FIFTH FIVE-YEAR REVIEW REPORT FOR ELLIS PROPERTY SITE BURLINGTON COUNTY, NEW JERSEY

Prepared by

U.S. Environmental Protection Agency
Region 2
New York, New York

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Date

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LIST OF ABBREVIATIONS & ACRONYMS

CEA	Classification Exception Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
C&T	Capture and Treatment
DCE	Dichloroethylene
DNAPL	Dense Non-Aqueous Phase Liquid
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
ICs	Institutional Controls
mg/kg	Milligram per Kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NJDEP	New Jersey Department of Environmental Protection
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
RAO	Remedial Action Objectives
ROD	Record of Decision
RI	Remedial Investigation
RPM	Remedial Project Manager
TCE	Trichloroethylene
VOC	Volatile Organic Compound
µg/L	Microgram per Liter

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP)(40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the fifth FYR for the Ellis Property Superfund Site (site). The triggering action for this policy FYR is the completion date of the previous FYR. The FYR has been prepared due to the fact that the remedial action will not leave hazardous substances, pollutants or contaminants on Site above levels that allow for unlimited use and unrestricted exposure but requires five or more years to complete.

The site consists of two operable units: Operable Unit 1 (OU1) addresses the contaminated soils and Operable Unit 2 (OU2) addresses the contaminated groundwater. Remedy selection for both operable units was documented in the 1992 Record of Decision (ROD). Both the soil and groundwater remedies have been implemented; however, the soil remedy was amended in 2013 to address additional soil contamination that acted as an ongoing source to groundwater contamination. The amended OU1 soil remedy was completed in 2022. Both OU1 and OU2 are addressed in this FYR.

The Ellis Property Superfund site FYR was led by the EPA Remedial Project Manager (RPM), Julie Nace. Participants included Rich Puvogel (EPA-Section Supervisor), Rachel Griffiths (EPA-Hydrogeologist), Urszula Filipowicz (EPA-Human Health Risk Assessor), Abigail DeBofsky (EPA-Ecological Risk Assessor) and Natalie Loney (EPA-community Involvement Coordinator). The review began on August 16, 2024.

Site Background

The site is located on Sharp Road in Evesham Township, New Jersey. The land at the site is vacant, undeveloped, and overgrown. Land use in the area immediately surrounding the site is primarily agricultural, though it is transitioning to residential use. The nearest free-flowing surface water is Sharps Run, approximately one-quarter mile north of the site.

There are no current uses of the Ellis Property except for the ongoing remedial activities, and there are no known plans for land re-use at this time. The land is currently zoned as industrial. The risk assessment prepared in the 1992 ROD and 2013 ROD Amendment considered unrestricted future land use for the site property.

This 36-acre property was originally a dairy farm, until acquired by Irving Ellis in 1968. The site is located on approximately four acres of the 36-acre property. This four-acre portion of the property was used for drum reconditioning operations. Surficial spills and discharges associated with drum reconditioning, and chemical storage are believed to have contributed to contamination of soil and

groundwater at the site. Site operations ceased in the late 1970s. The site was included on the National Priorities List on September 1, 1983.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Ellis Property		
EPA ID: NJD980529085		
Region: 2	**State:** NJ	**City/County:** Evesham and Medford Townships/Burlington County
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the site achieved construction completion?** No	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Julie Nace		
Author affiliation: EPA		
Review period: 8/16/2024 - 2/28/2025		
Date of site inspection: 10/8/2024		
Type of review: Policy		
Review number: 5		
Triggering action date: 4/9/2020		
Due date *(five years after triggering action date)*: 4/9/2025		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In 1985, EPA began a remedial investigation (RI) to determine the nature and extent of contamination in soils, groundwater, surface water, and sediment. RI results indicated groundwater and soils were contaminated with volatile organic compounds (VOCs) and metals. In 1992, a risk assessment was conducted and concluded that there was unacceptable risk associated with future residential land-use scenarios. These unacceptable risks to the future resident included ingestion of home-grown vegetables, incidental ingestion of soil, dermal contact with soil, inhalation of wind-blown dust from soil, ingestion of chemicals in the groundwater, and non-ingestion uses of groundwater (i.e., bathing). Surface water and sediment did not pose an unacceptable risk to human health. An ecological

risk assessment was also conducted and concluded that contaminated soils presented an unacceptable risk to ecological receptors.

As part of the 2013 ROD Amendment (see below), the Human Health Risk Assessment and Ecological Risk Assessment from the 1992 ROD were re-evaluated. EPA concluded that the current and future land use assumptions for the site were still valid and that the basis for taking an action at the site derived, primarily, from direct contact with soil or groundwater exposure to a future resident, was still valid.

Response Actions

Removal Actions
In 1983, The New Jersey Department of Environmental Protection (NJDEP) removed approximately one hundred drums containing acids from the site and disposed of them at an approved off-site facility. Containerized solids and flammable liquids were also removed and disposed, along with contaminated soil and sludge. In an acid spill area, the highly acidic surface soils were removed, and lime was tilled into the soil to neutralize the acid. Soils in the vicinity of a polychlorinated biphenyl (PCB) disposal area were removed to a depth of approximately two feet and disposed at an approved off-site facility. Local private wells were sampled and showed no contamination.

In 1989, at the request of NJDEP, EPA initiated the removal of 218 drums containing hazardous waste material and disposed of them off site. This removal action was completed in 1990.

Remedial Actions
In September 1992, EPA issued a ROD for the site. The ROD identified the following media-specific remedial action objectives (RAOs):

Soil

- Prevent contact with contaminated soil, which represents an unacceptable risk, or reduce contaminant concentrations in the soil below risk-based levels.
- Prevent further migration of soil contaminants into the groundwater.
- Prevent migration of contaminated soils off site.

Groundwater

- Prevent the migration of contaminated groundwater off site.
- Prevent the migration of contaminated groundwater into the underlying aquifers.
- Return the aquifer to its designated use as a source of drinking water by reducing contaminant concentrations in the shallow groundwater to drinking water quality.

The selected remedy included:

- Excavation of contaminated soil and treatment/disposal at an approved off-site facility.
- Extraction and treatment of contaminated groundwater from the shallow aquifer underlying the site with the treatment of groundwater in an on-site facility.
- Disposal of the treated groundwater on the site by reinjection.
- Implementation of an environmental monitoring program to ensure effectiveness of the remedy.

The OU1 soil remedy was completed in 1999, and the OU2 groundwater remedy was initiated in 2000. During operation of the groundwater capture and treatment (C&T) system it was observed that levels of trichloroethylene (TCE) in groundwater were not declining as expected. A subsequent investigation indicated the presence of a source of contamination within saturated soils. The remedy for OU1 soil was amended in a 2013 ROD Amendment to address the source of TCE.

In the 2013 ROD amendment, EPA added one additional RAO for groundwater, to address the potential for vapor intrusion exposure:

- Prevent potential exposure by inhalation/vapor intrusion that presents unacceptable risk under a future land use scenario.

The major components of the 2013 Amended Remedy include the following:

- Excavation and off-site disposal of TCE soil contamination in the residual source area, and contaminated soil in the plume area.
- Implementation of in-situ treatment, where appropriate, to compliment excavation.
- Continued operation of the existing groundwater collection and treatment system for a period of time (estimated to be one year) to evaluate the effectiveness of the system to reduce residual groundwater contamination.
- Monitoring of groundwater.
- Continuation of institutional controls to prevent exposure to contaminated groundwater until remediation goals are achieved.

Status of Implementation

The remediation of contaminated soil was performed in 1998 by excavating soils that exceeded cleanup levels established in the ROD and transporting contaminated soil off-site for disposal. A total of 1,400 cubic yards of excavated soils were disposed of at an approved off-site facility.

Construction of the groundwater C&T system was completed on June 5, 2000. The C&T system started on June 16, 2000 and was operational and functional on August 31, 2000. Groundwater long-term remedial action began on August 31, 2001.

While the removal and remedial response actions taken prior to the start of the C&T system eliminated drums and large areas of contaminated soil, residual TCE in groundwater has been consistently identified in site monitoring wells since 2001.

In 2006, EPA evaluated the groundwater C&T system. In addition to suggesting additional studies to determine the presence of dense non-aqueous phase liquid (DNAPL), the evaluation identified several issues likely to affect overall C&T system performance, including the location of extraction wells in low-permeability soil formations and the presence of a sand channel on the northern part of the site which limited the effectiveness of the northern portion of the collection trench.

In response to persistent TCE contamination in groundwater and the results of the 2006 evaluation, NJDEP conducted an investigation in 2007 to further delineate the residual sources and extent of contamination in soil and groundwater, evaluate the presence of DNAPL, and assess the potential need for changes to the groundwater remedy.

The 2007 investigation identified TCE DNAPL in groundwater between 10 and 24 feet below ground surface. The DNAPL source material constitutes a principal threat waste at the site. These contaminants, bound tightly in the saturated soils, leach slowly and serve as a continuing source of groundwater contamination that is not easily addressed by the groundwater C&T system. Pumping wells PW-1 and PW-2 had limited influence extracting subsurface contamination bound in the tight soil matrix. The two pumping wells were located relative to the TCE source areas and pumping had been ongoing for more than 10 years, yet little progress was made in reducing these sources.

Based on a review of the groundwater monitoring results from November 1999 to October 2010, it was found that the primary source area in the shallow zone was in the vicinity of monitoring wells MW-2 and MW-6, continuing downgradient to the extraction trench, where relatively high TCE concentrations persisted. Another source area was in the vicinity of extraction well PW-1, which had elevated concentrations of TCE in the influent to the treatment plant as high as 31,286 micrograms per liter (µg/L).

In 2012, NJDEP installed a cut off wall to isolate the contaminated groundwater from the sand channel and direct contaminated groundwater to the collection trench. This wall was also designed to be used as shoring protection for future excavation in the vicinity of the plume area. From 2013 through 2020, the groundwater C&T system was functional, and groundwater monitoring continued, prior to remedial actions that are described in the following paragraph.

Soil removal and in-situ thermal treatment, identified in the 2013 ROD Amendment, began in 2020. The groundwater C&T system was shut down during implementation of the soil removal and in-situ thermal treatment. Source areas of TCE were excavated in the periphery areas of the site while the central deeper area was treated by in-situ thermal treatment. The excavation of approximately 7,000 cubic yards of contaminated soil was completed in (April 2020) and the excavated area was backfilled with clean soil. The in-situ thermal treatment was completed in August 2022. The excavation and thermal treatment achieved the TCE soil remediation goal of 1 milligram per kilogram (mg/kg). Although excavation and in-situ thermal treatment have been completed, the temperature of the groundwater remains above levels that allow for operation of the C&T system. When the groundwater cools to a temperature that is compatible with operation of the C&T system, the C&T system will be restarted and groundwater monitoring will resume. The groundwater monitoring data will be used to evaluate the effectiveness of the C&T system to reduce any remaining residual groundwater contamination.

IC Summary Table

Table 1: Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	Yes	Entire Site	IC for groundwater is in the form of a classification exception area (CEA). These controls need to be in place until the aquifer is restored.	A classification exception area (CEA), established on February 10, 1998, exists at the site ensuring that potable wells are not installed in the contaminated shallow aquifer, thereby preventing exposure to the contaminants.

Systems Operations/Operation & Maintenance

The C&T system, designed to pump up to a rate of 8 gallons per minute, operated between 2000 and 2020. The system has been temporarily shut down to accommodate the removal of TCE source areas by a combination of excavation and in-situ thermal desorption. It is anticipated that the C&T system will resume operations in 2025, when the groundwater cools to a temperature that is compatible with operation of the C&T system, to address any remaining residual groundwater contamination. Operation and maintenance (O&M) of the groundwater treatment facility, once resumed, will include sampling and analysis of the monitoring wells, groundwater level measurements, and wetland monitoring. The O&M plan specifies that groundwater samples be collected from 38 monitoring wells on an annual basis and analyzed for site-related VOCs.

Potential site impacts from severe-weather events have been assessed, and the performance of the remedy is currently not at risk due to these expected effects (Appendix B).

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the **last** FYR as well as the recommendations from the **last** FYR and the current status of those recommendations.

Table 2: Protectiveness Determinations/Statements from the 2020 FYR

OU #	Protectiveness Determination	Protectiveness Statement
2	Short-term Protective	The remedy currently protects human health and the environment because there is no human or ecological receptor exposure to contaminated groundwater or subsurface soils, the site is not in use and there are no anticipated ecological concerns associated with exposure to site contaminants. However, in order for the remedy to be protective in the long-term, annual groundwater data to assess the effectiveness of the OU1 remedy needs to be collected.

Table 3: Status of Recommendations from the 2020 FYR

OU #	Issue	Recommendation	Current Status	Current Implementation Status Description	Completion Date (if applicable)
2	Annual groundwater data is needed to assess the effectiveness of the source removal.	Increase frequency of groundwater sampling to an annual basis.	Planned	Sitewide groundwater sampling is planned for Spring 2025 after groundwater temperatures from thermal treatment decrease. Downgradient wells within the wetlands, outside of the remedial action areas, have been sampled during the remedial action.	

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

During the FYR process, an interview was conducted with Kevin Rijs, Evesham Township Community Development Director. The purpose of the interview was to document any perceived problems or successes with the remedy that has been implemented to date. The interview was conducted on October 8, 2024. No issues or perceived problems were raised during the interview.

On August 7, 2024, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at Superfund sites in New York, New Jersey, and Puerto Rico, including the Ellis Property Superfund site. The announcement can be found at the following web address: https://www.epa.gov/superfund/R2-fiveyearreviews.

In addition to this notification, the EPA Community Involvement Coordinator for the site, Natalie Loney, posted a public notice on the EPA site webpage https://www.epa.gov/superfund/ellis-property and provided the notice to the Evesham Township by email on February 3, 2025 with a request that the notice be posted in municipal offices and on the village/town webpages. This notice indicated that a FYR would be conducted at the Ellis Property site to ensure that the cleanup at the site continues to be protective of human health and the environment. Once the FYR is completed, the results will be made available at the following repository/ies: Evesham Town Hall, 984 Tuckerton Road, Marlton, NJ 08053. In addition, the final report will be posted on the following website: https://www.epa.gov/superfund/ellis-property. Efforts will be made to reach out to local public officials to inform them of the results.

Data Review

Groundwater

No site-wide groundwater sampling has occurred since 2016 due to the ongoing remedial action. During remedial action, six downgradient monitoring wells, located within the wetlands, were sampled to assess whether the groundwater plume was migrating during implementation of the soil remedy. Sampling occurred three times in consecutive years (2022, 2023, and 2024). In general, results have remained consistent throughout the review period. Contaminant concentrations for monitoring wells MW-17, MW-19, MW-20, and MW-21 were non-detect or below New Jersey Groundwater Quality Standards (NJGWQS) (see Appendix **C** Figure 1). In MW-10, concentrations of cis-1,2-dichloroethylene (cis-1,2-DCE), TCE, and vinyl chloride have decreased throughout the review period but remain above their respective NJGWQS of 70 µg/L, 1 µg/L, and 1 µg/L, respectively. Cis-1,2-DCE concentrations decreased from a maximum of 180 µg/L in 2022 to 88.4 µg/L in 2024. Concentrations of TCE decreased from 94 µg/L in 2022 to 3.8 µg/L in 2024. The highest concentration of vinyl chloride was 8.4 µg/L in 2023 and decreased to 3.8 µg/L in 2024. In MW-18, concentrations of 1,1-dichloroethylene (1,1-DCE), cis-1,2-DCE, TCE, and vinyl chloride remain above NJGWQS. TCE exceedances have decreased in the wetland area (8.8 µg/L in 2022 to 1.2 µg/L in 2024, and 91 µg/L in 2022 to 3.82 µg/L in 2024). Overall, concentrations of 1,1-DCE, cis-1,2-DCE, and vinyl chloride have remained relatively stable in the

wetland area throughout the review period and, as of 2024, the highest concentrations were 10.2 µg/L, 4,220 µg/L, and 14.8 µg/L, respectively.

The elevated concentrations of cis-1,2-DCE in downgradient MW-18 may be indicative of reductive dechlorination closer to the thermal treatment zone which reduced TCE into cis-1,2-DCE. Reductive dechlorination is known to be enhanced by the warm temperatures associated with thermal treatment. The most recent geochemical conditions in MW-18 do not appear to support reductive dechlorination, which may be why the higher concentrations of cis-1,2-DCE persist and are not significantly reducing to vinyl chloride. The extent of elevated COC concentrations are limited to MW-18 as supported by low or non-detectable concentrations in downgradient MW-19. Continued monitoring and startup of the groundwater treatment system will aid in assessing and addressing the elevated concentrations.

Surface Water

As stated in the last FYR, none of the surface water sampling locations exceeded NJDEP surface water quality criteria. No further surface water sampling was conducted in this five-year period.

Sediment

No sediment data was gathered during this FYR. Evaluation of sediment data from previous FYRs supported a conclusion that contaminants are no longer eroding into the wetland area and further sampling of sediment and surface water is not warranted.

Soil

After completion of the remedial action for the ROD amendment, sampling showed that the excavation and thermal treatment achieved the TCE soil remediation goal of 1 milligram per kilogram (mg/kg).

Site Inspection

The inspection of the site was conducted on 10/8/2024. In attendance were Julie Nace (EPA, RPM), Rich Puvogel (EPA, Section Supervisor), Ula Kinahan (EPA, Human Health Risk Assessor), Kevin Rijs (Evesham Township, Community Development Director), and John Skurat (NJDEP, Operation and Maintenance Manager). The purpose of the inspection was to assess the protectiveness of the remedy. No significant issues were identified during the inspection. The active soil excavation and in-situ thermal treatment have been completed; however, groundwater temperatures remain above limits to run the C&T system. Groundwater temperatures are expected to diminish to levels that will allow for the restart of the C&T system in 2025.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

The groundwater C&T system was effectively capturing and treating the dissolved phase organic and inorganic groundwater contamination. However, the presence of residual levels of contaminants in the saturated soil and DNAPL impacted the ability for the system to restore groundwater. The 2013 ROD Amendment selected a remedy to address these sources. Once groundwater temperatures decrease to acceptable tolerances, the C&T system will be restarted and will be able to restore groundwater to

beneficial use. The system is currently shutdown until groundwater cools to lower temperatures that will allow the C&T system to resume operation.

Surface water and sediment sampling indicate VOCs are not discharging downgradient and the plume was effectively being contained by the C&T system. Groundwater data collected during the review period from downgradient wells within the wetland areas show no significant movement of the plume, and contamination is trending downwards toward the cleanup goal. The site is currently vacant (except for the groundwater C&T plant) and the groundwater use is limited by the CEA. To assess the effectiveness of the OU1 remedy, annual groundwater data from the treatment area needs to be collected so contaminant trends can be established.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Human Health Risk Assessment

Current and future land use assumptions and the basis for taking an action at the site remains valid. There have been no physical changes to the site that would adversely affect the protectiveness of the remedy. The exposure assumptions and toxicity values used at the time of the 1992 ROD to estimate the potential risks and hazards to human health followed the general risk assessment practice at the time. There is no direct contact exposure pathway to soil contaminants as the soil cleanup goals have been met. The exposure pathway to groundwater contaminants remains incomplete as all the residents in the immediate vicinity of the site are connected to the public water supply and a CEA is in place to ensure exposure to groundwater contaminants is prevented until cleanup goals are achieved. Although the risk assessment process has been updated and specific parameters and toxicity values have changed, the risk assessment process that was used for the site is still consistent with the current practice and the need to implement the remedial action remains valid. The cleanup goals for the site remain protective of human health. The RAOs from the 1992 ROD RAOs, and the modified RAO from the 2013 ROD amendment, established for both soil and groundwater at the site remain valid. Since the site does not contain any buildings other than the C&T facility, the vapor intrusion pathway is currently incomplete.

Ecological Risk Assessment

The exposure pathways and receptors that were used in the Ecological Risk Assessment (ERA) remain valid. The ERA found that contaminated soil posed a risk to white-tailed deer and woodcock. The soil excavation remedy has effectively eliminated risks to terrestrial receptors.

Surface water and sediments in the wetlands posed a marginal risk to aquatic life. Soil from the site was identified as the source of contamination to the wetlands. The soil excavation remedy prevented further migration of soil contaminants into the wetlands. The previous FYR found that no surface water samples exceeded NJDEP surface water quality criteria. While sediment data in previous FYRs did show exceedances of metals at the lowest effect levels of the NJDEP sediment screening guidelines, concentrations were overall shown to be decreasing relative to those reported in the 1992 ROD. The data from previous FYRs supported a conclusion that source material is no longer eroding into the wetland area. A temporary increase in concentrations of cis-1,2-DCE in MW-18 may be indicative of reductive dechlorination closer to the thermal treatment zone which reduced TCE into cis-1,2-DCE. The extent of elevated COC concentrations are limited to MW-18 as supported by low or non-detectable concentrations in downgradient MW-19. Recent data indicates that TCE and cis-1,2-DCE are decreasing

because the concentration of TCE in the source area has been reduced. Although surface water samples were not collected, it is unlikely there were any short-term impacts to the wetland.

QUESTION C: Has any **other** information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that could call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU1

Issues and Recommendations Identified in the Five-Year Review:

OU(s): 2	Issue Category: Monitoring			
	Issue: Groundwater data is needed to assess the effectiveness of the source removal.			
	Recommendation: Increase the frequency of sitewide groundwater sampling to an annual basis once the groundwater cools to a temperature that allows for representative sampling of groundwater contaminant levels.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	State	6/30/2025

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
Operable Unit:1	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy for OU1 is protective of human health and the environment.	

Protectiveness Statement(s)	
Operable Unit:2	*Protectiveness Determination:* Short-term Protective
Protectiveness Statement: The remedy currently protects human health and the environment because there is no human or ecological receptor exposure to contaminated groundwater or subsurface soils; the site is not in use and there are no anticipated ecological concerns associated with exposure to site	

contaminants. In order for the remedy to be protective in the long-term, annual groundwater data to assess the effectiveness of the OU1 remedy needs to be collected.

Sitewide Protectiveness Statement
Protectiveness Determination: Short-term Protective
Protectiveness Statement: The remedy currently protects human health and the environment because there is no human or ecological receptor exposure to contaminated groundwater or subsurface soils; the site is not in use, and there are no anticipated ecological concerns associated with exposure to site contaminants. In order for the remedy to be protective in the long-term, annual groundwater data to assess the effectiveness of the OU1 remedy needs to be collected.

VIII. NEXT REVIEW

The next FYR report for the Ellis Property Superfund site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

- Groundwater Water Sampling Summary, NJDEP – Ellis Property, Evesham Township, Burlington County, NJ. November 2016. Prepared for NDJEP by Handex Consulting and Remediation, LLC
- Surface Water and Sediment Sampling Report NJDEP – Ellis Property, Evesham Township, Burlington County, NJ. February 2017. Prepared for NDJEP by Handex Consulting and Remediation, LLC
- Ellis Property Groundwater Remediation System, Monthly System Operations Reports, NJDEP - Ellis Property, Evesham Township, Burlington County, NJ. January 2015 – June 2019. Prepared for NDJEP by Handex Consulting and Remediation, LLC

APPENDIX B – REMEDY RESILIENCE ASSESSMENT

In line with regional practice, two tools were utilized to assess the Ellis Property Superfund Site. Screenshots from each of the tools assessed are included here.

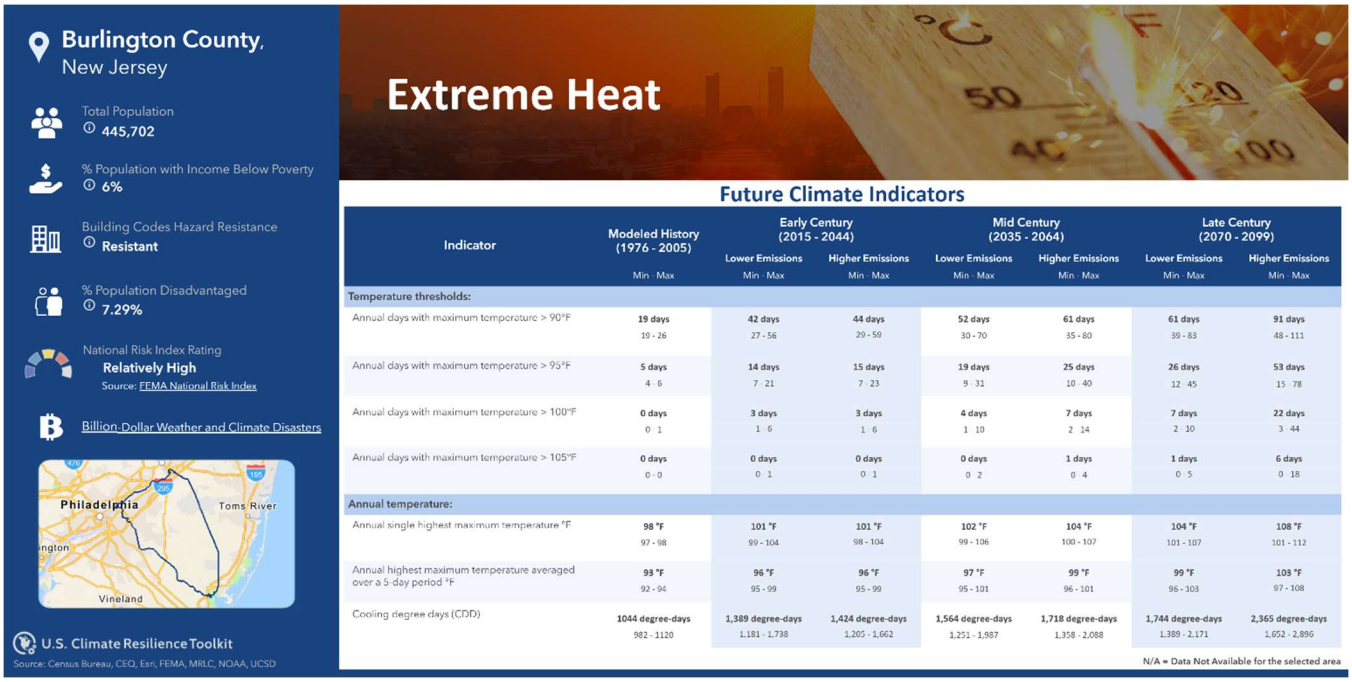
The first tool used to assess the site was the *CMRA*. The tool examined five hazards for the county the site falls within. According to this tool, the National Risk Index Rating for extreme heat and flooding are "relatively high," while wildfire risk is "relatively moderate" and drought risk is "relatively low." There is no risk of coastal inundation at this location as the site is situated inland.

Figures B-1 and B-2 show the "relatively high" risk hazards of extreme heat and flooding. Figure B-1 shows the projected increase in days per year with maximum temperatures > 100°F throughout the century. Figure B-2 shows the projected increase in days per year with precipitation greater than 3 inches throughout the century. Figure B-3 shows a projected moderate increase in wildfire risk due to increase days with higher temperatures. Figure B-4 shows projected small increase in days per year without precipitation. These projections suggest future precipitation events may decrease in frequency but increase in intensity.

This site is located near wetlands, and a small creek, that could flood and impact the C&T system with precipitation events that have increased in intensity. Storm and flood related trends will continue to be monitored. In addition, the wooded wetlands and fields could be susceptible to wildfire that would impact the C&T system but most of the site is surrounded by recently built subdivsions. Increased temperatures would not have a significant impact on the C&T system.

The second tool utilized is called the *USGS U.S. Landslide Inventory*. There have been no landslides recorded in the vicinity of the site (Figure B-5).

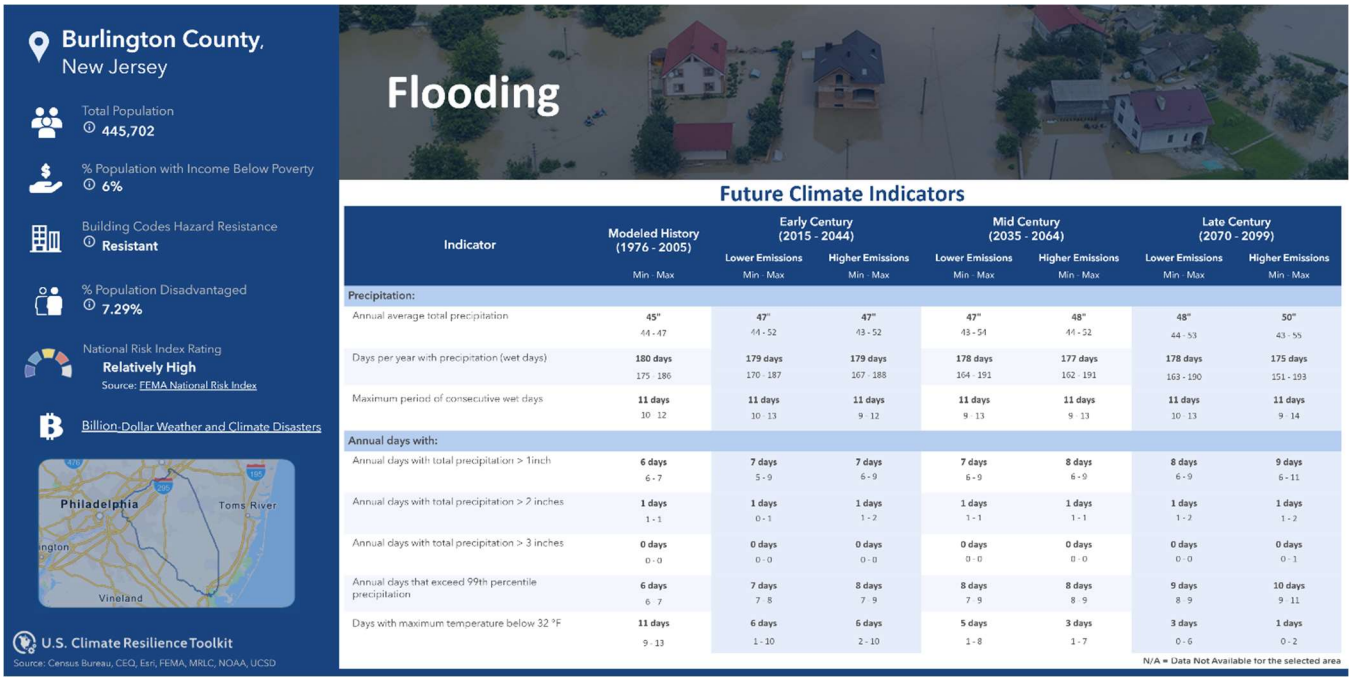
Potential site impacts from severe-weather events have been assessed, and the performance of the remedy is currently not at risk due to theses expected effects.



Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Temperature thresholds:							
Annual days with maximum temperature > 90°F	19 days 19 - 26	42 days 27 - 56	44 days 29 - 59	52 days 30 - 70	61 days 35 - 80	61 days 39 - 83	91 days 48 - 111
Annual days with maximum temperature > 95°F	5 days 4 - 6	14 days 7 - 21	15 days 7 - 23	19 days 9 - 31	25 days 10 - 40	26 days 12 - 45	53 days 15 - 78
Annual days with maximum temperature > 100°F	0 days 0 - 1	3 days 1 - 6	3 days 1 - 6	4 days 1 - 10	7 days 2 - 14	7 days 2 - 10	22 days 3 - 44
Annual days with maximum temperature > 105°F	0 days 0 - 0	0 days 0 - 1	0 days 0 - 1	0 days 0 - 2	1 days 0 - 4	1 days 0 - 5	6 days 0 - 18
Annual temperature:							
Annual single highest maximum temperature °F	98 °F 97 - 98	101 °F 99 - 104	101 °F 98 - 104	102 °F 99 - 106	104 °F 100 - 107	104 °F 101 - 107	108 °F 101 - 112
Annual highest maximum temperature averaged over a 5-day period °F	93 °F 92 - 94	96 °F 95 - 99	96 °F 95 - 99	97 °F 95 - 101	99 °F 96 - 101	99 °F 96 - 103	103 °F 97 - 108
Cooling degree days (CDD)	1044 degree-days 982 - 1120	1,389 degree-days 1,181 - 1,738	1,424 degree-days 1,205 - 1,662	1,564 degree-days 1,251 - 1,987	1,718 degree-days 1,358 - 2,088	1,744 degree-days 1,389 - 2,171	2,365 degree-days 1,652 - 2,896

N/A = Data Not Available for the selected area

Figure B-1: Extreme Heat



Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Precipitation:							
Annual average total precipitation	45" 44 - 47	47" 44 - 52	47" 43 - 52	47" 43 - 54	48" 44 - 52	48" 44 - 53	50" 43 - 55
Days per year with precipitation (wet days)	180 days 175 - 186	179 days 170 - 187	179 days 167 - 188	178 days 164 - 191	177 days 162 - 191	178 days 163 - 190	175 days 151 - 193
Maximum period of consecutive wet days	11 days 10 - 12	11 days 10 - 13	11 days 9 - 12	11 days 9 - 13	11 days 9 - 13	11 days 10 - 13	11 days 9 - 14
Annual days with:							
Annual days with total precipitation > 1inch	6 days 6 - 7	7 days 5 - 9	7 days 6 - 9	7 days 6 - 9	8 days 6 - 9	8 days 6 - 9	9 days 6 - 11
Annual days with total precipitation > 2 inches	1 days 1 - 1	1 days 0 - 1	1 days 1 - 2	1 days 1 - 1	1 days 1 - 1	1 days 1 - 2	1 days 1 - 2
Annual days with total precipitation > 3 inches	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 1
Annual days that exceed 99th percentile precipitation	6 days 6 - 7	7 days 7 - 8	8 days 7 - 9	8 days 7 - 9	8 days 8 - 9	9 days 8 - 9	10 days 9 - 11
Days with maximum temperature below 32 °F	11 days 9 - 13	6 days 1 - 10	6 days 2 - 10	5 days 1 - 8	3 days 1 - 7	3 days 0 - 6	1 days 0 - 2

N/A = Data Not Available for the selected area

Figure B-2: Flooding

Figure B-3: Wildfire

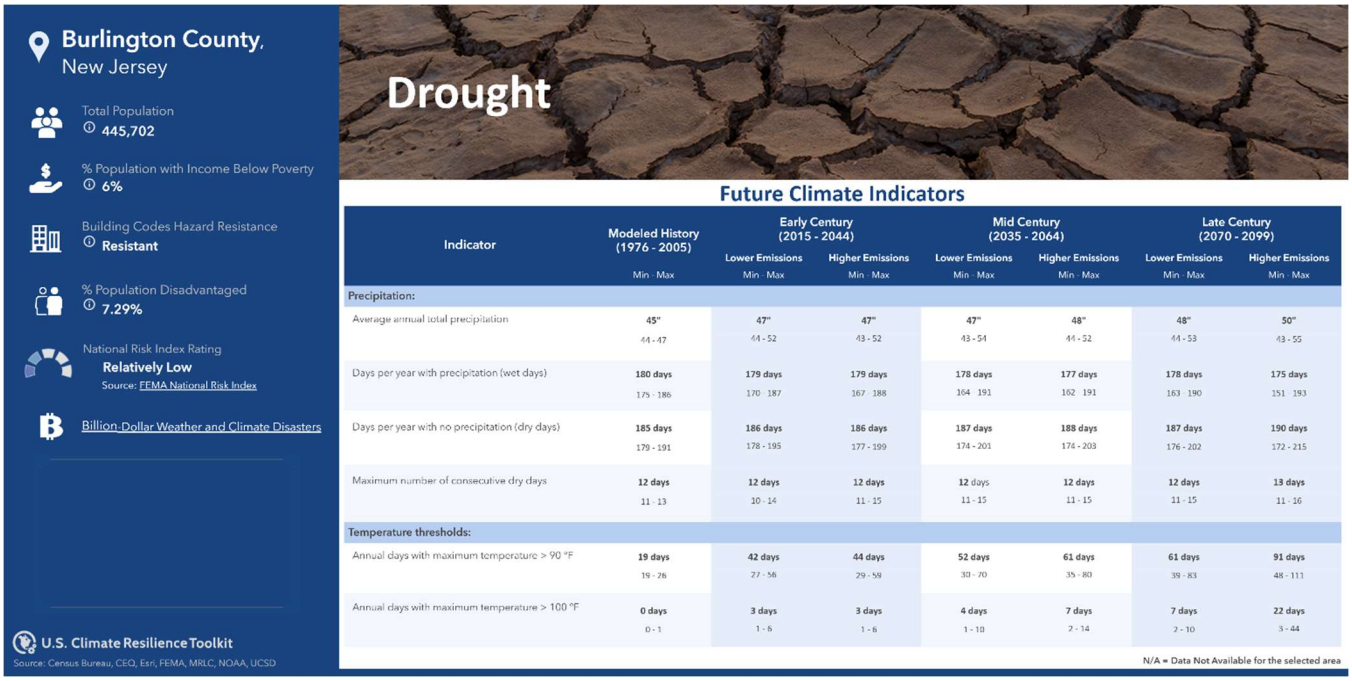


Figure B-4: Drought

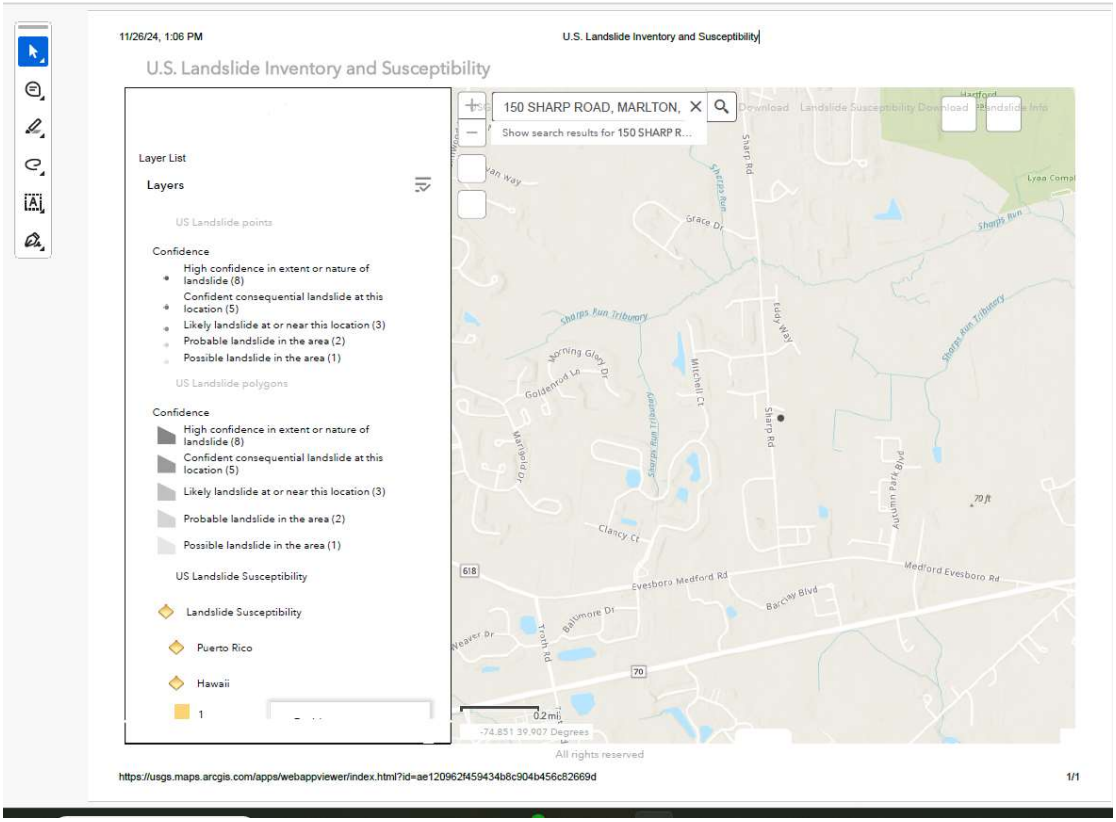
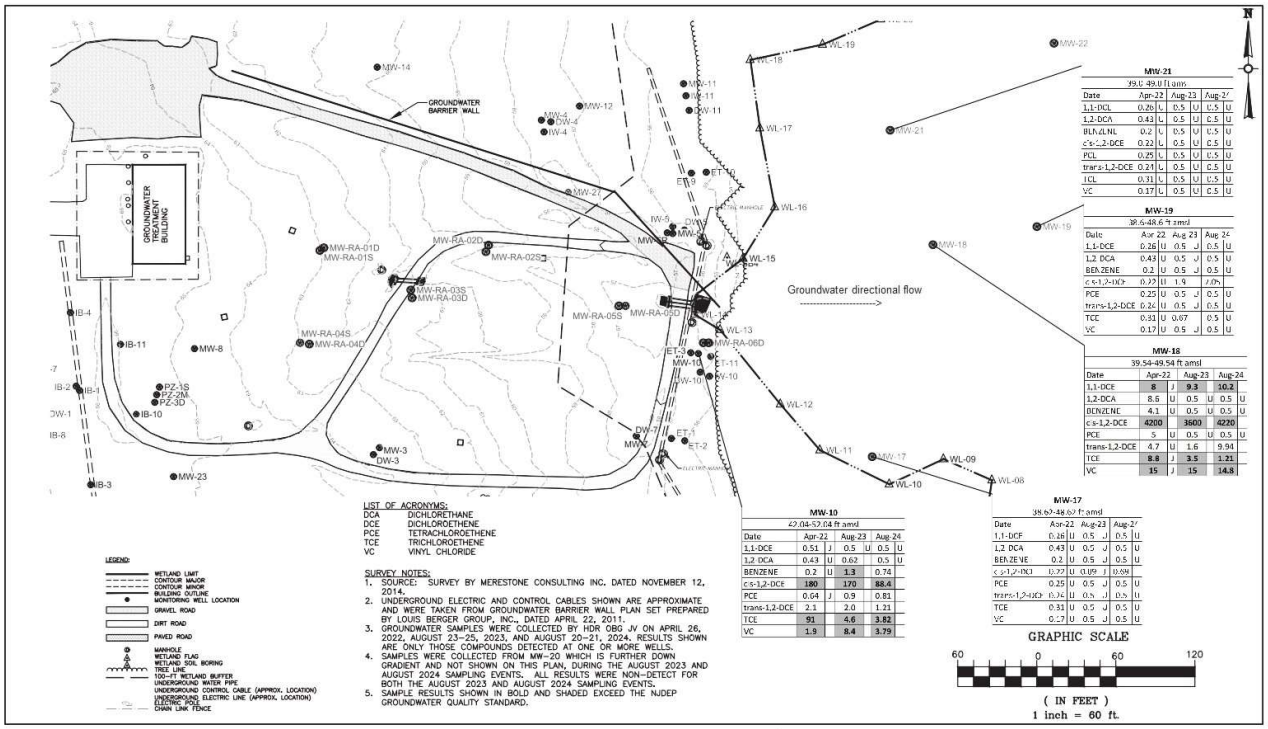


Figure B-5: Landslide

APPENDIX C – GROUNDWATER DATA



HDR OBG a joint venture

APRIL 2022, AUGUST 2023, & AUGUST 2024
GROUNDWATER SAMPLE RESULTS
ELLIS PROPERTY
EVESHAM TOWNSHIP, NEW JERSEY

DATE: SEPTEMBER 2024
FIGURE: 1