3 looking to replace. That's correct.

4 KATHY: And the ones that are sampled
5 would not, is there any danger there?

6 MR. GOWERS: We certainly would like
7 to replace those wells just so we can make sure
8 that you're not impacted in the future. I mean,
9 we can't say that that's going to happen.

10 They may show at low levels, which
11 are essentially safe to drink, they're below
12 drinking water standards. But we would prefer to
13 replace those wells with an aquifer which we know
14 isn't tainted, or put wells in an aquifer that we
15 know is clean.

16 PAUL: Paul (inaudible), Port
17 Republic again. I guess two more things. One is,
18 now that we know that there is issues there at the
19 depth that most of us have wells in that area,
20 will you be doing testing on each of these wells,
21 or are we responsible for finding out before you
22 get to the source of having funding, are we
23 responsible for finding out if we're above that
24 threshold where we might need emergency
25 replacement?

1 'Cause I saw on the map a few people
2 that showed these people's, that there were wells
3 at these locations, some of them were homes that
4 were sampled. I don't know if that's a homeowner
5 providing you the sample or you went to them and
6 tested their wells.

7 MR. GOWERS: We basically went to
8 them. If you see that we sampled it, we went to
9 the homeowners. And there may be times we can't
10 find contact information, we knock on doors,
11 nobody answers sometimes. And we didn't get
12 access to some of these homes.

13 However, if you fall within that
14 yellow circle, let us know tonight, we can take
15 your information, we're looking to try to take
16 samples again. Again, we're calling residents in
17 the area to arrange sampling.

18 We're actually looking to sample
19 again later in the month, August 29th or 30th. So
20 if you fall within that area, at the end of the
21 meeting here come up to us and let us know, and
22 we'll arrange time on either of those days to come
23 and sample your well.

24 PAUL: Okay. We will actually just
25 be back from vacation so that will be fine.

1 Because my neighbor is the one that's having -- on
2 the page -- as having higher than normal
3 activity. And being that I just dug to exactly
4 where it is, now I'm concerned so --

5 And then other than that, I guess
6 after this is over, after you replace all these
7 wells, how long will they be monitored, or is that
8 up to us to keep track and make sure we're okay,
9 and for others beyond the plume or beyond the area
10 of the concern to let you know if there's an
11 issue?

12 MR. GOWERS: Yeah. Once we replace
13 your wells, when that well is replaced, we're
14 required to sample that well to make sure that
15 it's clean, to make sure that the water that's in
16 your well is clean and doesn't have any
17 contaminants in it.

18 After that we may come back and
19 sample every once in a while, there's no
20 commitment that we're going to come back on an
21 annual basis. But we may come back. Actually, we
22 did come back to Moss Mill Road recently and we
23 did sample from a well there just to verify.

24 But also we feel this is a permanent
25 remedy. It will be a double-cased well, it's

1 sealed off from the contaminated aquifer. But
2 regardless, you put a well in, we still recommend
3 it.

4 PAUL: This would be, the pump
5 basically would be something maintainable, if we
6 ever have to replace it we don't have to dig all
7 again through that topsoil?

8 MR. GOWERS: Basically whatever we
9 install will be something that could be maintained
10 and that would be maintained by the resident,
11 yes. Just like if you install your own well you'd
12 be responsible to maintain it.

13 PAUL: Sure.

14 MS. ECHOLS: Any more questions. ?

15 MR. ALEX MARTIN: Alex Martin. Just
16 curious, what are the health effects for this
17 chemical spill? Any known health effects besides
18 just cancerous?

19 MR. GOWERS: It depends on the
20 chemicals. Some of them are carcinogens, some of
21 the compounds like trichloroethene and vinyl
22 chloride are carcinogens.

23 We know that there are other
24 contaminants where it's not clear whether or not
25 it may be a carcinogen, but it has other health

1 effects at high levels, like affecting the kidneys
2 or the liver. There's another contaminant one is
3 dichloroethene or ethene, that is known to have
4 those sort of effects.

5 But the standard we're looking at,
6 drinking water standards are basically overly
7 conservative, they really are. I mean, you
8 wouldn't get any effect at or near those sort of
9 levels. You'd have to be exposed to higher levels
10 over a long period of time where you would
11 actually see any of those effects.

12 PAUL: I have one or two more. So
13 there's no concern here for washing hands or
14 showering or anything like that, it's really long
15 term exposure that you're concerned about?

16 MR. GOWERS: Well, I mean it's not
17 just, when the standard says it's not only
18 drinking of the water, it's also they take into
19 consideration inhalation, any sort of exposure you
20 might get through showering or what have you.

21 AUDIENCE MEMBER: They're not more
22 concerned one versus another, it's just overall?

23 MR. GOWERS: It's overall. They look
24 at all, they don't just look at ingestion. They
25 look at thermal absorption, they look at

1 inhalation, when they develop these numbers based
2 upon risk.

3 AUDIENCE MEMBER: So if you were to
4 test, I guess (inaudible), if you were to test at
5 a high level, would you recommend someone not use
6 that water to wash their hands something like
7 that?

8 MR. GOWERS: If you tested above the
9 drinking water standard, we would obviously
10 recommend that you not use the water as potable
11 water.

12 Again, we're looking at drinking
13 water standards. And there's a number of
14 standards here. We may get into a situation where
15 there's federal drinking water standard, which is
16 less stringent than the state standard.

17 AUDIENCE MEMBER: And if we had any
18 sort of single (inaudible), like a Brita filter or
19 something like that, would that reduce somewhat
20 contaminants?

21 MR. GOWERS: It may reduce some of
22 the compounds. There's some compounds where
23 carbon is affected, like vinyl chloride. It
24 doesn't work very well with vinyl chloride.

25 AUDIENCE MEMBER: So it would have to

1 be some other kind of filtration system to do
2 that?

3 MR. GOWERS: We'd have to look at the
4 contaminate and see what the effect would be.
5 Carbon is generally affected for a lot of organic
6 compounds. I just know from experience that vinyl
7 chloride doesn't work very well with that.

8 MS. ECHOLS: Any more questions? No?
9 Okay. We want to thank each and every one of you
10 for coming tonight.

11 Please note that the public comment
12 period closes on August 21st. If you have any
13 comments you can always direct your email or send
14 mail to Joe, and it will become part of the
15 responsive summary.

16 And then it will be given to our
17 regional administrator and she'll go over the
18 responses, and a decision will be made and she
19 will sign it.

20 We want to once again thank the
21 Galloway Township Middle School for allowing us to
22 use their facility. And if you have any questions
23 you can always come up to us after the meeting,
24 we'll be here for a little while. We have to
25 travel a little further. Thank you so much for

1 coming. Good night.

2 MR. GOWERS: And again, if you fall
3 within that yellow circle and would like to
4 schedule your well to be sampled, you can come up
5 and we'll get you scheduled.

6 (The hearing is adjourned at 8:11
7 p.m.)

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

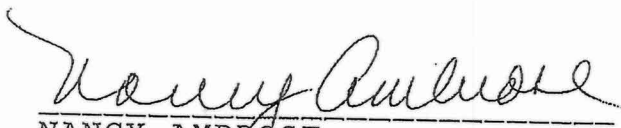
24

25

C E R T I F I C A T E

I, NANCY AMBROSE, LICENSE NO. 30XI00199300, a
Certified Court Reporter of the State of New
Jersey, do hereby certify that the foregoing is a
true and accurate transcript of the testimony as
taken stenographically by and before me at the
time, place and on the date hereinbefore set
forth, to the best of my ability.

I DO FURTHER CERTIFY that I am neither a relative
nor employee nor attorney nor counsel of any of
the parties to this action, and that I am neither
a relative nor employee of such attorney or
counsel, and that I am not financially interested
in the action.


NANCY AMBROSE
Certified Court Reporter
of the State of New Jersey