RECORD OF DECISION

Sherwin-Williams/Hilliards Creek Site

Operable Unit 4

Gibbsboro, Voorhees and Lindenwold, New Jersey

U.S. Environmental Protection Agency
Region II
September 2021

DECLARATION STATEMENT

RECORD OF DECISION

SITE NAME AND LOCATION

Sherwin-Williams/Hilliards Creek (NJD980417976), Borough of Gibbsboro, Camden County, New Jersey.
Operable Unit 4 – Soil, Sediment and Surface Water

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedy to address contaminated soil and sediment at the Sherwin-Williams/Hilliards Creek Site (Site), in the Borough of Gibbsboro, Voorhees Township, and Lindenwold in Camden County, New Jersey. The Site is comprised of the Former Manufacturing Plant area (FMP), Hilliards Creek, portions of Silver Lake (Gibbsboro, New Jersey), and Kirkwood Lake (Voorhees, New Jersey). Operable Unit 4 (OU4) of the Site, also known as the Waterbodies OU, will address soil and sediment contamination present within Silver Lake, Bridgewood Lake, Kirkwood Lake, and portions of Hilliards Creek (middle and lower). The selected remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, (CERCLA) and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the Administrative Record established for this Site.

The State of New Jersey Department of Environmental Protection (NJDEP) concurs, in part, with the selected remedy. NJDEP concurs with the selected alternative of soil and sediment removal including off-site disposal. However, the State of New Jersey will not concur with the capping and institutional control components of the selected soil alternative unless and until owners of property subject to restricted use requirements provide their consent to the placement of caps and deed notices on their property.

ASSESSMENT OF THE SITE

The remedial action selected in the ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

DESCRIPTION OF THE SELECTED REMEDY

The remedial action described in this document addresses the soil and sediment contamination at the Site, which are contaminated primarily with lead and arsenic.

The major components of the selected remedy for the soil include the following:

- Excavation, transportation, and disposal of 42,000 cubic yards of contaminated soil;
- Installation of engineering controls including vegetated soil covers in the floodplain areas adjacent to Hilliards Creek;

- Restoration and revegetation of Hilliards Creek flood plain;
- Institutional controls, such as deed notices, to prevent exposure to residual soil that exceeds levels that allow for unrestricted use; and
- Monitoring of restoration activities.

The major components of the selected remedy for the sediment include the following:

- Construction of a stream diversion system to allow access to sediment;
- Excavation, transportation, and disposal of 128,000 cubic yards of contaminated sediment within lakes and creeks;
- Dewatering and processing of excavated sediment;
- Stream bank remediation followed by revegetation and restoration that includes engineering controls to stabilize stream banks as needed; and
- Monitoring of restoration activities.

The U. S. Environmental Protection Agency (EPA) expects that removal of contaminated sediment, combined with soil removal and capping, will result in a decrease of surface water contaminants. Surface water monitoring will be included as part of the remedial action to assess any changes in contaminant conditions over time. If monitoring indicates that contamination levels have not decreased to below standards, EPA may require an action in the future.

The total present worth cost for the combined soil and sediment Selected Alternative is $90,026,569.

DECLARATION OF STATUTORY DETERMINATIONS

Part 1: Statutory Requirements

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, is cost effective and utilizes permanent solutions and treatment technologies to the maximum extent practicable.

Part 2: Statutory Preference for Treatment

The selected remedy does not meet the statutory preference for the use of remedies that involve treatment as a principal element because the contamination will be removed and disposed off-site. Neither the selected remedy nor any of the alternative remedies involved treatment due to technical infeasibility in implementing treatment methods for the contaminants of concern at this Site.

Part 3: Five-Year Review Requirements

Because the remedy will result in contaminants remaining in the soil on-site above levels that allow for unlimited use and unrestricted exposure, a statutory five-year review will be required.

RECORD OF DECISION DATA CERTIFICATION CHECKLIST

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

- Contaminants of concern and their respective concentrations may be found in the "Site Characteristics" section.
- Baseline risk represented by the contaminants of concern may be found in the "Summary of Site Risks" section.
- Cleanup levels established for contaminants 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 baseline risk assessment and decision document can be found in the "Current and Potential Future Site and Resource Uses" section.
- Estimated capital, annual operation and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which the remedial cost estimates are projected can be found in the "Description of Alternatives" section.
- Key factors that led to selecting the remedy may be found in the "Comparative Analysis of Alternatives" and "Statutory Determinations" sections.

Michael S. Regan, Administrator

SEP 28 2021
Date

RECORD OF DOCUMENT

DECISION SUMMARY

Sherwin-Williams/Hilliards Creek Site
Gibbsboro, Voorhees and Lindenwold
New Jersey

U.S. Environmental Protection Agency
Region II
New York, New York
September 2021

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SITE NAME, LOCATION AND DESCRIPTION

The Sherwin-Williams/Hilliards Creek Site (Site), see Figure 1, EPA ID # NJD980417976, is one of three sites which collectively make up what is commonly referred to as the "Sherwin-Williams Sites" (Sites). Located in areas of Gibbsboro, Voorhees, and Lindenwold, New Jersey, the Sherwin-Williams Sites are the *Sherwin-Williams/Hilliard's Creek Superfund Site* located in Gibbsboro, Voorhees and Lindenwold, the *Route 561 Dump Site* in Gibbsboro, and the *United States Avenue Burn Superfund Site* in Gibbsboro (Figure 2). The Sites include source areas from which contaminated soil and sediment have migrated, predominately through natural processes, to downgradient areas within Gibbsboro, Voorhees and Lindenwold.

Sherwin-Williams/Hilliards Creek Superfund Site: The Sherwin-Williams/Hilliards Creek Superfund Site includes the FMP, Hilliards Creek, a portion of Silver Lake and Kirkwood Lake. The FMP is approximately 20 acres in size and is comprised of commercial structures, undeveloped land, and the southern portion of Silver Lake. The FMP extends from the south shore of Silver Lake in Gibbsboro and straddles the headwaters of Hilliards Creek. Hilliards Creek is formed by the outflow from Silver Lake. The outflow enters a culvert beneath a parking lot at the FMP and resurfaces on the south side of Foster Avenue, Gibbsboro. From this point, Hilliards Creek flows in a southerly direction through the FMP and continues downgradient through residential and undeveloped areas. At approximately one mile from its origin, Hilliards Creek empties into Kirkwood Lake. Kirkwood Lake is approximately 25 acres, and is located in Voorhees and Lindenwold, with residential properties lining its northern shore.

Route 561 Dump Site: The Route 561 Dump Site (Dump Site) is located approximately 700 feet to the east of the FMP and is approximately 19 acres. It includes retail businesses, a portion of a residential area, wooded vacant lots and a small creek. A 2.9-acre fenced portion of the Dump Site is located at the base of an earthen dam that forms Clement Lake. The Dump Site includes portions of White Sand Branch, a small creek which originates at the Clement Lake dam and flows in a southwest direction for approximately 1,650 feet where it enters the fenced portion of the United States Avenue Burn Site (Burn Site).

United States Avenue Burn Site: The fenced portion of the Burn Site and its associated contamination is approximately 13 acres in size and encloses the remaining 400 feet of White Sand Branch. A 500-foot portion of a small creek, Honey Run, enters the Burn Site where it joins White Sand Branch before it passes beneath United States Avenue and enters Bridgewood Lake in Gibbsboro. The six-acre Bridgewood Lake empties through a culvert beneath West Clementon Road and forms a 400-foot long tributary that joins Hilliards Creek at a point approximately 1,000 feet downgradient from the FMP.

The EPA has been designated as the lead agency for cleanup of the Site, with the NJDEP functioning in a support role. Recent investigations at the Site have been performed by The Sherwin-Williams Company (Sherwin-Williams) under an Administrative Order on Consent (AOC) entered into in 1999, with EPA's oversight.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Site History

The former paint and varnish manufacturing plant property in Gibbsboro, New Jersey, was developed in the early 1800s as a sawmill, and later as a grain mill. In 1851, John Lucas & Co., Inc. (Lucas), purchased the property and converted the grain mill into a paint and varnish manufacturing facility that produced oil-based paints, varnishes, and lacquers. Sherwin-Williams purchased Lucas in the early 1930s and expanded operations at the facility. Historic features at the FMP included wastewater lagoons, above-ground storage tanks, a railroad line and spur, drum storage areas, and numerous production and warehouse buildings. Industrial waste from the facility was burned and discarded in the Burn Site. Waste from the facility was also discarded in the Dump Site. The facility was closed in 1977 and was sold to a developer in 1981.

In 1978, after plant operations closed, NJDEP directed Sherwin-Williams to excavate and properly dispose of the waste material remaining in the lagoons. During the 1980s, NJDEP entered into several administrative orders with Sherwin-Williams to oversee the characterization of contaminated groundwater and a petroleum-like seep in the FMP.

During the 1990s, NJDEP discovered two additional source areas, the Dump Site and the Burn Site. Contamination in both areas is attributable to historic dumping activities associated with the FMP. In the mid-1990s, enforcement responsibilities for the Dump Site and the Burn Site were transferred from NJDEP to EPA.

Contamination from the FMP, Dump Site and Burn Site has migrated downgradient, mainly through natural processes, into Hilliards Creek, Bridgewood Lake, and Kirkwood Lake. A small portion of Silver Lake, upgradient but adjacent to the FMP, is also contaminated.

Pre-Remedial Investigation Activities at the Sherwin-Williams/Hilliards Creek Site

The investigations were conducted in several phases starting in the late 1990s. In 1998, EPA sampled the upper portions of Hilliards Creek and several residential properties. Contaminants (mainly lead and arsenic) were detected in these soil and sediment samples. EPA entered into two AOCs with Sherwin-Williams in 1999. Under the first AOC Sherwin-Williams conducted additional sampling of Hilliards Creek and Kirkwood Lake to further characterize the extent of contamination. This sampling, which concluded in 2003, included residential properties along Hilliards Creek and Kirkwood Lake. The second AOC, signed in September 1999, required Sherwin-Williams to conduct a Remedial Investigation/Feasibility Study (RI/FS) for the Dump Site, the Burn Site and Sherwin-Williams/Hilliards Creek Site that included the area known today as the Waterbodies OU.

Bridgewood Lake: The earliest investigation of Bridgewood Lake occurred in 1995 and 1996 during a removal action investigation of the Burn Site. Sediment sampling indicated elevated levels of lead.

Hilliards Creek: In 1998, NJDEP collected sediment samples from an area known as the Wildlife Refuge and braided stream area. EPA also conducted sediment sampling within this

area in 1998. In addition, EPA also conducted an investigation of Hilliards Creek from Silver Lake to Hilliards Road in 1998. In 1999, EPA conducted a soil investigation along the banks and in the floodplain of Hilliards Creek.

Starting in 1999 and continuing through 2001, there was a four-phase investigation of Hilliards Creek conducted by Sherwin-Williams with EPA oversight. This investigation included soil and sediment transects across Hilliards Creek, soil samples from the southern bank, soil samples from a berm surrounding an artificial pond on a residential property, and soil samples from multiple residential properties along Kirkwood Lake.

Pursuant to the findings of this sampling, a removal action was taken at a number of locations for arsenic and lead. Installation of fencing occurred at the end of a walking path leading to the southern bank of Kirkwood Lake, across from Steven Drive, in the wetland area of Glenview Drive, on the south side of Hilliards Creek near North and West Roads, and the Wildlife Refuge and braided stream area.

Kirkwood Lake: An investigation of the soil, sediment and surface water was conducted by Sherwin-Williams for Kirkwood Lake with oversight from the EPA in 2002 and 2003. Soil shoreline samples and sediment samples from within Kirkwood Lake were obtained and analyzed in this investigation.

In 2002, under the direction of NJDEP, Sherwin-Williams conducted a study of fish tissue in Kirkwood Lake. This study consisted of interviews with local anglers, fish collection and fish tissue analysis.

In 2008, the Site was placed on the National Priorities List. Under EPA oversight, RI/FS activities began at the Site pursuant to the 1999 AOC, and those activities continue at present for portions of the Site for which EPA has not yet selected a remedy. EPA has been designated as the lead agency for cleanup of the Site, with the NJDEP functioning in a support role.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

EPA released the Proposed Plan for this remedial action at the Site and supporting information such as the Waterbodies RI/FS Reports as well as other related documents to the public for comment on April 1, 2021. EPA made these documents available to the public in the administrative record file maintained at the Gibbsboro Borough Hall/Library in Gibbsboro, NJ; the M. Allan Vogelson Regional Branch Library-Voorhees in Voorhees, NJ; the EPA Region II Records Center located at 290 Broadway, New York, NY; and online at https://www.epa.gov/superfund/sherwin-williams. The notice of availability for these documents was published in the Courier-Post on April 1, 2021. A 30-day public comment period lasted from April 1 through May 3, 2021.

In addition, on April 12, 2021, EPA held a virtual public meeting to discuss the findings of the Waterbodies RI/FS and to present EPA's Proposed Plan to the community. At this meeting, EPA representatives answered questions about the remedial alternatives developed as part of the FS. EPA addresses comments it received at the public meeting and during the public comment period in the Responsiveness Summary, which can be found in Appendix V.

SCOPE AND ROLE OF OPERABLE UNIT

The Sherwin-Williams/Hilliards Creek Superfund Site has been divided into several OUs to remediate the contamination more efficiently. OU1 includes all the residential properties. OU2 includes the FMP and the upper portion of Hilliards Creek. OU3 includes the groundwater at the Site. OU4 includes the rest of Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake. This ROD addresses OU4 of the Sherwin-Williams/Hilliards Creek Superfund Site which consists of the soil, sediment, and surface water of Silver Lake, Bridgewood Lake, Kirkwood Lake, and Hilliards Creek, also known as the Waterbodies OU. Both the Burn Site and the Dump Site have separate OU2 and OU3 designations that include soil, sediment, and groundwater. The table below lists the Records of Decision for the Sites. Those OUs that have RODs are in various stages of design and construction.

Sherwin-Williams/Hilliards Creek Site

Operable Unit	Record of Decision
1 - Residential	2015
2 - Former Manufacturing Plant	2020
3 - Groundwater	Anticipated 2022
4 - Waterbodies	2021

United States Avenue Burn Site

Operable Unit	Record of Decision
1 - Residential	2015
2 - Soil and Sediment	2017
3 - Groundwater	TBD

Route 561 Dump Site

Operable Unit	Decision Document
1 - Residential	2015
2 - Soil and Sediment	2016
3 - Groundwater	TBD

SITE CHARACTERISTICS

Physical Setting

OU4 is part of the Sherwin-Williams/Hilliards Creek Site. It includes Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek (Figure 2). All the lakes have been created by the construction of dams along the Hilliards Creek system. OU4 has been divided into four study areas corresponding to a waterbody:

Silver Lake: Silver Lake is approximately fourteen (14) acres, is located at the northern boundary of the FMP and is the most upgradient waterbody at the Sites. It is surrounded by mixed use properties including commercial and light industry, parking lots and undeveloped areas. It can reach a depth of nine feet. Silver Lake outflows through an underground conveyance system from the FMP area via a culvert under Foster Avenue before discharging into Hilliards Creek.

Bridgewood Lake: Bridgewood Lake is approximately nine acres, is divided into two lobes, and reaches a maximum depth of five feet. The shoreline is undeveloped except for a private sports club on the southwestern corner. It receives the combined flow of White Sand Branch and Honey Run and discharges into Hilliards Creek.

Hilliards Creek: The reach of Hilliards Creek that is included in the Waterbodies OU begins south of the FMP and continues to Kirkwood Lake, a distance of 1.5 miles. A small upper portion of Hilliards Creek, adjacent to the FMP, is being addressed separately under OU2. Hilliards Creek is a shallow stream with depths ranging from less than one foot to three feet. Its width ranges from five feet to twenty feet. The wider areas are characterized by a series of braided, interconnected small streams. There are approximately 40 acres of NJDEP mapped wetlands within the Site boundary along the entire length of Hilliards Creek. The wetlands include high-quality, high-value forested habitat, medium-quality, medium-value emergent habitat and low-quality, low-value phragmites habitat, see Figure 3. The wetlands provide substantial benefits to the community and the environment.

Kirkwood Lake: Kirkwood Lake is approximately 25 acres. It is two-thirds of a mile long, up to 400 feet wide, and has a maximum depth of four feet. The north side of the lake is developed with residential properties along its shore. The south shore is undeveloped except for a rail yard. The lake discharges through the spillway of Kirkwood Lake dam into the Cooper River.

Summary of the Remedial Investigation

Remedial investigation sampling of soil, sediment, and surface water by Sherwin-Williams, under EPA oversight, began in 2005 and continued to 2008. Additional sampling was conducted in 2017 and 2018 for the Human Health Risk Assessment (HHRA) and Baseline Ecological Risk Assessment (BERA). The 2018 RI Report contains a comprehensive description of all pre-RI investigation activities. Investigations of Bridgewood Lake, Hilliards Creek and Kirkwood Lake were conducted by Sherwin-Williams under the direction of NJDEP and the EPA.

The results of sample analyses were screened to determine if the levels of contamination posed a potential harm to human health and/or the environment. This was done by comparing the measured values of contaminants to standards that are protective of human health or ecological receptors.

The soil sample analytical results were compared to NJDEP's Residential Direct Contact Soil Remediation Standards (RDCSRS) referred to hereafter as residential remediation goals, and the Non-residential Direct Contact Soil Remediation Standards (NRDCSRS), referred to hereafter as non-residential remediation goals, depending on the zoning and land use. The sediment sample analytical results were compared to the lowest effect levels for ecological receptors and surface water results were compared to the New Jersey Surface Water Quality Standards (NJSWQS) for

Fresh Water. In addition, a HHRA and a BERA were conducted to determine if levels of contaminants exceeded EPA's acceptable risk range. Explanations of the results of the human health and ecological risk assessments are provided in separate sections later in this document.

The results of the RI showed that lead and arsenic are the primary contaminants of concern (COCs) in all media tested throughout OU4. Other contaminants, such as chromium and cyanide, were also found and they were generally co-located with lead and arsenic.

Soil:

Soil samples were taken from over 4,700 sample locations from the ground surface to depths of approximately ten feet in the floodplain soils around Hilliards Creek and the southern shore of Kirkwood Lake.

Lead and arsenic are the main COCs and were found most frequently and at the greatest concentrations above the NJDEP RDCSRS. Other contaminants that were found in the soil above the standard include hexavalent chromium and other metals, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs). Based on the sampling results and a comparison of these results to the RDCSRS, lead and arsenic were identified as the main COCs in the soil.

The most highly contaminated soil was found closest to the banks of the stream and the levels decline within a relatively short distance from the stream bank. This is a low energy, depositional riverine system but, during storm events, there is more transport of sediments downgradient. The stream has higher flow rates and water levels are higher during the spring season due to higher rainfall. The highest concentrations of lead and arsenic can be found along Hilliards Creek in an area called the Wildlife Refuge.

Most of the contamination in soil is located in the upper six inches but can be found at depths to five feet. The concentration of lead in soils range from less than the NJDEP residential standard of 400 milligrams/kilogram (mg/kg) to levels exceeding 100,000 mg/kg in the Wildlife Refuge area. The concentration of arsenic in soil ranges from less than the NJDEP residential standard of 19 mg/kg to levels exceeding 3,000 mg/kg in the Wildlife Refuge area. These high levels are due to the release of contaminants associated with the FMP.

Sediment:

Sediment samples were taken from more than 2,200 locations in Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek.

Lead and arsenic were the most common contaminants found at the highest concentrations above the NJDEP lowest effect levels for ecological receptors, which are 31 mg/kg for lead and 6 mg/kg for arsenic. Contaminants in sediment that exceed the lowest effect level criteria generally require further evaluation. Other constituents found above this criterion were cadmium, chromium, copper, cyanide, mercury and zinc, PAHs, pesticides, and PCBs. These other constituents were found less frequently and are co-located with lead and arsenic.

Lead and arsenic exceedances were found in sediment throughout Bridgewood Lake, Kirkwood Lake, Hilliards Creek, and a portion of Silver Lake. The concentration of lead varies from below the lowest effect level for ecological receptors to 39,200 mg/kg. The arsenic levels varied from below the lowest effects level for ecological receptors to over 1,900 mg/kg. For both metals, the highest values were found within Hilliards Creek near the Wildlife Refuge area.

Surface Water:

Over 700 surface water samples were collected from Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek. Analyses of the surface water showed exceedances of the NJSWQS for Fresh Water for aluminum, iron, zinc, cyanide, arsenic, lead, and cadmium. As with the other media, lead and arsenic are the main COCs.

The concentrations of metals in surface water were compared to the NJSWQS for Fresh Water of 5.4 micrograms/Liter (µg/L) for lead and 150 µg/L for arsenic. The total lead and total arsenic values varied from below the NJSWQS for Fresh Water to over 3,990 µg/L for total lead and over 329 µg/L for total arsenic. The highest concentrations in surface water were found in Hilliards Creek near the Wildlife Refuge Area.

CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

OU4 is located within the municipalities of Gibbsboro, Voorhees and Lindenwold. Most of the land ownership is the Borough of Gibbsboro and Camden County. OU4 is comprised of lakes, a creek, and wetlands. These areas are zoned for multiple uses that include residential, industrial and office technical park usage; however, all areas currently contain ecological habitat. Future use is mainly recreational use through a series of planned trails and recreational use of the streams and lakes. Silver Lake is privately owned and is surrounded by a walking trail. Swimming and boating are prohibited by the lake owner. Bridgewood Lake is privately owned by a sports club and the adjacent cemetery. It is used for catch-and-release fishing and boating. The lake is primarily surrounded by undeveloped, wooded land used for passive recreation. Kirkwood Lake is presently used for recreational activities such as fishing and boating and may be used for swimming in the future. This lake is bordered by residential properties to the north, which were evaluated as part of OU1, and undeveloped land potentially used for passive recreation to the south. The Hilliards Creek corridor includes the creek itself and adjacent floodplain soils. Hilliards Creek ranges from 0.5-3 feet deep and may be used for recreational wading. The upland areas surrounding Hilliards Creek include walking trails as well.

SUMMARY OF SITE RISKS

As part of the RI/FS, a baseline risk assessment was conducted to estimate the current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological 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. The baseline risk assessment includes an HHRA and a BERA. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the ROD summarizes the results of the risk assessments for the OU4.

Human Health Risk Assessment

A four-step process is utilized for assessing Site-related human health risks for a reasonable maximum exposure scenario:

> *Hazard Identification* – uses the analytical data collected to identify the contaminants of potential concern at the Site for each medium, with consideration of several factors explained below;
>
> *Exposure Assessment* - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water) by which humans are potentially exposed;
>
> *Toxicity Assessment* - determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and
>
> *Risk Characterization* - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of Site-related risks. The risk characterization also identifies contamination with concentrations which exceed acceptable levels, defined by the NCP as an excess lifetime cancer risk greater than 1 x 10^{-6} to 1 x 10^{-4} (also commonly expressed as: 1E-06 to 1E-04) or a noncancer Hazard Index (HI) greater than 1; contaminants at these concentrations are considered COCs and are typically those that will require remediation at the Site. Also included in this section is a discussion of the uncertainties associated with these risks.

Hazard Identification

In this step, the contaminants of potential concern (COPCs) in each medium were identified based on such factors as toxicity, frequency of detection, fate, and transport of the contaminants in the environment, concentration, mobility, persistence, and bioaccumulation.

The HHRA characterized the risk to human health from exposure to soil, sediment, surface water, and fish tissue at the Site. COPCs were determined for each exposure area and medium by comparing the available analytical data to appropriate risked-based screening criteria. Analytical data collected to determine the nature and extent of contamination at the Site indicated the presence of metals, PAHs, PCBs, and pesticides in various media above screening criteria.

Only the COCs, or the chemicals requiring a response, are listed in Appendix II-B, Table 1. Lead was also identified as a COC; the relevant subset of information for lead is summarized in Table 7 of Appendix II-B. However, a full list of all COPCs identified in the HHRA is available in the administrative record for the Site.

Exposure Assessment

Consistent with Superfund policy and guidance, the HHRA is a baseline HHRA and therefore assumes no remediation or institutional controls to mitigate or remove hazardous substance releases. Cancer risks and noncancer hazard indices were calculated based on an estimate of the reasonable maximum exposure (RME) expected to occur under current and future conditions at the Site. The RME is defined as the highest exposure that is reasonably expected to occur at a Site.

For purposes of the HHRA, the Waterbodies OU was divided into the following four exposure areas: Silver Lake, Bridgewood Lake, Kirkwood Lake, and Hilliards Creek. Exposure areas are geographic designations created for the risk assessment to define areas with similar anticipated current and future land use and/or similar levels of contamination. Silver Lake is surrounded by a walking trail. The soils associated with the walking trail were assessed separately as part of OU2. The lake is not currently used for recreation as swimming and boating are prohibited by the lake owner. Bridgewood Lake is privately owned by a sports club and used for catch-and-release fishing and boating. The lake is primarily surrounded by undeveloped, wooded land used for passive recreation. Kirkwood Lake is presently used for recreational activities such as fishing and boating and may be used for swimming in the future. This lake is bordered by residential properties to the north, which were evaluated as part of OU1, and undeveloped land potentially used for passive recreation to the south. The Hilliards Creek corridor includes the creek itself and adjacent floodplain soils. Hilliards Creek ranges from 0.5-3 feet deep and may be used for recreational wading. The upland areas surrounding Hilliards Creek include walking trails as well. Since this exposure area includes the creek and associated wetlands, future development is considered unlikely.

Considering the current and potential future land uses in each exposure area, the following exposure populations and pathways were evaluated under the current/future land use scenario:

- Recreator (adult, adolescent [6-16 years], and child [0-6 years]): incidental ingestion, dermal contact, and inhalation of particulates and volatiles released from surface soils (0-2 feet) surrounding Bridgewood Lake, the southern portion of Kirkwood Lake, and Hilliards Creek. Exposures to sediment and surface water via incidental ingestion and dermal contact within Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek were also evaluated for these receptors.

- Angler (adult, adolescent [6-16 years] and child [0-6 years]): ingestion of fish caught from Kirkwood Lake.

The future land use scenario included the following populations and exposure pathways:

- Swimmer (adult, adolescent [6-16 years] and child [0-6 years]): incidental ingestion and dermal contact with sediment and surface water while swimming in Silver Lake, Bridgewood Lake and Kirkwood Lake.

The fish ingestion pathway was evaluated for Kirkwood Lake only and is representative of potential risks within Silver Lake and Bridgewood Lake. Kirkwood Lake was determined to be the most appropriate indicator of risks related to fish consumption because it is downgradient of the three source areas (i.e., FMP, the Burn Site, and the Dump Site). Contaminants at these areas may have been conveyed to Kirkwood Lake via particle transport, and the lake may have served as a sediment trap. Kirkwood Lake also has higher average concentrations of PCBs compared to the other lakes, which are known to bioaccumulate in fish. In addition, people currently fish in Kirkwood Lake, while Bridgewood Lake is privately owned, stocked, and is catch-and-release only. Silver Lake is also privately owned and not currently used for fishing. During the RI, fish tissue samples were collected from a variety of species within Kirkwood Lake. These fish samples were comprised of two target feeding guilds: benthic omnivores and sport fish. The benthic omnivore feeding guild included brown bullhead (*Ameiurus nebulosus*), common carp (*Cyprinus carpio*), and channel catfish (*Ictalurus punctatus*) as the target species. The sport fish feeding guild included largemouth bass (*Micropterus salmoides*), black crappie (*Pomoxis nigromaculatus*), and sunfish (*Lepomis sp*.). Data from these fish species were combined into one dataset for the HHRA under the assumption that an angler would catch and consume a mix of species over time. A summary of all the exposure pathways considered in the HHRA can be found in Table 2 (Appendix II-B).

Typically, exposures are evaluated using a statistical estimate of the exposure point concentration (EPC), which is usually an upper-bound estimate of the average concentration (typically the 95% upper confidence limit (UCL)) for each contaminant, but in some cases may be the maximum detected concentration. For lead exposures, the arithmetic mean of all samples collected from the appropriate soil interval was used as the EPC. In addition, samples collected from each of the exposure areas were analyzed for total chromium, rather than hexavalent chromium. The potential presence of hexavalent chromium in soil, sediment, and fish tissue was evaluated using a relationship developed from soil data collected at the FMP (OU2) in 2016. Here, the average ratio of hexavalent chromium to total chromium in soils was 5%. In the absence of speciated data collected from the Waterbodies OU, two EPCs were used to evaluate risk for current/future recreators, swimmers and anglers exposed to soil, sediment and/or fish tissue. The first conservatively assumed that 100% of the chromium identified exists in the more toxic hexavalent form to represent the “worst-case” scenario. The second applied the hexavalent chromium soil ratio to the EPC for total chromium in soil, sediment and/or fish tissue, thus adjusting it to 5%. The results of applying this EPC range to Site receptors are discussed further under *Risk Characterization.*

A summary of the EPCs for COCs other than lead in each medium can be found in Appendix II-B, Table 1. Lead EPCs are summarized in Table 7. A comprehensive list of exposure point concentrations for all COPCs can be found in Appendix C (table 3 series) of the HHRA.

Toxicity Assessment

In this step, the types of adverse health effects associated with contaminant exposures and the relationship between magnitude of exposure and severity of adverse health effects were determined. Potential health effects are contaminant-specific and may include the risk of developing cancer over a lifetime or other noncancer 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 contaminants are capable of causing both cancer and noncancer health effects.

Under current EPA guidelines, the likelihood of carcinogenic risks and noncancer hazards due to exposure to Site chemicals are considered separately. Consistent with current EPA policy, it was assumed that the toxic effects of the Site-related chemicals would be additive. Thus, cancer and noncancer risks associated with exposures to individual COPCs were summed to indicate the potential risks and hazards associated with mixtures of potential carcinogens and noncarcinogens, respectively.

Toxicity data for the HHRA were provided by the Integrated Risk Information System (IRIS) database, the Provisional Peer Reviewed Toxicity Database (PPRTV), or another source that is identified as an appropriate reference for toxicity values consistent with EPA guidance. This information is presented in Appendix II-B Table 3 (Noncancer Toxicity Data Summary) and Table 4 (Cancer Toxicity Data Summary). Additional toxicity information for all COPCs is presented in the HHRA for the Site.

Risk Characterization

This step summarized and combined outputs of the exposure and toxicity assessments to provide a quantitative assessment of Site risks. Exposures were evaluated based on the potential risk of developing cancer and the potential for noncancer health hazards. Exposure from lead was evaluated using blood lead modeling and is discussed in more detail later in this section.

Noncarcinogenic Risks

Noncarcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intakes and benchmark comparison levels of intake (reference doses, reference concentrations). Reference doses (RfDs) and reference concentrations (RfCs) are estimates of daily exposure levels for humans (including sensitive individuals) which are thought to be safe over a lifetime of exposure. The key concept for a noncancer HI is that a "threshold level" (measured as an HI of less than or equal to 1) exists at which noncancer health effects are not expected to occur. The estimated intake of chemicals identified in environmental media (*e.g.*, the amount of a chemical ingested from contaminated soil) is compared to the RfD or the RfC to derive the hazard quotient (HQ) for the contaminant in the particular medium. The HI is obtained by adding the hazard quotients for all compounds within a particular medium that impacts a particular receptor population.

The HQ for oral and dermal exposures is calculated as below. The HQ for inhalation exposures is calculated using a similar model that incorporates the RfC, rather than the RfD.

HQ = Intake/RfD

Where: HQ = hazard quotient
Intake = estimated intake for a chemical (mg/kg-day)
RfD = reference dose (mg/kg-day)

The intake and the RfD will represent the same exposure period (i.e., chronic, subchronic, or acute).

As previously stated, the HI is calculated by summing the HQs for all chemicals for likely exposure scenarios for a specific population. An HI greater than 1 indicates that the potential exists for noncarcinogenic health effects to occur as a result of Site-related exposures, with the potential for health effects increasing as the HI increases. When the HI calculated for all chemicals for a specific population exceeds 1, separate HI values are then calculated for those chemicals which are known to act on the same target organ. These discrete HI values are then compared to the acceptable limit of 1 to evaluate the potential for noncancer health effects on a specific target organ. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. A summary of the noncarcinogenic risks associated with these chemicals for each exposure pathway is contained in Table 5 of Appendix II-B.

It can be seen in Table 5 that the noncancer hazard estimates exceeded EPA's threshold value of 1 for the child recreator in Hilliards Creek, child swimmer in Kirkwood Lake, child swimmer in Bridgewood Lake and child angler in Kirkwood Lake with HIs ranging from 2 to 7. The majority of noncarcinogenic hazard for these populations was primarily attributable to arsenic in Hilliards Creek surface soil and Bridgewood Lake sediment. A slightly elevated HI of 3 was identified for the child angler consuming fish from Kirkwood Lake due to PCB Aroclors 1254 and 1260. Thallium also contributed to elevated hazard in Kirkwood Lake surface water. Thallium, however, was infrequently detected throughout all Site media. Concentrations detected within soil and sediment were also similar to or below background levels. Therefore, the presence of thallium can likely be ascribed to natural background conditions (see *Uncertainties*) and is not included on Table 5. Using the assumption that all of the chromium present consisted of 100% hexavalent chromium did not significantly change the HI for any receptor and was not associated with an HI greater than 1 for any exposure pathway at the Site.

Carcinogenic Risks

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen under the conditions described in the *Exposure Assessment*, using the cancer slope factor (SF) for oral and dermal exposures and the inhalation unit risk (IUR) for inhalation exposures. Excess lifetime cancer risk for oral and dermal exposures is calculated from the following equation, while the equation for inhalation exposures uses the IUR, rather than the SF:

Risk = LADD x SF

Where: Risk = a unitless probability (1×10^{-6}) of an individual developing cancer
LADD = lifetime average daily dose averaged over 70 years (mg/kg-day)
SF = cancer slope factor, expressed as [1/(mg/kg-day)]

These risks are probabilities that are usually expressed in scientific notation (such as 1×10^{-4}). An excess lifetime cancer risk of 1×10^{-4} indicates that one additional incidence of cancer may occur in a population of 10,000 people who are exposed under the conditions identified in the *Exposure Assessment*. Current Superfund guidance identify the range for determining whether a remedial action is necessary as an individual lifetime excess cancer risk of 10^{-4} to 10^{-6} (corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk), with 10^{-6} being the point of departure.

As summarized in Table 6 of Appendix II-B, the estimated cancer risk for the current/future child recreator at Hilliards Creek slightly exceeded EPA's target risk range with a risk of 2×10^{-4} due to arsenic in surface soil. A future child swimmer in Silver Lake had an estimated cancer risk of 2×10^{-4} as well, primarily due to benzo(a)pyrene in surface water. This chemical, however, was found at the highest concentrations from off-site stormwater influent locations and is, therefore, not considered to be Site-related.

Adjusting the total chromium EPCs to 5% in each medium resulted in risks below or within the target risk range. The assumption that all chromium in soil and sediment exists in the hexavalent state increased risks slightly. Under this scenario, risks due to chromium were elevated above the target risk range for the child recreator in Hilliards Creek soil (1×10^{-3}) and sediment (2×10^{-4}). Chromium also increased the total risk for the child swimmer exposed to Bridgewood Lake sediment and Kirkwood Lake sediment to levels slightly above the target risk range (2×10^{-4} for each). Assuming 100% hexavalent chromium further increased cancer risks for the adult, adolescent, and child angler from estimates within the EPA target risk range to 3×10^{-4}, 4×10^{-4}, and 8×10^{-4}, respectively (see *Uncertainties*).

Risks Associated with Lead

Lead was detected in site media at elevated concentrations. Because there are no published quantitative toxicity values for lead it is not possible to evaluate risks from lead exposure using the same methodology as for the other COCs. However, since the toxicokinetics (the absorption, distribution, metabolism, an excretion of toxins in the body) of lead are well understood, lead is regulated based on blood lead concentrations. In lieu of evaluating risk using typical intake calculations and toxicity criteria, EPA developed models which are used to predict blood lead concentration and the probability of a child's blood lead concentration (BLL) exceeding 5 micrograms per deciliter (µg/dL) based on a given multimedia exposure scenario. EPA's risk reduction goal for lead-contaminated sites is to limit the probability of a typical child's (or that of a group of similarly exposed individuals') blood lead concentration exceeding 5 µg/dL to 5% or less. In the HHRA, lead risks for child receptors were evaluated using EPA's Integrated Exposure Uptake Biokinetic (IEUBK) model. The Adult Lead Methodology (ALM) model was used for all other adolescent and adult receptors.

As summarized in Table 7 of Appendix II-B, the predicted probabilities of a child's BLL exceeding 5 µg/dL surpassed EPA's risk reduction goal of 5% for a child swimmer at Silver Lake, Bridgewood Lake and Kirkwood Lake as well as a child recreator at Bridgewood Lake, Kirkwood Lake and Hilliards Creek. Based on the IEUBK results, the predicted probabilities at these exposure areas ranged from 8% to 99%. Results of the ALM model indicated that an adult

swimmer at Bridgewood and Kirkwood Lake and an adult recreator at Hilliards Creek also exceeded the risk reduction goal with predicted fetal BLL probabilities ranging from 11% to 38%. Furthermore, the evaluation of lead in fish consumed by Kirkwood Lake adult and child anglers also assumed exposure to soil and sediment using the weighted EPC of 510 mg/kg in the models. Soil exposure represented the greatest risks for the child receptor. The geometric mean blood lead level for the child angler is only 0.1 ug/dL higher when compared to a baseline scenario in which no fish from Kirkwood Lake are consumed. Thus, the risks associated with lead in fish are considered negligible and soil and sediment are considered the primary media of concern for lead exposure.

Human Health Risk Summary

Exposure to lead was found to exceed EPA's threshold criteria from surface soil and surface water from Bridgewood Lake and Kirkwood Lake, surface soil from Hilliards Creek, and sediment from each exposure area evaluated. Arsenic was associated with risk above EPA's threshold criteria in Bridgewood Lake sediment and Hilliards Creek floodplain soils. Based on these results, arsenic and lead were identified as the primary COCs, although the ingestion of PCBs in fish caught from Kirkwood Lake slightly exceeded the noncancer threshold as well.

The assumption that all chromium in soil and sediment exists in the hexavalent state increased risks to levels exceeding the EPA target risk range in Hilliards Creek floodplain soils and sediment, Bridgewood and Kirkwood Lake sediment and Kirkwood Lake fish. This assumption, however, likely overestimates risk as discussed under the *Uncertainties* section. In addition, the PAHs and thallium associated with elevated risk or hazard in surface water from Silver Lake and Kirkwood Lake, respectively, were attributed to anthropogenic or natural background sources.

Uncertainties

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

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

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

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

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the risk assessment provides upper-bound estimates of the risks to populations near OU4 and is highly unlikely to underestimate actual risks related to OU4.

Assuming that all chromium exists in the hexavalent state likely overestimates risk. Since contamination from OU2 was likely distributed downgradient via surface water and sediment within Hilliards Creek, the hexavalent chromium content in downgradient soil, sediment and fish tissue is not likely to be higher than that in OU2 soils. The conditions along Hilliards Creek (e.g., high total organic carbon from decaying vegetation) favor a more reducing environment resulting in higher concentrations of the less toxic, trivalent chromium as well. Therefore, hexavalent chromium in soil, sediment, surface water, and fish tissue, if present at all, is likely to be far less than 100% of the total chromium concentration.

A noteworthy source of additional uncertainty in the HHRA deals with the large number of tentatively identified compounds (TICs) detected. Toxicity factors are needed to quantify risks and hazards from exposure to chemicals. Since toxicity values were not available for the majority of the detected TICs, risks and hazards could not be quantified for these compounds. The omission of these chemicals from the quantitative risk evaluation tends to underestimate total noncancer and cancer risks.

Due to limited data, a 95% UCL could not be calculated for several analytes in OU4 surface water (thallium, cobalt and antimony in Kirkwood Lake, thallium in Hilliards Creek and benzo(a)pyrene in Bridgewood Lake), sediment (benzo(j)fluoranthene in Silver Lake) and soil (thallium around Kirkwood Lake). Instead, the maximum detected concentration was used as the EPC. Using the maximum concentration as the EPC is a conservative (i.e., health protective) assumption, which is likely to overestimate risks from exposure to these media.

Thallium was identified as one of the COPCs that contributed to risk in soil, sediment, and surface water. However, thallium was infrequently detected (i.e., in approximately 13% of soil samples, 6% of sediment samples, and 10% of surface water samples) across all the four exposure areas. Thallium occurs naturally, and the soil EPCs for all exposure areas (0.44-0.85 mg/kg) were within the range of background soil values established for the Site (maximum of 1.2 mg/kg). The EPA residential soil Regional Screening Level (0.78 mg/kg) for thallium is also below the background soil level. The EPCs for thallium in sediment were below the maximum thallium concentration in Clement Lake sediment (4.9 mg/kg), which was used to establish background conditions as well. Thus, it is likely that much of the risk attributed to thallium corresponds to background conditions.

As previously discussed, data from the various fish species collected were combined into one dataset for the HHRA under the assumption that an angler would catch and consume a mix of species over time. It is important to note that risks may differ based on fish consumption preferences as the concentrations observed varied by species. The highest PCB concentrations

were found in the benthic omnivore species, specifically the common carp. Thus, risks may be higher for an angler who preferentially consumes these types of fish. Conversely, the PCB concentrations for sport fish were lower than those in the combined dataset; thus, the risks may be lower than those estimated in this HHRA for an angler who preferentially consumes sport fish.

More specific information concerning health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the HHRA report which can be found within the Administrative Record that can be accessed at the EPA website https://www.epa.gov/superfund/sherwin-williams.

Ecological Risk Assessment

Sediment, surface water, pore water, soil, and biota tissue samples (i.e., benthic invertebrates, fish, and soil invertebrates) were collected as part of the BERA. Sediment toxicity testing was also conducted at the Site. The areas of the Site evaluated include Hilliards Creek, Kirkwood Lake, Bridgewood Lake, and Silver Lake. Hilliards Creek was further divided into upper (UHC), middle (MHC), and lower (LHC) portions. The following receptor groups were evaluated in the BERA: benthic invertebrates, fish, aquatic and terrestrial plants, soil invertebrates and wildlife (birds, mammals, amphibians, and reptiles). Surrogate wildlife species that were selected to represent a variety of wildlife in the BERA included Mallard, Muskrat, Spotted Sandpiper, Lesser Scaup, Great Blue Heron, Bald Eagle, Mink, American Robin, Short-tailed Shrew, Northern Bobwhite, Meadow Vole, Raccoon, Red-tailed Hawk, and Red Fox. Potential risks posed by site-related contaminants were determined by calculating hazard quotients (HQs) for each chemical and wildlife receptor. A summary of the HQs calculated for the wildlife receptors for each waterbody is presented in Table 8 in the Appendix II-B.

The BERA concluded, based on a weight-of-evidence (WOE) analysis of multiple lines of evidence (LOEs), that the potential for unacceptable ecological risks from sediment in Hilliards Creek, Kirkwood Lake, and Bridgewood Lake were primarily associated with the COPCs arsenic, chromium, cyanide, and lead. The highest ecological risks were predicted for Hilliards Creek and were primarily associated with elevated concentrations of arsenic, chromium, cyanide, and lead in the upstream portions of MHC. Small aquatic and terrestrial invertivorous wildlife (i.e., represented by the Spotted Sandpiper, American Robin, and Short-tailed Shrew) were identified as the most sensitive receptors at Hilliards Creek. Concentrations of arsenic and lead in Kirkwood Lake and Bridgewood Lake surface sediments were found to be uniformly elevated, resulting in unacceptable risks to several receptors. Risks in Silver Lake were predicted to be the lowest, consistent with background risks, and driven by localized metal concentrations in the southernmost portion of the lake.

Finally, unacceptable risks were identified for terrestrial invertivores (American Robin and Short-tailed Shrew) that may be exposed south of Kirkwood Lake, primarily from exposure to lead in dietary items (earthworms). However, these risk estimates were deemed uncertain given the small sample size and the wide range of detected lead concentrations in earthworm tissues

(reflecting a wide range of lead soil-to-earthworm bioaccumulation factors (BAFs) in Kirkwood Lake as compared to the BAFs developed for Hilliards Creek).

Based on these results, the response action selected in the Record of Decision is necessary to protect the public health or welfare or the environment from actual or threatened releases of contaminants into the environment.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are specific goals to protect human health and the environment. These objectives are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs) and risk-based levels established in the risk assessment. The RAOs for contaminated media provided below address the human health and ecological risks at OU4. No remedial action is proposed for surface water, therefore there are no remedial action objectives for surface water. Instead, surface water monitoring is included as part of each soil and sediment remedial alternative except for the no action alternative.

Soil

- Prevent potential current and future unacceptable risks to human and ecological receptors resulting from exposure (via direct contact, ingestion, and uptake into the food chain) to contaminants in soil.

- Minimize migration of Site-related contaminants in the soil to sediment and surface water.

Sediment

- Prevent potential current and future unacceptable risks to human and ecological receptors resulting from exposure (via direct contact, ingestion, and uptake into the food chain) to contaminants in sediment.

- Minimize migration of Site-related contaminants from the sediment to surface water and downgradient areas.

It is expected that removal of sediment, combined with soil removal and capping will result in a decrease of surface water contaminants to levels below NJSWQS. If monitoring indicates that surface water contamination levels have not decreased to below the NJSWQS, EPA may require an action in the future.

To achieve RAOs, EPA has selected soil and sediment RGs for the primary COCs, arsenic and lead. Chromium, PCBs, and other contaminants were found less frequently than and are co-located with lead and arsenic. They will be addressed by actions developed using the RGs for lead and arsenic; therefore, separate RGs were not identified. The RG for arsenic is based on the

New Jersey background level of 19 mg/kg. The RG for lead is based on the lower of the New Jersey human health direct contact (residential) standards or ecological risk-based goals.

The Waterbodies OU is comprised of lakes, a creek, and wetlands. These areas are zoned for multiple uses that include residential, industrial and office technical park usage; however, all areas currently contain ecological habitat. Therefore, RGs protective of both ecological and human receptors were considered to ensure that the cleanup is consistent across the OU.

The ecological RG for lead in soil is 213 mg/kg and is based on the most sensitive terrestrial wildlife receptor (Spotted Sandpiper) and applies to the top foot of soil at all properties, which is considered the biologically active zone. Below one foot, the human health RG of no concentration above 400 mg/kg, with an average at or below 200 mg/kg is applied. The approach for lead would achieve the risk reduction goal established for the Site, which is to limit the probability of a child's blood lead level exceeding 5 µg/dL to 5% or less.

The sediment RG for lead of 213 mg/kg is based on the dietary uptake of the Spotted Sandpiper. The use of this sediment value will result in the protection of avian species, which are the most sensitive receptor group, and is also considered protective of human receptors.

Achievement of RGs will be determined by post-remediation sampling. Attainment of sediment cleanup goals will be determined by use of post-remediation surface water and sediment sampling. Attainment of soil RGs will be determined by post-remediation soil sampling. The soil sampling methodology to determine attainment of cleanup goals is detailed in the Description of Alternatives below. In summary, the RGs for the Waterbodies are as follows:

Soil:

Arsenic:
- Residential RG: 19 mg/kg
- Ecological : 19 mg/kg

Lead:
- Residential RG: 400/200 mg/kg
- Ecological RG: 213 mg/kg

Sediment:

- Arsenic: 19 mg/kg
- Lead: 213 mg/kg

DESCRIPTION OF ALTERNATIVES

CERCLA Section 121(b)(1), 42 U.S.C. §9621(b)(1) requires that a remedial action be protective of human health and the environment, be cost effective, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practical. In addition, Section 121(b)(1) of the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances. CERCLA Section 121(d), 42 U.S.C. §9621(d), specifies that a remedial action must require a level or standard of control of the hazardous substances, pollutants, and contaminants which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA Section 121(d)(4), 42 U.S.C. §9621(d)(4).

Potential technologies applicable to soil and/or sediment remediation were identified and screened using effectiveness, implementability, and cost criteria, with emphasis on effectiveness. Those technologies that passed the initial screening were assembled into alternatives for soil and sediment.

For alternatives that incorporate removal of contaminated soil or sediment, the proposed depths of excavation are based on the soil boring data taken during the RI. These depths were used to estimate the quantity of soil to be removed and the associated costs. The actual depths and quantity of soil to be removed will be finalized during design and implementation of the selected remedy.

The time frames below for construction do not include the time it will take to negotiate with the potentially responsible party, design the selected remedy or procure necessary contracts. Five-year reviews would be conducted as a component of the alternatives that would leave contamination in place above levels that allow for unlimited use and unrestricted exposure.

For all soil and sediment alternatives requiring five-year reviews, the Present Worth Cost includes the periodic present worth cost of five-year reviews.

Common Element for Soil and Sediment Alternatives: Surface Water Monitoring

EPA expects that removal of sediment, combined with soil removal and/or capping, will result in a decrease of surface water contaminants to levels below the NJSWQS. Monitoring would be conducted on a quarterly basis to assess any changes in contaminant conditions over time. If monitoring indicates that contamination levels have not decreased to below the NJSWQS, EPA may require an action in the future.

Soil Alternatives:

Alternative 1 - No Action

Capital Cost:	*$0*
Annual O&M Cost:	*$0*
Present Worth Cost:	*$0*
Timeframe:	*0 years*

The NCP requires that a "No Action" alternative be evaluated to establish a baseline for comparison with other remedial alternatives. Under this alternative, no action would be taken to remediate the contaminated soil within OU4.

Alternative 2 – Targeted Soil Removal, Capping and Institutional Controls

Capital Cost:	*$28,757,660*
Annual O&M Cost:	*$354,200*
Present Worth Cost:	*$30,920,667*
Construction Time Frame:	*10 months*

This alternative would remove the highest concentrations of arsenic and lead (and other contaminants) in soils while preserving, to the extent possible, valuable wetlands and forested areas. Under this alternative, the average surface concentrations (0 - 2 feet) of arsenic and lead remaining in soil will meet the RGs in areas with valuable wetlands.

Based on the preliminary application of a Surface Weighted Average Concentration methodology, described below, approximately 42,000 cubic yards (cy) of soil would be excavated from the floodplain soils within Hilliards Creek for removal and to accommodate a cap where needed. The floodplain consists of sensitive wetlands and forested land. 42,000 cy would be removed from approximately 16 acres of wetlands and forested areas down to a depth of two feet. The area would be restored after excavation. This alternative would, to the extent practicable, preserve the forest in the high and medium quality wetland areas and provide a higher probability of restoring the current functions and values of these areas. To the extent possible during excavation, the existing high and medium-quality wetlands would be preserved, and low-quality wetlands would be targeted for removal. All areas would be restored with native species. The excavated soil would be transported to an appropriate disposal facility.

As part of this alternative, areas that have met the RGs through averaging would not require capping or deed notices. Capping with vegetative cover would be required for soils below two feet where contaminants remain at concentrations exceeding the RDCSRS. Institutional controls (deed notice) would be required for areas where the RDCSRS have not been attained. Five-year reviews would be conducted since contamination would remain above levels that allow for unlimited use and unrestricted exposure. Reviews would include monitoring for the success of the ecological restoration.

Soil Alternative 2 was developed as a remedial alternative for the Hilliards Creek floodplain that would minimize the number of acres of high quality habitat disturbed and preserve (as

determined by a Wetland Evaluation Technique, or WETII, Functions and Values Analysis), to the extent possible, the overstory trees that provide forested canopy for the wetlands. These actions are considered important in maximizing the potential for post-remediation restoration. Additionally, low quality habitat dominated by invasive Phragmites would be removed and restored to the extent possible with higher-quality habitat.

To calculate how to achieve these goals, a form of compliance averaging, called Surface Weighted Average Concentration, would be employed to determine the location and volume of soils to be removed in order to meet RGs. Surface Weighted Average Concentration methodology is based on dividing the remediation area into polygons based on wetland type and type of contamination. The size of each polygon is based on the range of the most sensitive ecological receptor. These polygons are assigned a weighted average based on samples taken within the polygon. Soils are removed in polygons with the highest concentration of contamination, and the lowest habitat value, until the remaining soils can meet the RGs on an average basis.

Alternative 3 – Excavation to Remediation Goals

Capital Cost:	*$59,445,435*
Annual O&M Cost:	*$478,720*
Present Worth Cost:	*$62,261,469*
Construction Time Frame:	*3 years*

This alternative would remove all soil exceeding the applicable RGs in ecological habitat areas with no preservation of wetlands or forested areas. Under this alternative, it would not be possible to preserve the forested areas because of the nature and extent of soil contamination. Clear cutting of all vegetation at distances ranging from approximately 50 to more than 200 feet from the stream bank would be required to excavate the soil. The excavation would extend to depths of 5 feet or more in some locations, with the greatest depths immediately adjacent to the stream channel.

Approximately 114,000 cubic yards of soil would be excavated. Approximately 23 acres of wetlands and forested areas would be completely cleared and impacted. The excavated soil would be transported to an appropriate disposal facility. The excavation area would be backfilled and revegetated with native species. No five-year reviews would be required. Reviews would be needed to monitor for the success of the ecological restoration.

Sediment Alternatives:

Alternative 1 – No Action

Capital Cost:	*$0*
Annual O&M Cost:	*$0*
Present Worth Cost:	*$0*
Timeframe:	*0 years*

The NCP requires that a "No Action" alternative be evaluated to establish a baseline for comparison with other remedial alternatives. Under this alternative, no action would be taken to remediate the contaminated sediment within the Waterbodies OU.

Alternative 2 – Partial Dredging, Capping and Natural Recovery

Capital Cost:	*$39,395,693*
Annual O&M Cost:	*$462,060*
Present Worth Cost:	*$40,261,013*
Construction Timeframe:	*2 years*

Under this Alternative, one foot of sediment would be dredged, or removed, in areas of Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake within OU4 that contain Site-related COCs exceeding the sediment RGs. In areas where contamination remains above RGs below one foot, a cap would be installed. The cap would be constructed of a layer of sand and stone. Natural sedimentation would then fill in above the cap and allow for restoration of habitat for the benthic community. Approximately 60,000 cubic yards of sediment would be removed under this alternative. Capping would require approximately 29,000 cubic yards of sand and 14,500 cubic yards of stone to be placed in Hilliards Creek, Bridgewood Lake, and Kirkwood Lake.

Sampling would take place to confirm that restoration was successful. Five-year reviews would be conducted since contamination would remain above levels that allow for unlimited use and unrestricted exposure.

Alternative 3 –Full Dredging

Capital Cost:	*$57,760,606*
Annual O&M Cost:	*$150,600*
Present Worth Cost:	*$59,105,902*
Construction Timeframe:	*2.5 years*

This alternative consists of the dredging, or removal, of all sediment with Site-related contaminants exceeding RGs. No capping of sediments is expected since all sediment exceeding the RGs would be removed and transported to an approved off-site disposal facility. Capping would be considered if residual contamination extends to unexpected depths. Lake areas would not be backfilled, but one foot of sand would be placed within Hilliards Creek for stream flow stabilization during natural sedimentation and the area restored. Stream areas would need to be diverted during dredging activities. All sediment would be dewatered and processed prior to transport off-site.

It is estimated that 128,000 cubic yards of sediment would be removed under this alternative, resulting in removal of 100% of contaminated sediments. Approximately three feet of sediment would be removed from Hilliards Creek, and between two and five feet of sediment from Silver Lake, Bridgewood Lake and Kirkwood Lake.

Monitoring to verify dredge performance will include bathymetry to ensure dredge elevations were achieved and chemical monitoring to ensure removal of sediment with COC concentrations above the RG. Vegetation of stream banks, and in the riparian zone and wetlands, would be monitored for a period of five years to ensure successful restoration of vegetation in these areas. In addition, a minimum of five years of surface water monitoring would be conducted to ensure that the concentration of surface water contaminants is below NJSWQS levels. Five-Year Reviews would also be employed to assess the effectiveness of the remedy.

COMPARATIVE ANALYSIS OF ALTERNATIVES

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

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

Evaluation of Soil Alternatives

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.

Alternative 1, No Action, would not be protective of human health or the environment since it does not include measures to prevent exposure to contaminated soil.

Alternative 2 would be protective of human health and ecological receptors by removing surface soil (0 – 2') to meet RGs. The areas to be excavated will be calculated by using averages for each wetland habitat (forested, emergent, and phragmites) created for lead, arsenic and chromium. Excavation based on the use of averaging is predicted to reduce contamination up to 96% depending on habitat area and specific contaminant. The excavation approach of Alternative 2, incorporating the Surface Weighted Average Concentration methodology, would meet the RGs and be protective of public health and the environment while preserving sensitive habitat and open space. The highest concentrations of contamination in surface soils would be removed and

those areas would be revegetated and stabilized. The average concentrations of lead and arsenic in surface soil throughout the remediation area would meet soil RGs. Engineering controls would be applied in the form of a cap that is comprised of vegetative covering, and institutional controls in the form of deed notices would be required for areas that have lead and arsenic contamination exceeding the RDCSRS below two feet in depth. The cap would consist of a demarcation layer, one foot of common fill, one foot of topsoil, and a fabric erosion control blanket. This would prevent the transport of contamination to surface water by contamination left below the surface.

Alternative 3 would also be protective of human health and ecological receptors by removing all surface soil to meet RGs based on ecological criteria in ecological habitat areas. In addition, all subsurface contamination, below two feet, exceeding RDCSRS would be removed.

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

Section 121(d) of CERCLA and NCP, 40 C.F.R. § 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.

There are three types of ARARs, chemical-specific, location-specific, and action-specific. These are explained below.

Chemical-Specific: These ARARs include health- or risk-based numerical values or methodologies that establish the acceptable amount or concentration of a chemical in the environment. Where more than one requirement addressing a contaminant is determined to be an ARAR, the most stringent value should be used.

Location-Specific: These ARARs address activities based on geographical or land use concerns. Examples include standards and requirements for addressing wetlands, historic places, floodplains, or sensitive ecosystems and habitats.

Action-Specific: These ARARs address activities or the operation of certain technologies at a site. Examples include regulations concerning the design, construction, and operating characteristics of a treatment system or a landfill.

Location-specific ARARs include the Federal Fish and Wildlife Coordination Act and the New Jersey Freshwater Wetlands Protection Act and Clean Water Act. Location-specific ARARs affect some portions of the Site that are wildlife areas and/or designated wetland areas.

Action-specific ARARs are determined by the specific technology of each alternative. For this operable unit, all the active soil alternatives include excavation and off-site disposal. Action-specific ARARs include the Federal Resource Conservation and Recovery Act. Also included are the New Jersey Solid Waste Rules and certain portions of the Technical Requirement for Site Remediation.

A complete list of potential ARARs can be found in Appendix II-A.

Alternative 1, No Action, would not meet ARARs.

Alternatives 2 and 3 would be in compliance with chemical-specific ARARs by either removing contaminated surface and subsurface soil with lead and arsenic at concentrations exceeding the New Jersey RDCSRS (Alternative 3), or through a combination of excavation and capping and application of institutional controls (Alternative 2). Ecological RGs will also be used to determine the extent of excavation and capping.

Alternative 2 would also be consistent with To Be Considered (TBC) criterion in the NJDEP Ecological Evaluation Technical Guidance (2015). This guidance states that where remediation may do more harm than good, a risk management decision can be made. This alternative is designed to minimize damage to ecological habitat and provide the greatest potential for complete restoration of the functions and values of these habitats by achieving the ecological risk-based remedial goals through an excavation designed based on the use of averaging.

Action-specific ARARs would be met by Alternatives 2 and 3 during the construction phase by proper design and implementation of the action including disposal of excavated soil at the appropriate disposal facility. These alternatives would also meet location-specific ARARs, such as applicable provisions of the NJDEP Wetlands Protection Act Rules.

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.

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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.

Alternative 1 would not provide long-term effectiveness or permanent protection to ecological or human receptors because the soil contaminants would remain uncontrolled.

Alternative 2 provides long-term effectiveness and permanence by removing approximately 96 percent of the contaminant mass and controlling direct contact exposure to human health and ecological receptors to residual levels of contamination that would remain in soil. This alternative removes the highest concentrations of lead and arsenic contamination based on an averaging methodology, and caps the remaining contamination at depth, thereby preventing humans and wildlife from coming into direct contact with the contamination. Also, by preserving valuable wetland habitat and maximizing the potential for successful restoration, Alternative 2 helps ensure the long-term viability of the wetlands. Restoration of the wetland floodplain areas takes into consideration more frequent and intense storms. Overstory trees, native plants and removal of invasive species is part of the restoration plan to create a more resilient wetland corridor.

Alternative 3 would provide a greater degree of long-term effectiveness and permanence than Alternative 2 when considering exposure to lead and arsenic in soil because Alternative 3 removes all of the contamination but would not provide the same flood resiliency since all vegetation would be removed.

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.

All the active soil alternatives involve removal and/or capping of soil. There is no treatment of the contaminants in any of the alternatives and, therefore, no reduction in toxicity. Removal of the contaminated soil would decrease the volume of contaminants at the Site and capping would decrease accessibility and contaminant mobility. The excavated material would be transferred to a landfill without treatment and therefore the overall reduction of toxicity mobility or volume through treatment would not be achieved. However, treatment of contaminated soil may be required prior to disposal.

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.

Alternative 1 does not present any short-term risks to Site workers, the community, or the environment because it does not include active remediation work.

Alternatives 2 and 3 would each have significant short-term impacts upon the community and the environment. Both would have negative short-term impacts to the ecological habitat that currently exists. Overall, the short-term impacts of Alternative 2, although significant, are less than those of Alternative 3, as less habitat will be disturbed.

Risks to site workers, the community and the environment include potential short-term exposure to contaminants during excavation of soil. Potential exposures and environmental impacts associated with dust and runoff would be minimized with proper installation and implementation of dust and erosion control measures and monitoring. Worker safety issues would be significant for both Alternative 2 and Alternative 3, but Alternative 3 would require more time at the Site therefore expose workers to risks for a longer period of time (three years) compared to Alternative 2 (10 months).

Alternatives in which the largest quantity of soil is removed would have the greatest area of impact, would require the longest period of time to complete, and would have the highest potential for short–term adverse effects. Alternative 2 would take 10 months to complete. Alternative 3 would take 3 years to complete and includes almost three times the amount of soil removal compared to Alternative 2. Short-term impacts would be greater for Alternative 3 because of this longer timeframe and greater quantities of soil.

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.

Alternative 1 does not entail any construction, so it can be easily implemented.

Alternatives 2 and 3 have common implementability issues related to the removal of large amounts of soil, water management, installation of the caps (for Alternative 2), and restoration. These issues also include conducting large-scale construction activities in wetland areas and the need for specialized equipment, establishing routes to the soil removal areas, dewatering of the contaminated soil, the management of invasive species and protection of native species during restoration.

The increased volume of soil removal, and the need for large scale wetland restoration, associated with Alternative 3 increases the implementation difficulties compared to Alternative 2. Alternative 2 would also have implementability issues with targeted removal of soil, but they would be to a lesser extent than Alternative 3 due to reduced amount of soil removal and area of disturbance. Alternative 3 would remove more high value, sensitive wetland habitats creating implementability issues for restoration. These implementability issues are caused by the larger size and complexity of working in wetland and riparian areas. A substantial amount of water management will be required, and access to and from the removal areas will be limited.

7. Cost

Includes estimated capital and O&M costs, and net present worth value of capital and O&M costs.

The total estimated present worth costs increase with the amount of material removed. The estimated costs, calculated using a 7% discount rate, are: $0 for Alternative 1; $30,920,667 for Alternative 2; and $62,261,469 for Alternative 3.

8. State Acceptance

Indicates whether based on its review of the RI/FS reports and the Proposed Plan, the state supports, opposes, and/or has identified any reservations with the selected remedial measure.

The State of New Jersey concurs with the selected alternative of soil removal including off-site soil disposal. However, the state will not concur with the capping and institutional control component of the selected soil alternative unless and until property owners of property subject to restricted use requirements provide their consent to the placement of a cap and a deed notice on their property.

9. Community Acceptance

Summarizes the public's general response to the response measures described in the Proposed Plan and the RI/FS reports. This assessment includes determining which of the response measures the community supports, opposes, and/or has reservations about.

EPA solicited input from the community on the remedial alternatives for soils that were proposed for OU4. Oral comments were recorded from attendees of the public meeting. The attached Responsiveness Summary addresses the comments received during the public comment period. The community (residents, business owners, nearby property owners) had varied positions, from support to reservations about EPA's Proposed Plan. EPA received written and oral comments from residents of Voorhees and Gibbsboro as well as elected officials. These issues raised by the commenters are discussed in EPA's comprehensive response to comments received during the public comment period in the Responsiveness Summary, Appendix V.

Evaluation of Sediment Alternatives

1. Overall Protection of Human Health and the Environment

Alternative 1 is not protective of human health or the environment because no action would be taken to address sediment contamination.

Alternative 2 would provide protection of human health and the environment by removing the sediment containing the highest concentrations of lead and arsenic and capping the areas of remaining sediment that contains arsenic and lead at concentrations greater than the RGs to prevent human and ecological exposure. Maintenance of the cap would be required to assure continued protection of human health and the environment over time.

Alternative 3 would provide protection of human health and ecological receptors by removing all sediment containing contaminants at concentrations greater than the RGs. Preventing exposure to sediment at concentrations greater than RGs would protect ecological receptors and prevent risks associated with fish ingestion.

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

Sediment RGs are a combination of background and Site-specific risk-based numbers. There are no chemical-specific Federal or State of New Jersey standards for the COCs in sediment.

Location-specific ARARs for the sediment are applicable because OU4 contains wetlands and wildlife areas. Location-specific ARARs include certain provisions of the Federal Fish and Wildlife Coordination Act and the New Jersey Freshwater Wetlands Protection Act and Clean Water Act.

Action-specific ARARs are determined by the specific technology of each alternative. In this case, all the active alternatives include dredging and off-site disposal. Action-specific ARARs include certain provisions of the Federal Resource Conservation and Recovery Act. Also included are the New Jersey Solid Waste Rules and certain portions of the Technical Requirements for Site Remediation.

A complete list of potential ARARs can be found in Appendix II-A.

Alternative 1 would not meet ARARs.

Alternatives 2 and 3 would comply with action and location-specific ARARs, including those that apply to remediation and filling in floodplains, work in wetland areas (NJDEP Wetlands Protection Act Rules), waste management (Resource Conservation Recovery Act Land Disposal Restrictions), and storm water management.

3. Long-Term Effectiveness and Permanence

Alternative 1 does not remove existing contamination and exposures and risks would remain. This alternative does not offer any long-term effectiveness or permanence.

Alternative 2 would provide long-term effectiveness and permanence by removing the most contaminated surface sediments in the OU and using capping to prevent exposure to the underlying contaminants. Maintenance dredging of the lakes may compromise the integrity of the sediment caps. Capped areas would need to be properly maintained to assure long-term protectiveness.

Alternative 3 would provide the highest degree of long-term permanence and effectiveness because all lead and arsenic at concentrations exceeding RGs, would be removed. No cap maintenance would be necessary because capping would not be a component of this alternative.

4. Reduction of Toxicity, Mobility, or Volume through Treatment

The primary COCs driving the risk associated with sediments are metals. All the active alternatives involve removal and/or capping of the sediment. Since removal and containment are

the technologies that would be used for the remediation of sediment, none of the alternatives provide reduction of toxicity, mobility, or volume through treatment; however, treatment of contaminated sediment may be required prior to disposal.

5. Short-Term Effectiveness

Alternative 1 does not present any short-term risks to the community, Site workers or the environment because this alternative does not include any active remediation work.

Alternatives 2 and 3 involve dredging and thus have potential for short-term adverse effects that include ecological damage to and loss of habitat, and construction within the community that adds noise, odor, and limits access to public areas. Potential risks posed to Site workers, the community, and the environment during implementation of Alternatives 2 and 3 could be due to wind-blown or surface water transport of contaminated sediments. Any potential impacts associated with dust and runoff would be minimized through proper installation and implementation of dust and erosion control measures. Contaminated sediments may become suspended in the water column during dredging activities. Sediment control mechanisms such as sediment curtains will be used to control sediment migration. The areas would be monitored throughout the construction. Adverse short-term impacts to the community include increased truck traffic, potential odors, and increased noise. The extent of the short-term impacts associated with Alternatives 2 and 3 would be similar since the remediation footprint for both alternatives is similar.

Alternative 2 would take two years to complete, as compared to 2.5 years for Alternative 3, so Alternative 3 would have a slightly higher potential for short–term adverse effects than Alternative 2.

6. Implementability

Alternative 1 would not include any activity, so no implementation is required.

Alternatives 2 and 3 require sediment removal and face similar implementability challenges. Such challenges include access through private property to the remediation areas, the need for barge or boat mounted dredging equipment, controlling sediment resuspension, transportation of dredged materials, controlling the flow of surface water and the influx of groundwater, and streambed stabilization and wetland restoration.

It is expected that the degree of implementability difficulty for Alternative 2 would be slightly greater than Alternative 3. Although the volume of sediment removed is less in Alternative 2 (60,000 cubic yards) compared to Alternative 3 (128,000 cubic yards), the aerial extent of sediment removal would be the same for each Alternative. The footprint of the equipment laydown and support areas and access roads required to conduct sediment removal would also be approximately the same under both alternatives. Implementability of Alternative 2 is slightly more difficult than Alternative 3 because it has the additional design and construction component of capping which involves the testing, procurement, shipment, distribution, and placement of approximately 43,500 cubic yards of cap material.

7. Cost

The total estimated present worth costs, calculated using a 7% discount rate, are: $0 for Alternative 1; $40,261,013 for Alternative 2; and $59,105,902 for Alternative 3.

8. State Acceptance

The state of New Jersey concurs with the selected alternative for sediment.

9. Community Acceptance

EPA solicited input from the community on the remedial alternatives for sediment that were proposed for the Waterbodies OU. Oral comments were recorded from attendees of the public meeting. EPA received written and oral comments from residents of Voorhees and Gibbsboro as well as elected officials. Comments from the community members indicated support of sediment Alternative 3. Comments received during the public comment period and EPA responses are in the attached Responsiveness Summary, Appendix V.

PRINCIPAL THREAT WASTE

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (40 C.F.R. § 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for the migration of contamination to groundwater, surface water, or air, or act as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a Site-specific basis through a detailed analysis of alternatives, using the remedy selection criteria described above. The manner in which principal threat wastes are addressed provides a basis for making a statutory finding as to whether the remedy must employ treatment as a principal element.

Although lead and arsenic, in soil and sediment, act as sources to surface water, these sources are not highly mobile and therefore are not considered principal threat wastes at this OU.

SELECTED REMEDY

Based upon consideration of the results of the Site investigations, the requirements of CERCLA, the detailed analysis of the remedial alternatives and public comments, EPA has determined that Soil Alternative 2, Targeted Soil Removal, Capping and Institutional Controls is the appropriate remedy for the Site. For the sediment, the selected alternative is Alternative 3, Full Dredging. As discussed above, sediment and surface water will be monitored to determine the effectiveness of the implemented soil and sediment remedies. Together, these two elements comprise EPA's Selected Alternative. The remedy best satisfies the requirements of CERCLA Section 121 and the NCP's nine evaluation criteria for remedial alternatives, 40 C.F.R. § 300.430(e)(9). This remedy includes the following components for the soil and sediment.

Soil:
The Selected Soil Alternative 2 (Figure 4) involves excavation, capping, and off-site disposal of soil. The major components of the Selected Soil Alternative include:

- Excavation, transportation, and disposal of 42,000 cubic yards of contaminated soil;
- Installation of engineering controls including vegetated soil covers in the floodplain areas adjacent to Hilliards Creek;
- Restoration and revegetation of Hilliards Creek flood plain;
- Institutional controls, such as deed notices, to prevent exposure to residual soil that exceeds levels that allow for unrestricted use; and
- Monitoring of restoration activities.

This alternative would remove the soil containing the highest concentrations of arsenic and lead (and other contaminants co-located with the areas targeted for excavation) from the Hilliards Creek flood plain. To the extent possible during excavation, the existing high- and medium-quality wetlands would be preserved, and low-quality wetlands would be targeted for removal. All areas would be restored with native species. Under this alternative, surface and subsurface soil containing the highest concentrations of arsenic or lead at concentrations greater than the RGs would be removed to a depth of up to 2 feet. The areas to be excavated and the depth of excavation will be calculated by using averaging in the remedial design phase (Surface Weighted Average Concentration methodology). After excavation the average concentration of lead and arsenic in soil would meet soil RGs. This will reduce exposure to levels that are protective of human health and the environment and will also prevent the transport of soil contamination to surface water.

As part of the remedy, a cap consisting of a vegetated soil cover will be installed in those areas within the floodplain soils of Hilliards Creek where lead and arsenic remain in soil at concentrations greater than RDCSRS at depth, and an institutional control in the form of a deed notice will be required to ensure that future use of the affected property is restricted to avoid exposure to the elevated concentrations remaining at depth, and to provide for the maintenance and integrity of the cap. This remedial action will, to the extent practicable, preserve the forest canopy in the high- and medium-quality wetland areas, while removing the most highly contaminated soils.

Selected Soil Alternative 2 will provide an equivalent degree of protection as Soil Alternative 3, and has fewer implementability issues, and greater short-term effectiveness.

The Soil Alternative 2 is preferred over other alternatives because it is expected to achieve substantial and long-term risk reduction through off-site disposal, and is expected to preserve valuable wetlands, forests and open space while being protective of human health and the environment. The Selected Soil Alternative reduces the risk within a reasonable time frame, at a lower cost compared to other alternatives and is protective in the long-term.

The Selected Soil Alternative will achieve RGs that are protective for residential use in the surficial floodplain soils adjoining Hilliards Creek. Though the remedy will be protective, it will

not achieve levels that allow for unrestricted use at depth, and deed notices will be required. Five-year reviews will be conducted since contamination will remain above levels that allow for unlimited use and unrestricted exposure.

Sediment:

The Selected Sediment Alternative 3 (Figure 5 and Figure 6) includes full excavation of sediment bed and banks with contaminant levels greater than the RGs from Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek. The major components of the Selected Sediment Alternative include:

- Construction of a stream diversion system to allow access to sediment;
- Excavation, transportation, and disposal of 128,000 cubic yards of contaminated sediment within lakes and creeks;
- Dewatering and processing of excavated sediment;
- Stream bank remediation followed by revegetation and restoration that includes engineering controls to stabilize stream banks as needed; and
- Monitoring of restoration activities.

Approximately three feet of sediment would be removed from Hilliards Creek, and between two and five feet of sediment from Silver Lake, Bridgewood Lake and Kirkwood Lake. Following removal, monitoring to verify dredge performance will include bathymetry to ensure elevations were achieved and chemical monitoring to ensure removal of sediment with COC concentrations above the RG. Sediment chemistry will also be monitored prior to the five-year review(s) to address whether the remedy is functioning as intended until the Site is deleted from the NPL. After sediment and surface water monitoring verify that the remedial action objectives have been met, the stabilizing revegetation of stream banks, riparian zone, and wetlands, will be monitored for a period of five years to ensure successful restoration of these areas.

The Selected Sediment Alternative was selected over other alternatives because it is expected to achieve substantial and long-term risk reduction with greater certainty, requires less long-term monitoring and maintenance, and has less implementability challenges than Alternative 2. The Selected Sediment Alternative includes dredging and off-site disposal of sediment at concentrations that exceed RGs, which will reduce contaminant levels in Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake. The Selected Sediment Alternative 3 reduces risk within a reasonable timeframe, is cost effective, and provides for long-term effectiveness of the remedy.

Surface water monitoring would be conducted during the implementation of the remedy, as well as post remedial construction to assess any changes in contaminant conditions. It is expected that removal of contaminated sediment, combined with the soil removal and capping performed as part of the Selected Soil Alternative, will result in a decrease of surface water contaminants to levels below NJSWQS. If monitoring indicates that surface water contamination levels have not decreased to below the NJSWQS, EPA may require an action in the future.

The Selected Alternatives provides the best balance of tradeoffs among the alternatives based on the information available to EPA at this time. EPA has determined that the Selected Alternatives will be protective of human health and the environment, will comply with ARARs, will be cost-effective and will utilize permanent solutions, to the extent practicable. The total present worth cost for the combined soil and sediment Selected Alternatives is $90,026,569. Consistent with EPA Region 2's Clean and Green policy, EPA will evaluate the use of sustainable technologies and practices with respect to implementation of a selected remedy.

STATUTORY DETERMINATIONS

As was previously noted, CERCLA Section 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 reduce the volume, toxicity or mobility of the hazardous substances, pollutants, or contaminants permanently and significantly at a Site. CERCLA Section 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 Section 121(d)(4).

Protection of Human Health and the Environment

The selected soil remedy will be protective of human health and the environment by removing contaminated soil that poses a direct contact or ecological threat. The combination of soil removal and capping will prevent human and wildlife receptor exposure to contaminants. Where the soil is capped, institutional controls such as deed notices will be put in place to ensure that impacts to human health and the environment are minimized.

The selected sediment remedy will be protective by removing the contaminated sediment in Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek resulting in a reduction of contamination levels to below RGs.

In addition, removal of the contaminated soil and sediment is expected to result in contamination levels in the surface water decreasing to below the NJSWQS. Surface water will be monitored to ensure protectiveness.

Implementation of the selected remedy will not present unacceptable short-term risks or adverse cross-media impacts and will therefore be protective of human health and the environment.

Compliance with ARARs

EPA expects that the selected remedy for soil and sediment will comply with federal and New Jersey ARARs. A complete list of ARARs can be found in Appendix II-A.

Chemical-specific ARARs are only available for the soil because there are no chemical-specific Federal or State of New Jersey standards for the COCs in sediment. Sediment RGs are Site-specific, risk-based goals. The chemical-specific ARARs for lead and arsenic in the soil include the New Jersey Residential and Non-Residential Direct Contact Soil Remediation Standards.

Location-specific ARARs apply to some portions of the soil and sediment within OU4, such as the flood plain of Hilliards Creek which is a wildlife area. Location-specific ARARs include the Federal Fish and Wildlife Coordination Act and the New Jersey Freshwater Wetlands Protection Act and Clean Water Act.

The action-specific ARARs are the same for the soil and sediment because the soil and sediment remedy components both include excavation and off-site disposal. For the soil and sediment, action-specific ARARs include the Federal Resource Conservation and Recovery Act. Also included are the New Jersey Solid Waste Rules and certain portions of the Technical Requirement for Site Remediation.

Cost Effectiveness

EPA has determined that the selected remedy is cost effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness." (NCP §300.430 (f)(1)(ii)(D)). 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. The relationship of the overall effectiveness of the selected remedy was determined to be proportional to costs and hence, the selected remedy represents a reasonable value for the money to be spent. The selected remedy is cost-effective as it has been determined to provide the greatest overall protectiveness for its present worth costs.

Utilization of Permanent Solutions and Alternative Treatment Technologies

EPA has determined that the selected remedy utilizes permanent solutions and treatment technologies to the maximum extent that is practicable. The majority of the contaminated soil will be removed. Where soil contaminants remain, a minimum of two feet of soil will be removed and the area will be capped with clean soil within the Hilliards Creek floodplain. In Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake, all contamination above the sediment RGs will be removed.

The selected remedy will provide adequate long-term control of risks to human health and the environment through eliminating and/or preventing exposure to the contaminated sediment and floodplain soils. The selected remedy is protective against short-term risks.

Preference for Treatment as a Principal Element

Treatment is not an element of the selected remedy because contaminated soil and sediment are being addressed through a combination of removal and capping.

Five-Year Review Requirements

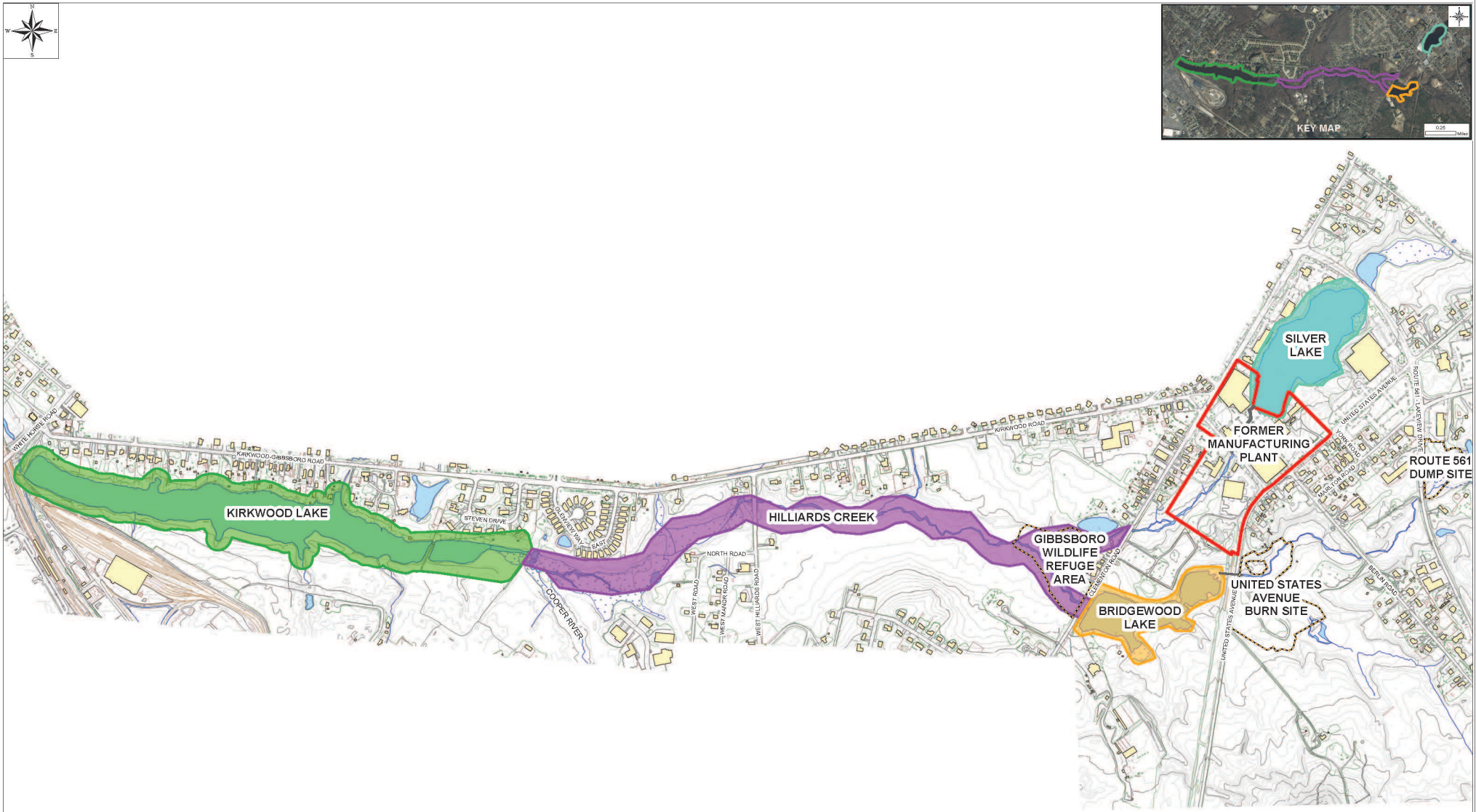
The selected remedy for the soil involves capping where the RGs are not attained at depth. Therefore, contamination will likely be left in place at levels above those that allow for unlimited use and unrestricted exposure. A statutory five-year review will be conducted within five years of initiation of the remedial action for the Site to ensure that the remedy is, or will be, protective of human health and the environment.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Site was released for public comment on April 1, 2021. The Proposed Plan identified Soil Alternative 2 as the preferred alternative to address soil contamination, Sediment Alternative 3 to address sediment contamination, and monitoring of surface water. Upon review of all comments submitted, EPA determined that no significant changes to the selected remedy, as it was presented in the Proposed Plan, are warranted.

The Proposed Plan incorrectly provided present worth costs for sediment alternatives and total present worth costs of the combined sediment and soil selected alternatives. The present worth costs for Sediment Alternative 2 and Sediment Alternative 3 were incorrectly presented on page 20 of the Proposed Plan as $43,968,919 and $58,207,732 respectively. The correct present worth cost for Sediment Alternative 2 is $40,261,013 and for Sediment Alternative 3 is $59,105,902. The total present worth cost for both the soil and sediment selected alternatives was incorrectly presented on page 22 of the Proposed Plan as $90,974,604. The total present worth cost for both the soil and sediment selected alternatives is $90,026,569.

APPENDIX I: Figures



Legend

- Silver Lake
- Bridgewood Lake
- Hilliards Creek
- Kirkwood Lake
- Former Manufacturing Plant Extent
- Fence Boundary
- Approximate Location of Silver Lake Conveyance
- Approximate Location of Culvert Under United States Avenue
- Perennial Stream Channel
- Intermittent Stream Channel

Weston Solutions, Inc.
205 Campus Drive Edison, New Jersey 08837-3939
TEL: (732) 417-5800 Fax: (732) 417-5801
http://www.westonsolutions.com

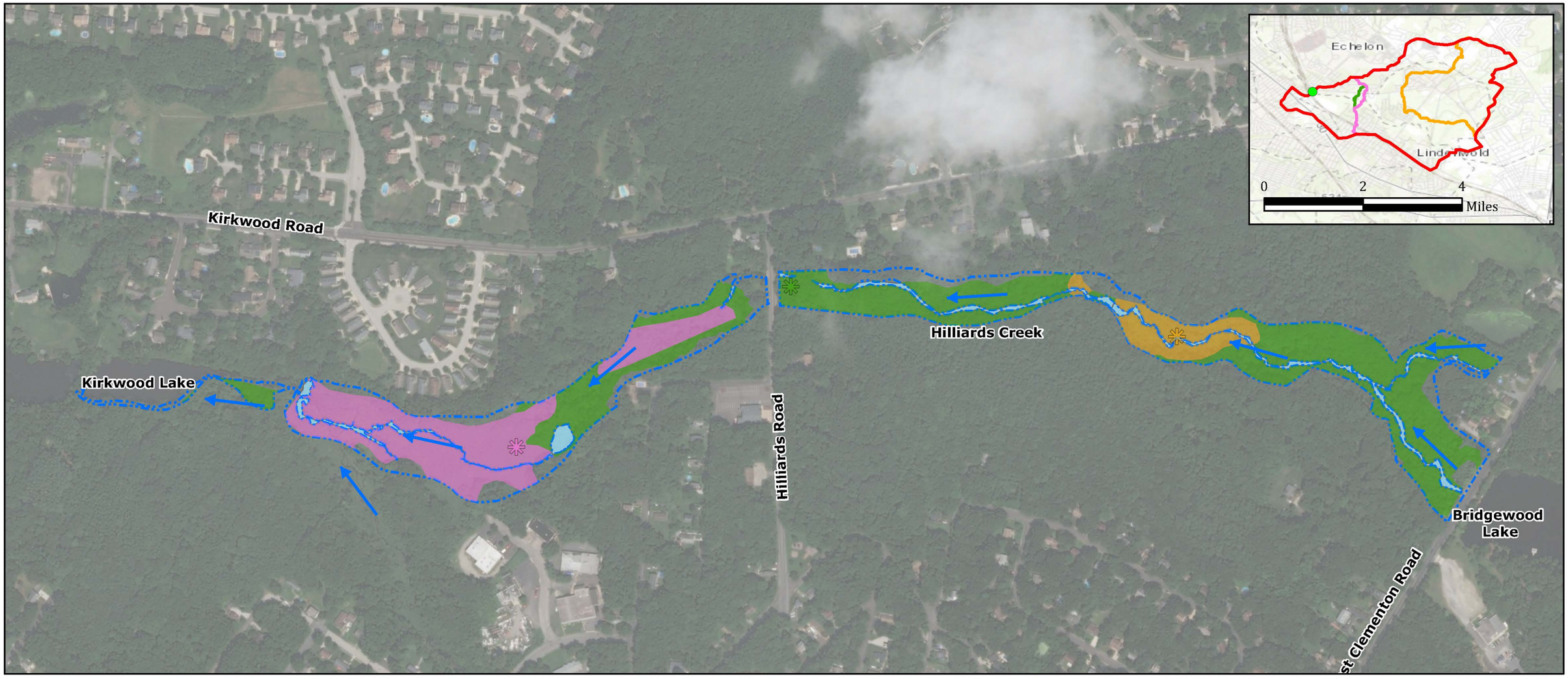
REPORT DATE: October 2019	PROJECT MANAGER: R. Brown
DRAWING: 23082_Comprehensive_Site_Map.mxd PATH: L:\SHERWIN\GIS\MXD\2019_03_Waterbodies_FS\	CHECKED BY: A. Fischer
REVISION No.: 0	CONTRACT No.: DELIVERY ORDER NO.:
WORK ORDER No.: 20076.022.092.0008	DRAWN/MODIFIED BY: J. Heaton DATE CREATED: 4/16/2019

CLIENT NAME: The Sherwin-Williams Company

PROJECT NAME: Waterbodies Feasibility Study

DRAWING TITLE: COMPREHENSIVE SITE MAP

FIGURE: 2 | SCALE: 1 " = 300 ' | DATE: 10/3/2019



LEGEND

- WATERBODIES PROJECT BOUNDARY
- OPEN WATER
- DIRECTION OF WATER FLOW

ASSESSMENT AREAS

- HILLIARD CREEK EMERGENT WETLANDS (2.01 ACRES)
- HILLIARD CREEK FORESTED WETLANDS (13.94 ACRES)
- HILLIARD CREEK PHRAGMITES WETLANDS (6.78 ACRES)
- APPROXIMATE ASSESSMENT AREA CENTER

INSET LEGEND

- SERVICE AREA WATERSHED (5.05 SQ MI)
- EMERGENT WETLAND WATERSHED (1.83 SQ MI)
- FORESTED WETLAND WATERSHED (4.24 SQ MI)
- PHRAGMITES WETLAND WATERSHED (4.2 SQ MI)
- SERVICE AREA EXTENT

NOTES:
1. BASED ON WETLAND EVALUATION TECHNIQUE VOLUME II (WETII) METHODOLOGY, SERVICE AREA IS DEFINED AS THE POINT TO WHICH SERVICES ARE DELIVERED AND IS DETERMINED TO BE 5 MILES DOWNSTREAM OF THE ASSESSMENT AREA'S OUTLET OR UNTIL A DAM IS REACHED. FOR THE PURPOSES OF THIS ANALYSIS, THE IMPOUNDMENT AT THE DOWNSTREAM PORTION OF KIRKWOOD LAKE IS THE EXTENT OF THE SERVICE AREA FOR ALL AAS AND THE MOST DOWNSTREAM EXTENT OF THE SERVICE AREA WATERSHED.
2. WATERSHEDS WERE CALCULATED USING UNITED STATES GEOLOGICAL SURVEY, STREAMSTATS PROGRAM. COLORED PORTIONS OF WETLAND REPRESENT THE DOWNSTREAM EXTENTS OF THE ASSESSMENT AREAS AND SERVICE AREAS EXTENT.
3. OPEN WATER SHOWN FOR HILLIARDS CREEK FORESTED WETLANDS (1.51 ACRES), HILLIARDS CREEK PHRAGMITES WETLANDS (0.4 ACRES), AND HILLIARDS CREEK EMERGENT WETLANDS (0.23 ACRES) WERE BASED ON ROBINSON AERIAL SURVEY, INC. OPEN WATER AREAS SHOWN WERE INCLUDED WITHIN THE OVERALL AA ACREAGE.
4. WETLAND EXTENTS WERE BASED ON A COMBINATION OF DELINEATIONS COMPLETED BY THE ELM GROUP, INC AND WESTON SOLUTIONS WHERE POSSIBLE AND NATIONAL WETLAND INVENTORY MAPS WHERE NECESSARY. WETLAND AA WERE CLIPPED TO THE WATERBODIES PROJECT BOUNDARY.
5. HILLIARDS CREEK IS REFERRED TO ON MAPS OF THE AREA TYPICALLY AS "MILLARD CREEK". IT IS ALSO REFERRED TO AS "HILLIARD CREEK". HOWEVER, THE SHERWIN-WILLIAMS SITE HAD HISTORICALLY BEEN REFERRED TO AS "HILLIARDS CREEK", SO THAT IS HOW IT IS REFERENCED IN THIS DOCUMENT.

SOURCE:
1.SOURCES: ESRI, HERE, DELORME, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY
2. UNITED STATES GEOLOGICAL SURVEY. 2018. THE STREAMSTATS PROGRAM. HTTP://STREAMSTATS.USGS.GOV
3. UNITED STATES FISH AND WILDLIFE SERVICE. 2018. NATIONAL WETLANDS INVENTORY WEBSITE. U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE. WASHINGTON, D.C. HTTP://WWW.FWS.GOV/WETLANDS/

0 400 800

SCALE:1 " = 400 '

TITLE:

FIGURE 3

WATERBODIES OU FUNCTIONS AND VALUES SITE MAP

LOCATION:
SHERWIN WILLIAMS
WATERBODIES OPERABLE UNIT
GIBBSBORO, NEW JERSEY

DATE:
03/19/2019

FILENAME:
204027_WB_Functions_Values.mxd

THE ELM GROUP
345 WALL STREET, PRINCETON, NEW JERSEY 08540
4936 YORK ROAD, SUITE 1000, HOLICONG, PENNSYLVANIA 18928
2591 BAGLYOS CIRCLE, SUITE C45, BETHLEHEM, PENNSYLVANIA 18020
WWW.exploreELM.com

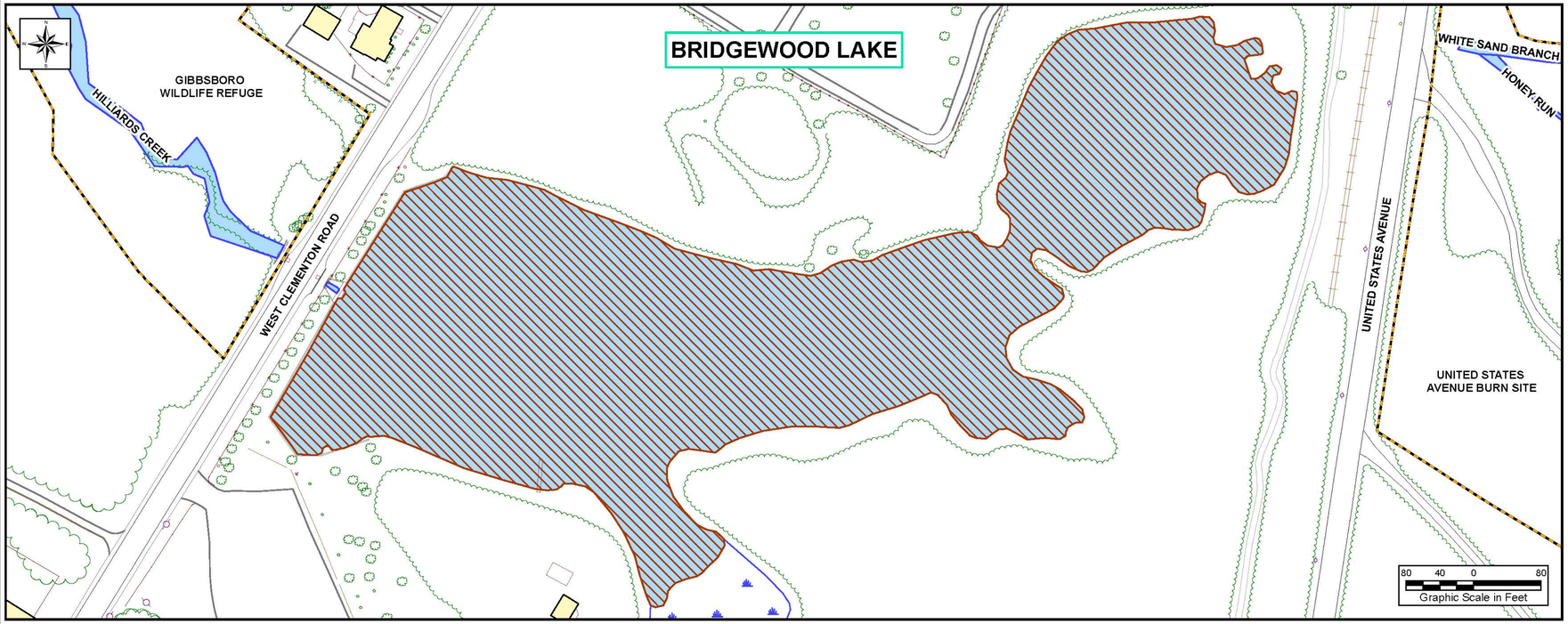
K:\204027_Sherwin-Williams_Gibbsboro\DATA_MANAGEMENT\GIS\WB\Map Documents\RDP\204027_WB Functions_Values.mxd

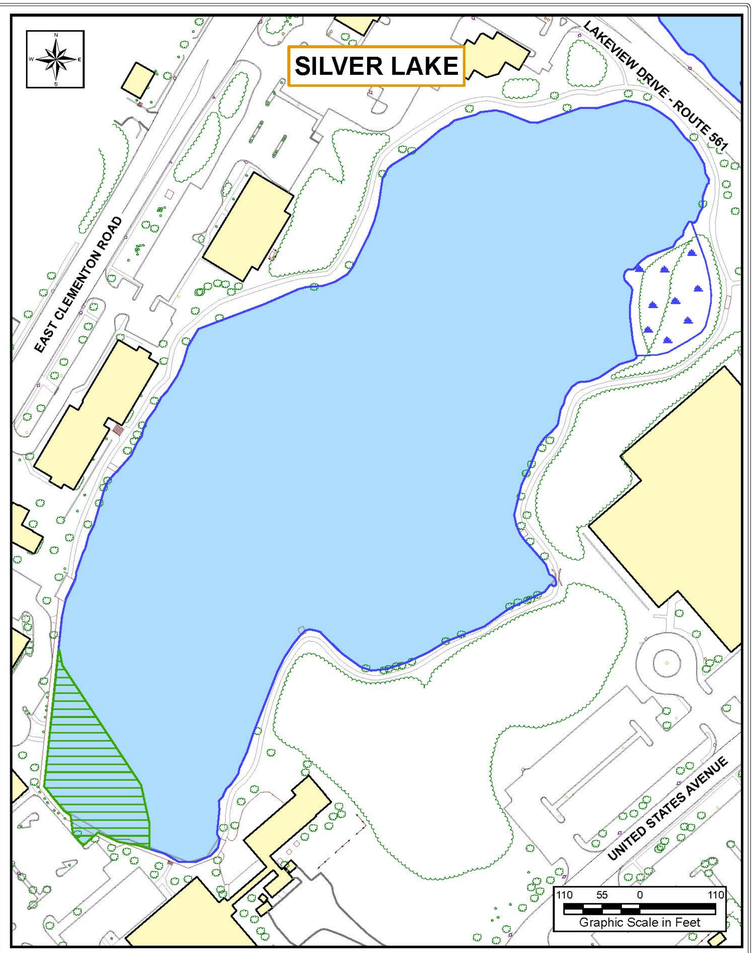
Legend

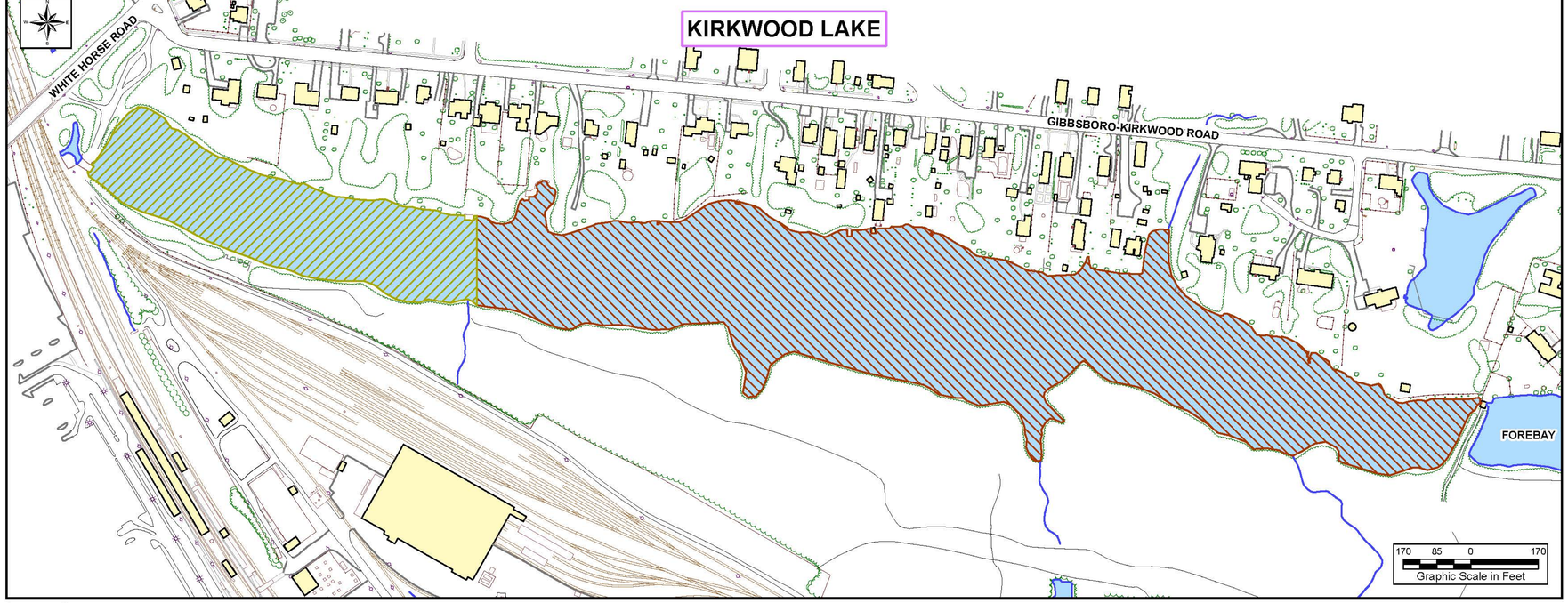
- Two-Foot Depth Removal Area and Backfill with a Marker Layer, then One-Foot Common Fill Overlaid by One-Foot Topsoil
- Phragmites Wetland
- Fence Boundary

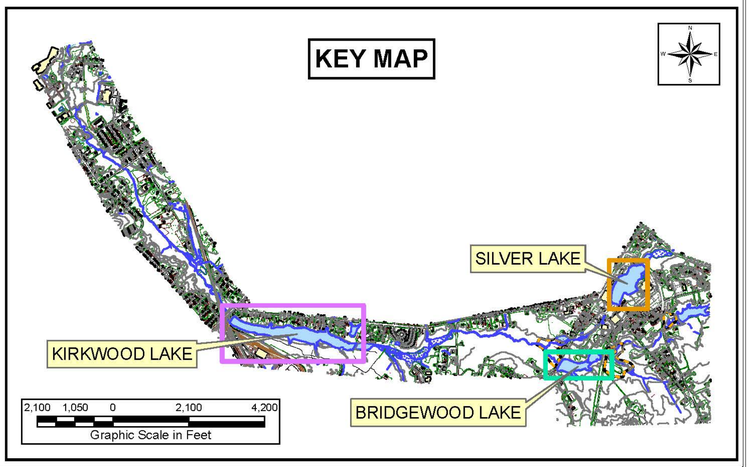
Weston Solutions, Inc.
205 Campus Drive Edison, New Jersey 08837-3939
TEL: (732) 417-5800 Fax: (732) 417-5801
http://www.westonsolutions.com

REPORT DATE: April 2020	PROJECT MANAGER: R. Brown	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: HILLIARDS CREEK SOIL ALTERNATIVE 2 TWO-FOOT REMOVAL AND CAP
DRAWING: 25047_Waterbodies_HC_Soil_Alternative2.mxd PATH: L:\SHERWIN\GIS\MXD\2020_01_Waterbodies_FS\	CHECKED BY: A. Fischer		
REVISION No.:	CONTRACT No.: DELIVERY ORDER NO.:	PROJECT NAME: Waterbodies Feasibility Study	
WORK ORDER No.: 20076.022.092.0008	DRAWN/MODIFIED BY: J. Heaton DATE CREATED: 5/15/2019		FIGURE: 4 SCALE: 1 " = 200 ' DATE: 4/9/2020









Legend

- One-Foot Average Sediment Removal, No Backfill (Silver Lake)
- Two-Foot Average Sediment Removal, No Backfill (Bridgewood & Kirkwood Lakes)
- Three-Foot Average Sediment Removal, No Backfill (Kirkwood Lake)

Notes:
1. The sediment thickness varies from no sediment present along the lake margines with greater thicknesses occurring towards the centerline of the lake.
2. The overall sediment removal depths are sufficient for cost estimating purposes since, in addition to locations where the removal may extend deeper, there are also locations where the removal will be less than the stated average removal.

WESTON SOLUTIONS SM
Weston Solutions, Inc.
205 Campus Drive Edison, New Jersey 08837-3939
TEL: (732) 417-5800 Fax: (732) 417-5801
http://www.westonsolutions.com

SHERWIN WILLIAMS

REPORT DATE: April 2020	PROJECT MANAGER: R. Brown	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: SILVER, BRIDGEWOOD, AND KIRKWOOD LAKES ALTERNATIVE 3 – REMOVAL OF SEDIMENT TO MEET PRGS
DRAWING: L:\SHERWIN\GIS\MXD\2020_01_Waterbodies_FS1 PATH: 20058_Waterbodies_Sediment_Alternative2.mxd	CHECKED BY: A. Fischer		
REVISION No.	CONTRACT No. DELIVERY ORDER NO.	PROJECT NAME: Waterbodies Feasibility Study	
WORK ORDER No. 20076.022.092.0008	DRAWN/MODIFIED BY: J. Heaton DATE CREATED: 6/6/2019		FIGURE: 5 SCALE: 1 " = 170 ' DATE: 4/9/2020

Legend

- Two and a Half-Foot Stream Channel Sediment Removal and Installation of 2.25-Foot Cap (2.0-Foot Sand overlaid by 0.25-Foot Gravel)
- Three-Foot Sediment Removal Only
- Phragmites Wetland Area (To Be Considered Soil)
- Fence Boundary

Weston Solutions, Inc.
205 Campus Drive Edison, New Jersey 08837-3939
TEL: (732) 417-5800 Fax: (732) 417-5801
http://www.westonsolutions.com

REPORT DATE: October 2019	PROJECT MANAGER: R. Brown	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: HILLIARDS CREEK SEDIMENT ALTERNATIVE 3 REMOVAL OF SEDIMENT TO MEET PRGS
DRAWING: L:\SHERWIN\WORSMXD\2018_12_Waterbodies_RI\R\ PATH: 24069_Waterbodies_HC_Sediment_Alternative3.mxd	CHECKED BY: A. Fischer		
REVISION No.	CONTRACT No. DELIVERY ORDER NO.	PROJECT NAME: Waterbodies Feasibility Study	
WORK ORDER No. 20076.022.092.0008	DRAWN/MODIFIED BY: J. Heaton DATE CREATED: 5/15/2019		FIGURE: 6 SCALE: 1 " = 200 ' DATE: 10/3/2019

APPENDIX II-A: ARAR and TBCs Tables

Table 1
Location Specific ARARs for
Sherwin-Williams/Hilliards Creek Superfund Site OU4

Regulatory Level	Citation	Description	Status	Comment
State	New Jersey Freshwater Wetlands Protection Act Rules (N.J.A.C 7:7A)	Constitutes the rules governing the implementation of the Freshwater Wetlands Protection Act and the New Jersey Water Pollution Control Act as it relates to freshwater wetlands.	Applicable	Applicable to remediation activities within Middle and Lower Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake.
State	New Jersey Flood Hazard Area Control (N.J.A.C 7:13)	Sets forth the requirements governing activities in the flood hazard area or riparian zone of a regulated water.	Applicable	Applicable to remediation activities within Middle and Lower Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake. .
State	New Jersey Division of Fish, Game, and Wildlife Rules (N.J.A.C 7:25)	Supplements the statues governing fish and game laws in the State of New Jersey.	Applicable	Applicable to aquatic and wildlife areas within the Site boundary.
State	New Jersey Endangered Plant Species Program (N.J.A.C. 7:5C)	Identifies the official list of endangered plant species and establishes the program for maintaining and updating the list.	Applicable	Applicable to any threatened or endangered plant species that may occur within the Site boundary (ie – Swamp Pink)
Federal	Endangered Species Act (16 U.S.C. 1531 *et seq.*)	Requires that action be performed to conserve endangered species or threatened species.	Applicable	Applicable to any threatened or endangered wildlife species that may occur within the Site boundary.
Federal	Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq*.)	Requires actions to protect fish or wildlife when diverting, channeling, or modifying a stream.	Applicable	Applicable to remediation activities within Middle and Lower Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake.
Federal	National Historic Preservation Act	Establishes a program for the preservation of historic properties in the United States.	Potentially Applicable	Potentially applicable during remedial activities if scientific, historic, or archaeological artifacts are identified during implementation of the remedy.

Table 2
Action-Specific ARARs for
Sherwin-Williams/Hilliards Creek Superfund Site OU4

Regulatory Level	Citation	Description	Status	Comment
State	NJ - Technical Requirements for Site Remediation (N.J.A.C. 7:26E) and Administrative Requirements for the Remediation of Contaminated Sites (N.J.A.C. 7:26C)	Specifies requirements for remedial activities under New Jersey cleanup programs, including requirements for institutional and engineering controls for contaminated soils left in place in excess of standards.	Applicable	The project will meet substantive requirements applicable because some contaminated soils will remain at levels above NJ soil remediation standards.
State	NJ - Pollutant Discharge Elimination System Rules (N.J.A.C. 7:14A)	Establishes standards for groundwater and surface water discharges that may alter the physical, chemical or biological properties of State waters.	Applicable	The project will meet substantive requirements for surface water or groundwater discharges from the remedial activities which will be performed in OU4.
State	NJ – Air Pollution Rules (N.J.A.C. 7:27)	Establishes air quality standards for discharge of pollutants to air for protection of public health and preservation of ambient air quality.	Applicable	The project will meet substantive requirements applicable to remedial activities that result in air emissions during soil remediation.
State	NJ - Soil Erosion and Sediment Control Act (N.J.S.A. 4:24-43 and N.J.A.C. 2:90-1)	Establishes soil erosion and sediment control standards for construction projects that result in soil erosion.	Applicable	Applicable to remedial construction activities that result in total land disturbance greater than or equal to 5000 sf^2.
State	NJ – Storm Water Management (N.J.A.C. 7:8)	Establishes requirements for managing and controlling storm water from construction.	Applicable	Applicable for establishing the design and performance standards for stormwater management measures during remedial activities
State	NJ - Hazardous Waste Regulations (N.J.A.C. 7:26G)	Describes methods for identifying hazardous wastes and lists known hazardous wastes.	Potentially Applicable	Applicable if hazardous waste is identified and, if so, properly managed during site remediation.
State	NJ – Noise Control Rules (N.J.A.C. 7:29)	Sets forth regulations relating to the control and abatement of noise from industrial, commercial, public service or community service facilities.	Relevant and Appropriate	Applicable to establishing limits on the noise that can be generated during remedial activities.

Table 2 – continued
Action-Specific ARARs
Sherwin-Williams/Hilliards Creek Superfund Site OU2

Regulatory Level	Citation	Description	Status	Comment
State	NJ Surface Water Quality Standards (N.J.A.C 7:9B)	Establishes designated uses of the State's surface water and specifies surface water quality standards (SWQS) for protection of surface water.	Applicable	Applicable during floodplain soil and sediment remediation activities; which may require de-watering activities and result in subsequent surface water discharges to Hilliards Creek, Silver Lake, Bridgewood Lake or Kirkwood Lake.
Federal	Resource Conservation and Recovery Act (40 C.F.R. 260 – 270)	Establishes responsibilities and standards for the management of hazardous and non-hazardous wastes.	Applicable	Applicable for on-site management of hazardous and non-hazardous wastes generated by remedial activities.
Federal	DOT Rules for Hazardous Materials Transportation (49 C.F.R. 107, 171.1-172.604)	Establishes requirements for the safe and effective transportation of hazardous materials in commerce.	Potentially Applicable	Applicable if hazardous waste is identified and, if so, properly managed during site remediation.
Federal	National Ambient Air Quality Standards (40 C.F.R. Part 50)	Establishes air quality standards for specific criteria pollutants, including lead.	Applicable	Applicable during soil remediation activities (excavation), which may include dust control measures required during excavation of impacted soils.
Federal	Federal Water Pollution Control Act (FWPCA), Section 404 (33 U.S.C. 1344) as it pertains to wetlands. 40 C.F.R. Part 230 40 C.F.R. §§ 230.91–.98	Regulates discharge of dredged or fill material into wetlands adjacent to navigable waters.	Applicable	Applicable to remediation activities Middle and Lower Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake. On-site activities will be properly conducted to minimize adverse effects.

Table 3 Chemical-Specific ARARs for Sherwin-Williams/Hilliards Creek Superfund Site OU4				
Regulatory Level	**Citation**	**Description**	**Status**	**Comment**
State	NJ Soil Remediation Standards (N.J.A.C. 7:26D)	Establishes the minimum standards for the remediation of contaminated soil.	Applicable	NJDEP RDCSRS and NRDCSRS are identified as remedial goals for Site-related soil COCs. Per USEPA May 12, 2010 letter to NJDEP the ingestion/dermal exposure pathway SRS are ARARs, but SRS for the inhalation pathway is not an ARAR.[1]

1.Letter dated May 12, 2010, USEPA Region 2 to NJDEP Site Remediation Program regarding Application of New Jersey's Site Remediation Standards at Federal-Lead Superfund Sites.

Table 4
To be Considered (TBCs) for
Sherwin-Williams/Hilliards Creek Superfund Site OU4

Regulatory Level	Citation	Description	Status	Comment
State	NJ Soil Cleanup Criteria for Chromium (September 2008, Revised April 2010)	Provides guidance on soil cleanup criteria for trivalent and hexavalent chromium concentrations.	TBC	
State	NJDOT Standard Specifications – Soil and Sediment Control Measures (1996)	NJDOT standards are typically used to develop the appropriate plans for sediment and soil erosion controls required under New Jersey Soil Conservation Act.	TBC	
State	NJDEP Guidance Document, "Capping of Inorganic and Semivolatile Contaminants for Impact to Groundwater Pathway", Version 1.0, March 2014	Provides guidance on capping of inorganic and semivolatile contaminants.	TBC	
State	NJDEP Site Remediation Program, "Technical Guidance on the Capping of Sites Undergoing Remediation", Version 1.0, July 2014	Provides guidance for conducting remediation to comply with NJDEP requirements established by Technical Requirements for Site Remediation N.J.A.C. 7:26E	TBC	
State	NJDEP Guidance for the Evaluation of Immobile Chemicals for the Impact to Ground Water Pathway", June 2008	This guidance provides procedures to evaluate potential impacts to groundwater from immobile chemicals.	TBC	
State	NJDEP Site Remediation Program, "Technical Guidance for the Attainment of Remediation Standards and Site-Specific Criteria", Version 1.0, September 2012	This guidance provides procedures on use of alternate methods to achieve compliance with applicable remediation standards.	TBC	
State	NJDEP Site Remediation Program, "Presumptive and Alternative Remedy Technical Guidance", Version 2.0, August 2013	Provides guidance for conducting remediation to comply with NJDEP requirements established by Technical Requirements for Site Remediation N.J.A.C. 7:26E	TBC	
State	NJDEP Site Remediation Program, "Monitored Natural Attenuation Technical Guidance", Version 1.0, March 2012	Provides guidance for conducting remediation to comply with NJDEP requirements established by Technical Requirements for Site Remediation N.J.A.C. 7:26E	TBC	

Table 4 – continued
TBCs
Sherwin-Williams/Hilliards Creek Superfund Site OU4

Regulatory Level	Citation	Description	Status	Comment
State	Administrative Requirements for the Remediation of Contaminated Sites (N.J.A.C. 7:26C)	Presents NJDEP Administrative Requirements for Remediation of Contaminated Sites.	TBC	
State	NJDEP "NJDEP Ecological Screening Criteria." March 2009	Provides ESC to be used as screening values in ecological assessments.	TBC	
State	NJDEP "Ecological Evaluation Technical Guidance," Version 2.0, August 2018	Provides guidance on conducting ecological evaluations and implementing Risk Managment Decisions for ecologically sensitive natural resources.	TBC	
Federal	EPA's 2000 "Principles for the Restoration of Aquatic Resources, EOA841-F-00-0003.	Provides guidance on the principles to be applied in the restoration of wetlands.	TBC	
Federal	"Policy on Floodplains and Wetlands Assessments for CERCLA Actions", 1985	Requires that CERCLA actions meet the substantive requirements of Floodplain Management Executive Order (EO 11988) and Protection of Wetlands Executive Order (EO 1990).	TBC	
Federal	Fish and Wildlife Coordination Act Advisories	Advisories on the effects of pollutants and other activities on wildlife, including migratory birds and fish, and wildlife habitat authorized under the Fish and Wildlife Coordination Act.	TBC	
Federal	Executive Order 11988 Floodplain Management	Requires federal agencies to avoid, to the extent possible, long and short-term adverse impacts associated with the occupancy and modification of floodplains, and avoid support of floodplain development wherever there is a practicable alternative.	TBC	The potential effects of the remedy will be evaluated to ensure that the planning and decision making reflect consideration of flood hazards and floodplains management, including restoration and preservation of natural undeveloped floodplains.
Federal	Executive Order 11990 Protection of Wetlands	Requires federal agencies to provide leadership and take actions to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.	TBC	A comprehensive wetland assessment was conducted as part of the FS. The remedy will take action to meet wetland mitigation requirements.

APPENDIX II-B: Risk Tables

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

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft bgs)

Exposure Point	Chemical of Concern[1]	Concentration Detected (Qualifier)		Concentration Units	Frequency of Detection	Exposure Point Concentration[2] (EPC)	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
Surface soil in HC	Arsenic	0.5(J)	4880(J)	mg/kg	265/277	497	mg/kg	97.5% KM (Chebyshev) UCL
	Chromium (100% / 5% Cr[VI])	0.53(J)	10100(J)	mg/kg	279/279	643 / 32	mg/kg	95% Chebyshev (Mean, Sd) UCL

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment (0-0.5 ft bgs)

Exposure Point	Chemical of Concern[1]	Concentration Detected (Qualifier)		Concentration Units	Frequency of Detection	Exposure Point Concentration[2] (EPC)	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
Sediment in BWL	Arsenic	2.2(J)	1070(J)	mg/kg	62/62	284	mg/kg	95% Student's-t UCL
	Chromium (100% / 5% Cr[VI])	1.1(J)	395(J)	mg/kg	62/62	155 / 7.8	mg/kg	95% Chebyshev (Mean, Sd) UCL
Sediment in HC	Chromium (100% / 5% Cr[VI])	3.8	3430(J)	mg/kg	122/122	440.6 / 22	mg/kg	95% Chebyshev (Mean, Sd) UCL
Sediment in KWL	Chromium (100% / 5% Cr[VI])	1.2(J)	696(J)	mg/kg	135/135	172.5 / 8.6	mg/kg	95% Chebyshev (Mean, Sd) UCL

Scenario Timeframe: Current/Future
Medium: Fish
Exposure Medium: Tissue

Exposure Point	Chemical of Concern[1]	Concentration Detected (Qualifier)		Concentration Units	Frequency of Detection	Exposure Point Concentration[2] (EPC)	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
Fish in KWL	Aroclor 1254	0.0029	0.16	mg/kg	46/46	0.05	mg/kg	95% Chebyshev (Mean, Sd) UCL
	Aroclor 1260	0.0023	0.066	mg/kg	44/46	0.02	mg/kg	95% KM Adjusted Gamma UCL
	Chromium (100% / 5% Cr[VI])	0.094	15	mg/kg	43/46	4.3 / 0.22	mg/kg	95% KM (Chebyshev) UCL

Footnotes:

(1) Lead was also identified as a site-related COC; the medium-specific EPCs for lead can be found in Table 7.

(2) The UCLs were calculated using EPA's ProUCL software (Version 5.1); when available, UCLs were used as EPCs.

(3) Two risk estimates were calculated for exposure to chromium in soil, sediment and fish tissue in the absence of speciated data. The first conservatively assumed that 100% of the chromium identified exists in the hexavalent form. Within soils collected from the Former Manufacturing Plant (Operable Unit 2) in 2016, 5% of the total chromium detected was found to exist in the hexavalent state. Risks related to soil, sediment and fish tissue were also assessed by applying this 5% ratio to the total chromium EPC, as shown in the table.

Definitions:

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

" +" = Value is the average of a parent sample and a field duplicate sample
BWL = Bridgewood Lake
Cr [VI] = Hexavalent chromium
EPC = Exposure point concentration
ft bgs = Feet below ground surface
HC = Hilliards Creek
J = Estimated value (qualifier)
KWL = Kirkwood Lake
mg/kg = Milligrams per kilogram
UCL = Upper confidence limit of mean

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

This table presents the chemicals of concern (COCs) along with exposure point concentrations (EPCs) for each of the COCs detected in site media (*i.e.*, the concentration used to estimate the exposure and risk from each COC). 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

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Soil	Soil (0-2 feet)	BWL KWL HC	Recreator	Adult Adolescent Child	Ingestion Dermal Inhalation	Quantitative	Exposure to soil while visiting site
Current/Future	Sediment	Sediment (0-0.5 feet)	BWL KWL SL HC	Recreator	Adult Adolescent Child	Ingestion Dermal	Quantitative	Exposure to sediment while wading
Current/Future	Surface Water	Surface Water	BWL KWL SL HC	Recreator	Adult Adolescent Child	Ingestion Dermal Inhalation	Quantitative	Exposure to surface water while wading
Future	Sediment	Sediment (0-0.5 feet)	BWL KWL SL	Swimmer	Adult Adolescent Child	Ingestion Dermal	Quantitative	Exposure to surface water while swimming
Future	Surface Water	Surface Water	BWL KWL SL	Swimmer	Adult Adolescent Child	Ingestion Dermal	Quantitative	Exposure to sediment while swimming
Current/Future	Fish	Fish	KWL	Angler	Adult Adolescent Child	Ingestion	Quantitative	Consumption of fish caught from the lake

Definitions:
BWL = Bridgewood Lake
KWL = Kirkwood Lake
SL = Silver Lake
HC = Hilliards Creek

Summary of Selection of Exposure Pathways

This table describes the exposure pathways associated with the varying media (soil, sediment, surface water and fish) that were evaluated in the risk assessment along with the rationale for the inclusion of each pathway. Exposure media, exposure points, and characteristics of receptor populations are also included.

Table 3
Noncancer Toxicity Data Summary

Pathway: Ingestion/Dermal

Chemicals of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Absorp. Efficiency (Dermal)	Adjusted RfD for Dermal[1]	Adj. Dermal RfD Units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD Target Organ	Dates of RfD
Arsenic[2]	Chronic	3.0E-04	mg/kg-day	1	3.0E-04	mg/kg-day	Skin	3	IRIS	9/1/1991
Chromium[3]	Chronic	3.0E-03	mg/kg-day	0.025	7.5E-05	mg/kg-day	Non Observed	900	IRIS	9/3/1998
Lead[4]	Chronic	NA	mg/kg-day	1	NA	mg/kg-day	See Footnote 3	NA	NA	NA
Aroclor 1254	Chronic	2.0E-05	mg/kg-day	1	2.0E-05	mg/kg-day	Immunological	300	IRIS	11/1/1996
Aroclor 1260[5]	Chronic	2.0E-05	mg/kg-day	1	2.0E-05	mg/kg-day	Immunological	300	IRIS	11/1/1996

Pathway: Inhalation

Chemicals of Concern	Chronic/ Subchronic	Inhalation RfC	Inhalation RfC Units	Inhalation RfD (If available)	Inhalation RfD Units (If available)	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD Target Organ	Dates of RfC
Arsenic	Chronic	1.5E-05	mg/m^3	NA	NA	Lung	30	CalEPA	12/1/2008
Chromium[3]	Chronic	1.0E-04	mg/m^3	NA	NA	Respiratory	300	IRIS	9/3/1998
Lead[4]	Chronic	NA	mg/m^3	NA	NA	NA	NA	NA	NA
Aroclor 1254	Chronic	NA	mg/m^3	NA	NA	NA	NA	NA	NA
Aroclor 1260	Chronic	NA	mg/m^3	NA	NA	NA	NA	NA	NA

Footnotes:

(1) Adjusted RfD for Dermal = Oral RfD x Oral Absorption Efficiency for Dermal (RAGS E, 2004)

(2) An oral relative bioavailability factor of 60% was used when quantifying risks from soil ingestion.

(3) Based on chromium VI.

(4) Risks and hazards from lead exposure are not evaluated in the same manner as the other contaminants. See Table 7 for the summary of risks resulting from lead exposure.

(5) Based on aroclor 1254.

Definitions:

CalEPA = California Environmental Protection Agency

IRIS = Integrated Risk Information System

mg/m^3 = Milligrams per cubic meter

mg/kg-day = Milligrams per kilogram per day

NA = Not available

Summary of Toxicity Assessment

This table provides noncarcinogenic risk information that is relevant to the contaminants of concern at the Site. Toxicity data are provided for the ingestion, dermal and inhalation routes of exposure.

Table 4
Cancer Toxicity Data Summary

Pathway: Ingestion/ Dermal

Chemical of Concern	Oral Cancer Slope Factor	Units	Adjusted Cancer Slope Factor (for Dermal)	Slope Factor Units	Weight of Evidence/ Cancer Guideline	Source	Date
Arsenic[1]	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	4/10/1998
Chromium[2]	5.0E-01	$(mg/kg\text{-}day)^{-1}$	2.0E+01	$(mg/kg\text{-}day)^{-1}$	NA	CalEPA	7/1/2011
Lead[3]	NA	$(mg/kg\text{-}day)^{-1}$	NA	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	11/1/1993
Aroclor 1254	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	6/1/1997
Aroclor 1260[4]	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	6/1/1997

Pathway: Inhalation

Chemical of Concern	Unit Risk	Units	Inhalation Cancer Slope Factor	Slope Factor Units	Weight of Evidence/ Cancer Guideline	Source	Date
Arsenic	4.3E-03	$(\mu g/m^3)^{-1}$	NA	NA	A	IRIS	4/10/1998
Chromium[2]	8.4E-02	$(\mu g/m^3)^{-1}$	NA	NA	A	IRIS	9/3/1998
Lead[3]	NA	$(\mu g/m^3)^{-1}$	NA	NA	NA	NA	NA
Aroclor 1254	5.7E-04	$(\mu g/m^3)^{-1}$	NA	NA	B2	IRIS	6/1/1997
Aroclor 1260[4]	5.7E-04	$(\mu g/m^3)^{-1}$	NA	NA	B2	IRIS	6/1/1997

Footnotes:

(1) An oral relative bioavailability factor of 60% was used when quantifying risks from soil ingestion.

(2) Based on chromium VI.

(3) Risks and hazards from lead exposure are not evaluated in the same manner as the other contaminants. See Table 7 for the summary of risks resulting from lead exposure.

(4) Based on aroclor 1254.

Definitions:

CalEPA = California Environmental Protection Agency

IRIS = Integrated Risk Information System, U.S. EPA

NA = Not available

$(\mu g/m^3)^{-1}$ = Per micrograms per cubic meter

$(mg/kg\text{-}day)^{-1}$ = Per milligrams per kilogram per day

EPA Weight of Evidence (EPA, 1986):

A = Human carcinogen

B2 = Probable Human Carcinogen - based on sufficient evidence of carcinogenicity in animals and inadequate or no evidence in humans

Summary of Toxicity Assessment

This table provides carcinogenic risk information that is relevant to the contaminants of concern at the Site. Toxicity data are provided for the ingestion, dermal and inhalation routes of exposure.

Table 5
Risk Characterization Summary - Noncarcinogens

Scenario Timeframe: Current/Future
Receptor Population: Recreator at HC
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Noncarcinogenic Hazard Quotient			
					Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Surface Soil	Surface Soil on HC	Arsenic	Skin	5.4	0.65	0.0014	6.1
							Soil Hazard Index Total[1] =	**7**
							Receptor Hazard Index[1] =	**7**
							Skin HI=	**6**

Scenario Timeframe: Future
Receptor Population: Swimmer at BWL
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Noncarcinogenic Hazard Quotient			
					Ingestion	Dermal	Inhalation	Exposure Routes Total
Sediment	Sediment	Sediment in BWL	Arsenic	Skin	2.2	0.26	NA	2.4
							Soil Hazard Index Total[1] =	**2**
							Receptor Hazard Index[1] =	**2**
							Skin HI=	**2**

Scenario Timeframe: Current/Future
Receptor Population: Angler at KWL
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Primary target Organ	Noncarcinogenic Hazard Quotient			
					Ingestion	Dermal	Inhalation	Exposure Routes Total
Fish	Tissue	Fish from KWL	Aroclor 1254	Immunological	1.6	NA	NA	1.6
			Aroclor 1260	Immunological	0.7	NA	NA	0.7
							Fish Hazard Index Total[1] =	**3**
							Receptor Hazard Index[1] =	**3**
							Immunological HI=	**2**

Footnotes:

(1) The HI represents the summed HQs for all chemicals of potential concern at the site, not just those requiring remedial action (i.e., the chemicals of concern [COCs]) which are shown in this table.

Definitions:

BWL = Bridgewood Lake
HC = Hilliards Creek
HI = Hazard Index
KWL = Kirkwood Lake
NA = Not available
UHC = Upper Hilliards Creek
UNDV = Undeveloped Area

Table 6
Risk Characterization Summary - Carcinogens

Scenario Timeframe: Current/Future
Receptor Population: Recreator at HC
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Dermal	Inhalation	Exposure Routes Total
Soil	Surface Soil	Surface soil on HC	Arsenic	2.1E-04	2.5E-05	7.8E-09	2.3E-04
			Chromium[2,3]	1.1E-03	NA	1.0E-06	1.1E-03
						Soil Risk Total[1]=	**1E-03**
						Total Risk[1]=	**1E-03**

Scenario Timeframe: Current/Future
Receptor Population: Recreator at HC
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Dermal	Inhalation	Exposure Routes Total
Sediment	Sediment	Sediment in HC	Chromium[2,4]	2.2E-04	NA	NA	2.2E-04
						Soil Risk Total[1]=	**2E-04**
						Total Risk[1]=	**2E-04**

Scenario Timeframe: Future
Receptor Population: Swimmer in BWL
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Dermal	Inhalation	Exposure Routes Total
Sediment	Sediment	Sediment in BWL	Chromium[2,5]	1.9E-04	NA	NA	1.9E-04
						Soil Risk Total[1]=	**2E-04**
						Total Risk[1]=	**2E-04**

Scenario Timeframe: Future
Receptor Population: Swimmer in KWL
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Dermal	Inhalation	Exposure Routes Total
Sediment	Sediment	Sediment in KWL	Chromium[2,6]	2.1E-04	NA	NA	2.1E-04
						Sediment Risk Total[1]=	**2E-04**
						Total Risk[1,2]=	**2E-04**

Scenario Timeframe: Current/Future
Receptor Population: Angler at KWL
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Dermal	Inhalation	Exposure Routes Total
Fish	Tissue	Fish from KWL	Chromium[2,7]	2.6E-04	NA	NA	2.6E-04
						Fish Risk Total[1]=	**3E-04**
						Total Risk[1,2]=	**3E-04**

Scenario Timeframe: Current/Future
Receptor Population: Angler at KWL
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Dermal	Inhalation	Exposure Routes Total
Fish	Tissue	Fish from KWL	Chromium[2,8]	3.5E-04	NA	NA	3.5E-04
						Sediment Risk Total[1]=	**4E-04**
						Total Risk[1,2]=	**4E-04**

Scenario Timeframe: Current/Future
Receptor Population: Angler at KWL
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical Of Concern	Carcinogenic Risk			
				Ingestion	Dermal	Inhalation	Exposure Routes Total
Fish	Tissue	Fish from KWL	Chromium[2,9]	8.1E-04	NA	NA	8.1E-04
						Sediment Risk Total[1]=	**8E-04**
						Total Risk[1,2]=	**8E-04**

Table 6
Risk Characterization Summary - Carcinogens

Footnotes:

(1) Total Risk values represent cumulative estimates from exposure to all chemicals of potential concern (COPCs) as identified in the RAGS D table 2 series, and not only from those identified in this table (i.e, the chemicals of concern [COCs]).

(2) Chromium risks displayed for soil, sediment and tissue are based on the assumption that 100% of the chromium identified exists in the hexavalent form. This assumption, however, likely overestimates risk. Since contamination from Operable Unit (OU) 2 (Former Manufacturing Plant) was likely distributed downstream via surface water and sediment within Hilliards Creek, the hexavalent chromium content in downgradient media is not likely to be higher than that in OU2 soils. The conditions along Hilliards Creek (e.g., high total organic carbon from decaying vegetation) favor a more reducing environment resulting in higher concentrations of the less toxic, trivalent chromium as well.

(3) Risks based on the 5% ratio (from Table 1) were 6E-05, which is within the target risk range (1E-06 to 1E-04).

(4) Risks based on the 5% ratio (from Table 1) were 1E-05, which is within the target risk range (1E-06 to 1E-04).

(5) Risks based on the 5% ratio (from Table 1) were 9E-06, which is within the target risk range (1E-06 to 1E-04).

(6) Risks based on the 5% ratio (from Table 1) were 1E-05, which is within the target risk range (1E-06 to 1E-04).

(7) Risks based on the 5% ratio (from Table 1) were 1E-05, which is within the target risk range (1E-06 to 1E-04).

(8) Risks based on the 5% ratio (from Table 1) were 2E-05, which is within the target risk range (1E-06 to 1E-04).

(9) Risks based on the 5% ratio (from Table 1) were 4E-05, which is within the target risk range (1E-06 to 1E-04).

Definitions:

BWL = Bridgewood Lake

HC = Hilliards Creek

KWL = Kirkwood Lake

NA = Not available

Table 7
Risk Characterization Summary - Lead
Medium-Specific Exposure Point Concentration and Resultant Risks

Exposure Area: Silver Lake

Receptor	Exposure Media	Lead Exposure Point Concentration[1] (EPC)	EPC Units	Geometric Mean Blood Lead Level (ug/dL)	Lead Risk[2]
Current/Future Adult Recreator	Sediment (0-0.5ft)	170	mg/kg	0.7	0.03%
Current/Future Child Recreator	Sediment (0-0.5ft)	50	mg/kg	1.4	0.3%
Future Adult Swimmer	Sediment (0-0.5ft)	170	mg/kg	1	0.1%
Future Child Swimmer	Sediment (0-0.5ft)	170	mg/kg	2.6	8%

Exposure Area: Bridgewood Lake

Receptor	Exposure Media	Lead Exposure Point Concentration[1] (EPC)	EPC Units	Geometric Mean Blood Lead Level (ug/dL)	Lead Risk[2]
Current/Future Adult Recreator	Soil (0-2ft) + Sediment (0-0.5ft)	623	mg/kg	1.2	0.5%
Current/Future Child Recreator	Soil (0-2ft) + Sediment (0-0.5ft)	623	mg/kg	6.7	73%
Future Adult Swimmer	Sediment (0-0.5 ft), Surface Water	1,485	mg/kg	3.7	25%
Future Child Swimmer	Sediment (0-0.5 ft), Surface Water	1,485	mg/kg	13	98%

Exposure Area: Hilliards Creek

Receptor	Exposure Media	Lead Exposure Point Concentration[1] (EPC)	EPC Units	Geometric Mean Blood Lead Level (ug/dL)	Lead Risk[2]
Current/Future Adult Recreator	Soil (0-2ft) + Sediment (0-0.5ft)	4,112	mg/kg	4.7	38%
Current/Future Child Recreator	Soil (0-2ft) + Sediment (0-0.5ft)	4,112	mg/kg	25	99.97%

Exposure Area: Kirkwood Lake

Receptor	Exposure Media	Lead Exposure Point Concentration[1] (EPC)	EPC Units	Geometric Mean Blood Lead Level (ug/dL)	Lead Risk[2]
Current/Future Adult Recreator	Soil (0-2ft) + Sediment (0-0.5ft)	510	mg/kg	1	0.3%
Current/Future Child Recreator	Soil (0-2ft) + Sediment (0-0.5ft)	510	mg/kg	5.7	61%
Future Adult Swimmer	Sediment (0-0.5 ft bgs)	1,015	mg/kg	2.7	11%
Future Child Swimmer	Sediment (0-0.5 ft), Surface Water	1,015	mg/kg	10	93%
Adult Anger	Fish Tissue	0.11	mg/kg	1.3	0.8%
Child Angler	Fish Tissue	0.11	mg/kg	5.8	62%[3]

Footnotes:

(1) The lead EPC in soil was the arithmetic mean of all samples collected from a given soil depth interval.

(2) Lead risks are expressed as the probability of having a blood lead level greater than 5 micrograms per deciliter (µg/dL); EPA's risk reduction goal is to limit the probability of a child's blood lead concentration exceeding 5 µg/dL to 5% or less.

(3) The evaluation for the Kirkwood Lake adult and child Anglers assumes exposure to soil and sediment using the weighted EPC of 510 mg/kg. This EPC drives lead risks for the child receptor. The geometric mean blood lead level for the child angler is only 0.1 ug/dL higher when compared to a baseline scenario in which no fish from Kirkwood Lake are consumed. Thus, the risks associated with lead in fish are considered negligible.

Definitions:

ft = Feet below ground surface
mg/kg = milligram per kilogram
ug/dL = microgram per deciliter

Table 8 Summary of Wildlife Risks

Habitat	Receptor	NOAEL/LOAEL HQ	COPCs with Hazard Quotients ≥ 1.0																					
			Al	Sb	As	Ba	Cd	Cr	Cu	Pb	Mn	Se	Tl	V	Zn	CN-	AROCLOR-1248	AROCLOR-1260	ATRAZINE	BIS(2-ETHYLHEXYL) PHTHALATE	DIBENZOFURAN	DI-N-BUTYL PHTHALATE	PENTACHLORO PHENOL	Total HPAHs	1,2-DICHLORO BENZENE
HC (Entire Creek)																									
Aquatic Habitat	Mallard	NOAEL HQ	-	NC	-	-	-	-	-	**3**	-	-	-	-	-	**4**	-	-	NC	-	NC	-	-	-	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
	Muskrat	NOAEL HQ	**18**	**2**	**6**	-	-	**5**	-	**23**	-	-	**8**	-	-	-	-	-	**1.0**	-	-	-	-	-	-
		LOAEL HQ	**1.8**	-	**4**	-	-	**4**	-	**12**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Spotted Sandpiper	NOAEL HQ	**2**	NC	**15**	**6**	-	**6**	**7**	**96**	-	-	-	**5**	-	**59**	-	-	NC	-	NC	-	-	**8**	NC
		LOAEL HQ	-	NC	**9**	**3**	-	**6**	**2**	**16**	-	-	-	**3**	-	**6**	-	-	NC	-	NC	-	-	-	NC
	Great Blue Heron	NOAEL HQ	-	NC	-	-	-	-	-	**5**	-	-	-	-	-	**15**	-	-	NC	-	NC	-	-	**1.1**	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	**1.5**	-	-	NC	-	NC	-	-	-	NC
	Mink	NOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Terrestrial Habitat	American Robin	NOAEL HQ	**3**	NC	**11**	**9**	**2**	**7**	**2.0**	**138**	-	**3**	-	**5**	-	**94**	-	-	NC	-	NC	**1.1**	-	**10**	NC
		LOAEL HQ	-	NC	**7**	**5**	**1.3**	**7**	-	**23**	-	**1.6**	-	**2**	-	**9**	-	-	NC	-	NC	-	-	**1.0**	NC
	Short-tailed Shrew	NOAEL HQ	**39**	**13**	**28**	**5**	**5**	**8**	**1.6**	**52**	**2**	**9**	**7**	-	**1.0**	-	-	-	-	-	-	-	-	**1.8**	**6**
		LOAEL HQ	**4**	**1.3**	**18**	**1.9**	-	**7**	-	**27**	**1.7**	**6**	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-
	Northern Bobwhite	NOAEL HQ	**6**	NC	**3**	**3**	-	**3**	-	**38**	-	-	-	**1.3**	-	**73**	-	-	NC	-	NC	-	-	**6**	NC
		LOAEL HQ	-	NC	**1.9**	**1.3**	-	**2**	-	**6**	-	-	-	-	-	**7**	-	-	NC	-	NC	-	-	-	NC
	Meadow Vole	NOAEL HQ	**177**	**5**	**4**	**1.2**	-	**2**	-	**6**	-	**1.8**	-	-	-	-	-	-	**1.6**	-	-	-	-	**1.7**	-
		LOAEL HQ	**18**	-	**3**	-	-	**2**	-	**3**	-	**1.2**	-	-	-	-	-	-	-	-	-	-	-	-	-
	Raccoon	NOAEL HQ	**1.3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Red-tailed Hawk	NOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	**6**	-	-	NC	-	NC	-	-	-	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
	Red Fox	NOAEL HQ	**3**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HC (LMHC)																									
Aquatic Habitat	Mallard	NOAEL HQ	-	NC	-	-	-	-	-	**3**	-	-	-	-	-	**3**	-	-	NC	-	NC	-	-	-	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
	Muskrat	NOAEL HQ	**19**	**1.8**	**6**	-	-	**5**	-	**24**	-	-	**8**	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	**1.9**	-	**4**	-	-	**4**	-	**13**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Spotted Sandpiper	NOAEL HQ	**3**	NC	**10**	**8**	-	**7**	**7**	**99**	-	-	-	**6**	-	**45**	-	-	NC	-	NC	-	-	**7**	NC
		LOAEL HQ	-	NC	**6**	**4**	-	**6**	**2**	**16**	-	-	-	**3**	-	**4**	-	-	NC	-	NC	-	-	-	NC
	Great Blue Heron	NOAEL HQ	-	NC	-	-	-	-	-	**5**	-	-	-	-	-	**14**	-	-	NC	-	NC	-	-	-	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	**1.4**	-	-	NC	-	NC	-	-	-	NC
	Mink	NOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Terrestrial Habitat	American Robin	NOAEL HQ	**4**	NC	**17**	**10**	**3**	**10**	**2**	**141**	-	**4**	-	**6**	**1.1**	**85**	-	-	NC	-	NC	**1.1**	-	**9**	NC
		LOAEL HQ	-	NC	**10**	**5**	**1.7**	**10**	-	**23**	-	**2**	-	**3**	**1.1**	**8**	-	-	NC	-	NC	-	-	-	NC
	Short-tailed Shrew	NOAEL HQ	**43**	**14**	**41**	**5**	**7**	**12**	**1.8**	**51**	**2**	**11**	**7**	-	**1.2**	-	-	**1.5**	-	-	-	-	-	**1.8**	**4**
		LOAEL HQ	**4**	**1.4**	**26**	**2**	-	**10**	**1.1**	**27**	**1.9**	**7**	-	-	**1.2**	-	-	-	-	-	-	-	-	-	-
	Northern Bobwhite	NOAEL HQ	**8**	NC	**4**	**3**	-	**4**	-	**42**	-	**1.0**	-	**1.5**	-	**89**	-	-	NC	-	NC	-	-	**3**	NC
		LOAEL HQ	-	NC	**3**	**1.5**	-	**3**	-	**7**	-	-	-	-	-	**9**	-	-	NC	-	NC	-	-	-	NC
	Meadow Vole	NOAEL HQ	**218**	**4**	**6**	**1.4**	-	**3**	-	**7**	-	**2**	-	-	-	-	-	-	**1.6**	-	-	-	-	-	-
		LOAEL HQ	**22**	-	**4**	-	-	**3**	-	**4**	-	**1.4**	-	-	-	-	-	-	-	-	-	-	-	-	-
	Raccoon	NOAEL HQ	**1.6**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Red-tailed Hawk	NOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	**7**	-	-	NC	-	NC	-	-	-	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
	Red Fox	NOAEL HQ	**4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 8 Summary of Wildlife Risks

Habitat	Receptor	NOAEL/LOAEL HQ	COPCs with Hazard Quotients ≥ 1.0																					
			Al	Sb	As	Ba	Cd	Cr	Cu	Pb	Mn	Se	Tl	V	Zn	CN-	AROCLOR-1248	AROCLOR-1260	ATRAZINE	BIS(2-ETHYLHEXYL) PHTHALATE	DIBENZOFURAN	DI-N-BUTYL PHTHALATE	PENTACHLORO PHENOL	Total HPAHs	1,2-DICHLORO BENZENE
KWL																									
Aquatic Habitat	Mallard	NOAEL HQ	-	NC	-	-	-	-	-	**1.3**	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
	Muskrat	NOAEL HQ	**31**	**1.6**	**3**	-	-	**2**	**1.1**	**7**	-	-	**4**	-	-	-	**1.1**	-	-	-	-	-	-	-	-
		LOAEL HQ	**3**	-	**1.7**	-	-	**1.8**	-	**4**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Lesser Scaup	NOAEL HQ	-	NC	**1.6**	**1.6**	-	-	**4**	**7**	-	-	-	**6**	-	**3**	-	-	NC	-	NC	-	**4**	-	NC
		LOAEL HQ	-	NC	-	-	-	-	**1.4**	**1.2**	-	-	-	**3**	-	-	-	-	NC	-	NC	-	-	-	NC
	Great Blue Heron	NOAEL HQ	-	NC	-	-	-	-	-	**1.3**	-	-	-	-	-	**12**	-	-	NC	-	NC	-	-	**1.0**	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	**1.2**	-	-	NC	-	NC	-	-	-	NC
	Mink	NOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Terrestrial Habitat	American Robin	NOAEL HQ	**1.7**	NC	-	-	**1.4**	-	**1.1**	**122**	-	**4**	-	**2**	**1.7**	**9**	-	-	NC	**13**	NC	**10**	**1.1**	**6**	NC
		LOAEL HQ	-	NC	-	-	-	-	-	**20**	-	**2**	-	**1.2**	**1.7**	-	-	-	NC	**1.3**	NC	**1.0**	-	-	NC
	Short-tailed Shrew	NOAEL HQ	**19**	**16**	**1.2**	-	**4**	-	-	**55**	-	**11**	**5**	-	**1.9**	-	-	-	**1.1**	**1.0**	**1.5**	-	**1.1**	**1.3**	-
		LOAEL HQ	**1.9**	**1.6**	-	-	-	-	-	**29**	-	**8**	-	-	**1.9**	-	-	-	-	-	-	-	**1.0**	-	-
	Northern Bobwhite	NOAEL HQ	**3**	NC	-	-	-	-	-	**20**	-	-	-	-	-	**3**	-	-	NC	**2.0**	NC	**1.6**	-	**1.1**	NC
		LOAEL HQ	-	NC	-	-	-	-	-	**3**	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
	Meadow Vole	NOAEL HQ	**96**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	**10**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Raccoon	NOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Red-tailed Hawk	NOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
	Red Fox	NOAEL HQ	**1.5**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BWL																									
Aquatic Habitat	Mallard	NOAEL HQ	-	NC	-	-	-	-	-	**1.8**	-	-	-	-	-	**2**	-	-	NC	-	NC	-	-	-	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
	Muskrat	NOAEL HQ	**29**	**5**	**8**	-	-	**2.0**	-	**10**	-	-	**42**	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	**3**	-	**5**	-	-	**1.7**	-	**5**	-	-	**4**	-	-	-	-	-	-	-	-	-	-	-	-
	Lesser Scaup	NOAEL HQ	-	NC	**5**	-	-	-	**4**	**10**	-	-	-	**11**	-	**11**	-	-	NC	-	NC	-	**1.5**	-	NC
		LOAEL HQ	-	NC	**3**	-	-	-	**1.2**	**1.7**	-	-	-	**5**	-	**1.1**	-	-	NC	-	NC	-	-	-	NC
	Great Blue Heron	NOAEL HQ	-	NC	-	-	-	-	-	**1.8**	-	-	-	-	-	**13**	-	-	NC	-	NC	-	-	**1.1**	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	**1.3**	-	-	NC	-	NC	-	-	-	NC
	Mink	NOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Raccoon	NOAEL HQ	-	-	-	-	-	-	-	-	-	-	**1.4**	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SL																									
Aquatic Habitat	Mallard	NOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
	Muskrat	NOAEL HQ	**9**	**1.9**	-	-	-	-	-	**1.9**	-	-	**7**	-	-	-	-	-	-	-	-	-	-	**1.5**	-
		LOAEL HQ	-	-	-	-	-	-	-	**1.0**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Lesser Scaup	NOAEL HQ	-	NC	-	-	-	-	**1.6**	**1.6**	-	-	-	**3**	-	-	-	-	NC	-	NC	-	-	**5**	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	**1.5**	-	-	-	-	NC	-	NC	-	-	-	NC
	Great Blue Heron	NOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	**1.9**	-	-	NC	-	NC	-	-	**2**	NC
		LOAEL HQ	-	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NC	-	NC	-	-	-	NC
	Mink	NOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Raccoon	NOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LOAEL HQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Al – Aluminum; As – Arsenic; Ba – Barium; BWL – Bridgewood Lake; Cd – Cadmium; CN- – Cyanide; COPC – Chemical of Potential Concern; Cr – Chromium; Cu – Copper; HPAH – High Molecular Weight Polycyclic Aromatic Hydrocarbon; HQ – Hazard Quotient; KWL – Kirkwood Lake; LMHC – Lower and Middle Hilliards Creek; LOAEL – Lowest Observed Adverse Effect Level; Mn – Manganese; NC – No Criteria Available; NOAEL – No Observed Adverse Effect Level; Pb – Lead; Sb – Antimony; Se – Selenium; SL – Silver Lake; Tl – Thallium; TRV – Toxicity Reference Value; V – Vanadium; Zn – Zinc.

"-" – HQ is ≤1 or no TRV was available for this COPC (see Appendix D).

HQs ≥1.0 are **bolded**/highlighted and indicate a potential risk to ecological receptors.

APPENDIX III: Administrative Record Index

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

03/30/2021 **REGION ID: 02**

Site Name: SHERWIN-WILLIAMS/HILLIARDS CREEK
CERCLIS ID: NJD980417976
OUID: 04
SSID: 02QN
Action:

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
616842	03/30/2021	ADMINISTRATIVE RECORD INDEX FOR OU4 FOR THE SHERWIN-WILLIAMS/HILLIARDS CREEK SITE	2	Administrative Record Index		(US ENVIRONMENTAL PROTECTION AGENCY)
178408	09/30/1999	ADMINISTRATIVE ORDER ON CONSENT FOR REMEDIAL INVESTIGATION / FEASIBILITY STUDY FOR INDEX NO. II CERCLA-02-99-2035 FOR ROUTE 561, UNITED STATES AVENUE BURN AND SHERWIN-WILLIAMS/HILLIARDS CREEK SITE	65	Legal Instrument		FOX,JEANNE (US ENVIRONMENTAL PROTECTION AGENCY)|MUSZYNSKI,WILLIAM,J (US ENVIRONMENTAL PROTECTION AGENCY)
565118	01/18/2018	REMEDIAL INVESTIGATION REPORT FOR OU4 FOR THE SHERWIN-WILLIAMS/HILLIARDS CREEK SITE	2577	Report		
565095	10/24/2018	REVISED HUMAN HEALTH RISK ASSESSMENT REPORT FOR OU4 FOR THE SHERWIN-WILLIAMS/HILLIARDS CREEK SITE	1360	Report		
565050	11/20/2018	US EPA'S APPROVAL OF THE REVISED HUMAN HEALTH RISK ASSESSMENT REPORT FOR OU4 FOR THE SHERWIN-WILLIAMS/HILLIARDS CREEK SITE	1	Letter	(THE SHERWIN-WILLIAMS COMPANY)|CAPICHIONI,MARY LOU (THE SHERWIN-WILLIAMS COMPANY)	(US ENVIRONMENTAL PROTECTION AGENCY)|NACE,JULIE (US ENVIRONMENTAL PROTECTION AGENCY)
616843	08/01/2019	WATERBODIES UNIT BASELINE ECOLOGICAL RISK ASSESSMENT FOR OU4 FOR THE SHERWIN-WILLIAMS/HILLIARDS CREEK SITE	5513	Report		(GRADIENT CORPORATION)
616844	09/29/2019	US EPA APPROVAL OF THE WATERBODIES UNIT BASELINE ECOLOGICAL RISK ASSESSMENT FOR OU4 FOR THE SHERWIN-WILLIAMS/HILLIARDS CREEK SITE	2	Letter	CAPICHIONI,MARY LOU (THE SHERWIN-WILLIAMS COMPANY)	NACE,JULIE (US ENVIRONMENTAL PROTECTION AGENCY)

630398

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

03/30/2021 **REGION ID: 02**

Site Name: SHERWIN-WILLIAMS/HILLIARDS CREEK
CERCLIS ID: NJD980417976
OUID: 04
SSID: 02QN
Action:

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
620685	02/18/2021	FEASIBILITY STUDY FOR WATERBODIES OU4 4/19/2020 REVISED 2/18/21 FOR THE SHERWIN-WILLIAMS/HILLIARDS CREEK SITE	915	Report	(THE SHERWIN-WILLIAMS COMPANY)	(WESTON SOLUTIONS INCORPORATED)
620697	02/23/2021	US EPA APPROVES THE FEASIBILITY STUDY FOR WATERBODIES OU4 4/19/2020 REVISED 2/18/21 FOR THE SHERWIN-WILLIAMS/HILLIARDS CREEK SITE	1	Letter	(THE SHERWIN-WILLIAMS COMPANY)	NACE,JULIE (US ENVIRONMENTAL PROTECTION AGENCY)
620682	03/01/2021	CORRESPONDENCE REGARDING THE PROPOSED PLAN FOR WATERBODIES OU4 FOR THE SHERWIN-WILLIAMS/HILLIARDS CREEK SITE	2	Letter	EVANGELISTA,PAT (US ENVIRONMENTAL PROTECTION AGENCY)	(NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)
616751	03/30/2021	PROPOSED PLAN FOR OU4 FOR THE SHERWIN-WILLIAMS/HILLIARDS CREEK SITE	28	Publication		(US ENVIRONMENTAL PROTECTION AGENCY)

APPENDIX IV: State Concurrence Letter

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
SITE REMEDIATION AND WASTE MANAGEMENT PROGRAM
401 East State Street
P.O. Box 420, Mail Code 401-06
Trenton, New Jersey 08625-0420
Telephone: (609) 292-1250 Fax (609) 777-1914
www.nj.gov/dep

PHILLIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

SHAWN M. LaTOURETT
Commissioner

September 9, 2021

Pat Evangelista, Director
Superfund and Emergency Response Division
U.S. Environmental Protection Agency Region II
290 Broadway
New York, NY 10007-1866

RE: Sherwin-Williams/Hilliards Creek Superfund Site, Waterbodies Unit
Gibbsboro, Camden County, New Jersey
PI No. G000004382, EA No. RPC000005

Dear Mr. Evangelista:

The New Jersey Department of Environmental Protection (Department) has reviewed the Record of Decision for the Sherwin-Williams/Hilliards Creek Superfund Site, Operable Unit (OU) 4, also known as the "Waterbodies OU", prepared by the U.S. Environmental Protection Agency (EPA) Region II. The selected remedy addresses soil, sediments, and surface water in the "Waterbodies OU" which includes Silver Lake, Bridgewood Lake, Kirkwood Lake and portions of Hilliards Creek in Gibbsboro Borough and Voorhees Township, Camden County, New Jersey.

The selected remedy includes:

- Excavation and off-site disposal of contaminated sediment from Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek;
- Post-remedy surface water monitoring to evaluate the effectiveness of the remedy;
- Restoration and revegetation of the Hilliards Creek floodplain, and lake shorelines as needed; post-remedy monitoring to ensure successful restoration;
- Excavation and off-site disposal of contaminated soil from the Hilliards Creek floodplain, removal to accommodate a cap where needed; backfill and restoration of excavation areas;
- Establishment of institutional controls as needed.

The Department acknowledges that this selected remedy would remove the highest concentrations of arsenic and lead (and other contaminants) in shallow soils while preserving, to the extent possible, the high and medium quality wetland and forested areas that exist within the Hilliards Creek floodplain. This selected remedy is designed to minimize damage to ecological habitat and provide the greatest potential for complete restoration of the functions and values of these habitats.

The Department acknowledges that residential properties (OU1) along Hilliards Creek and Kirkwood Lake were addressed by a September 2015 Record of Decision (ROD) and that sediment, soil and surface water in the upper portions of Hilliards Creek (OU2) were addressed by a June 2020 ROD; groundwater (OU3) and impacts to the Cooper River will be addressed at a later date.

The Department concurs with the selected remedy for sediment and surface water and the selected remedy for soil on those parcels that will not require a deed notice for the Waterbodies OU. However, because property owner consent to the implementation of a remedy that requires a cap and deed notice has not been obtained, the Department cannot concur with the Record of Decision. If property owner consent is obtained, the Department will concur with the Record of Decision.

Should you wish to discuss this matter further please feel free to contact me at (609) 292-1250.

Sincerely,

Mark J. Pedersen
Assistant Commissioner

CC: Lynn Vogel, NJDEP, BCM

APPENDIX V: Responsiveness Summary

APPENDIX V

RESPONSIVENESS SUMMARY

Operable Unit 4 of the Sherwin-Williams/Hilliards Creek Site

Gibbsboro and Voorhees, New Jersey

INTRODUCTION

This Responsiveness Summary provides a summary of the public's comments and concerns regarding the Proposed Plan for Operable Unit 4 ("OU4") of the Sherwin-Williams/Hilliards Creek Site ("Site") and EPA's responses to those comments.

All comments summarized in this document have been considered in EPA's final decision for the selection of the cleanup response for OU4 of the Site. This Responsiveness Summary is divided into the following sections:

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

This section provides the history of the community involvement and interests regarding the Site.

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

This section contains summaries of oral and written comments received by EPA at the public meeting and during the public comment period, and EPA's responses to these comments.

The last section of this Responsiveness Summary includes attachments, which document public participation in the remedy selection process for this OU. They are as follows:

Attachment A contains the Proposed Plan that was distributed to the public for review and comments;

Attachment B contains the public notices that appeared in the Courier-Post;

Attachment C contains the transcripts of the public meeting; and

Attachment D contains the public comments received during the public comment period. (Note: personal information, such as email addresses, home addresses, and phone numbers contained in the letters and emails were redacted to protect the privacy of the commenters).

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

The subject of this Record of Decision (ROD) and Responsiveness Summary is OU4 of the Sherwin-Williams/Hilliards Creek Superfund Site located in Gibbsboro and Voorhees, New Jersey. The Sherwin-Williams/Hilliards Creek Superfund Site along with the United States Avenue Burn Superfund Site and the Route 561 Dump Site comprise three Sites collectively referred to as the "Sherwin-Williams Sites" located in Gibbsboro, Voorhees and Lindenwold, New Jersey. Public interest in the "Sherwin-Williams Sites" has been high.

On April 1, 2021, EPA released the Proposed Plan and supporting documentation for the cleanup response for OU4 of the Sherwin-Williams/Hilliards Creek Site to the public for comment. EPA made these documents available to the public in the administrative record repositories maintained at the EPA Region 2 office (located at 290 Broadway, New York, New York), the Gibbsboro Hall/Library (49 Kirkwood Road, Gibbsboro, New Jersey) and the M. Allan Vogelson Regional Branch Library – Voorhees (203 Laurel Road, Voorhees, New Jersey). These documents were also available online (https://www.epa.gov/superfund/sherwin-williams). EPA published a notice of availability for these documents in the Courier-Post and held a public comment period from April 1, 2021 through May 3, 2021.

On April 12, 2021, EPA held a virtual public meeting to discuss the Proposed Plan for OU4 of the Sherwin-Williams/Hilliards Creek Superfund Site. The purpose of this meeting was to inform local officials and interested citizens about the Superfund process, to present the Proposed Plan for the Site and to respond to questions. At the meeting, EPA reviewed the history of the Site, the results of the investigation of contamination at the Site, and details about the Proposed Plan before taking questions from meeting attendees. The transcript of this public meeting is included in this Responsiveness Summary as Attachment C.

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

A. SUMMARY OF QUESTIONS AND EPA'S RESPONSES FROM THE PUBLIC MEETING CONCERNING OPERABLE UNIT 4 OF THE SHERWIN-WILLIAMS HILLIARDS CREEK SITE – APRIL 12, 2021.

A virtual public meeting was held April 12, 2021, at 7:00 pm. Following a brief presentation of the investigation findings, EPA presented the Proposed Plan and preferred alternative for the Sherwin-Williams/Hilliards Creek Site, received comments from interested citizens, and responded to questions regarding the remedial alternatives under consideration. Comments and questions raised by the public following EPA's presentation are as follows and are combined by topic:

Comment #1: Several commenters asked if the upstream Site remediation will be completed before the downstream remediation; and how will contamination be contained during the remediation of upstream Sites.

EPA Response: EPA is remediating source areas first, in an upstream to downstream sequence with the exception of the prioritized residential properties. Remediation is currently ongoing at residential properties and the Route 561 Dump Site. Remediation will continue downstream from the Route 561 Dump Site to the United States Avenue Burn Site. For the Sherwin-Williams/Hilliards Creek Site, contamination will be addressed at the Former Manufacturing Plant, then downstream through the Waterbodies operable unit (from Silver Lake, through Hilliards Creek, and in Kirkwood Lake).

Comment #2: One commenter asked how effluent from dredging operations will be contained and prevented from flowing downstream.

EPA Response: Engineering controls will be put in place during the dredging of the creeks and lakes. Such engineering controls may include the use of booms and sediment traps to minimize the downstream movement of sediment. The placement and type of controls will be determined during remedial design. Surface water monitoring will also be conducted during remedy implementation.

Comment #3: Several commenters asked about the restoration of the wetlands. One commenter wanted to know if the wetland corridor along the stream will be restored to an inaccessible wetland, of high value for wildlife, or highly accessible, low value for wildlife. Another commenter wanted to know if the wetlands will be restored to a park or a forest.

EPA Response: The wetland areas surrounding Hilliards Creek have been identified and assessed. The wetland areas consist of three

distinct types of wetlands: phragmites (invasive species), emergent wetlands (native species), and forested wetlands (native species). These wetlands were assigned values: phragmites (low value), emergent (medium value) and forested (high value). Phragmites wetlands will be restored with native wetland plants after the area is remediated and the phragmites removed. Emergent wetlands will be remediated, then restored with native wetland plants similar to the current plant population. The forested wetlands that are remediated under the remedy will be restored with native wetland plants and trees similar to the current plant population. EPA's preferred alternative will work to minimize disruption to the high value, forested wetlands as described in the proposed alternative.

Comment #4: Two commenters asked for an estimate of the amount of contamination that will be removed, and the amount of contaminated soil that will be left in place, in Soil Alternative 2.

EPA Response: Alternative 2, which consists of targeted removal, would excavate approximately 42,119 cubic yards of contaminated soil which represents approximately 95% of the contaminant mass. 71,453 cubic yards of residually contaminated soil, containing the balance of approximately 5% of the contaminant mass, would remain following implementation of Soil Alternative 2. Soil Alternative 3 would remove all soils exceeding cleanup goals, or approximately 113,572 cubic yards.

Comment #5: One commenter asked if dredging is done by dewatering the lakes and exposing all the sediment or if hydraulic dredging is being considered for the lakes. In addition, the commenter asked if it would be difficult to do the post-excavation sampling if the water was left in the lake during hydraulic dredging.

EPA Response: The method of sediment removal from lakes will be determined during remedial design. EPA anticipates that a number of sediment removal methods will be analyzed in order to choose the sediment removal method that is most compatible with Site conditions. Analysis of sediment removal methods will consider factors that include, but are not limited to, access to the Site, type of sediment to be removed, and sensitive natural resources within the Site. With the exception of Silver Lake, it is anticipated that sediment removal will be conducted from shore to shore, and down to hard native sand. In general, pre-excavation sampling will be sufficient to ensure that proposed

excavation and dredging areas will meet cleanup standards, but post-excavation samples will be collected if necessary, and that determination will be made during the remedial design phase.

Comment #6: One commenter stated that Bridgewood Lake has a well-managed sport fishing population. This commenter inquired whether EPA will address this fish population during sediment removal, or if fish populations are addressed by a joint effort with Fish and Wildlife. The commenter also asked if the fish will be transplanted and replaced, and if there was a standard procedure for handling fish.

EPA Response: EPA is aware of the sport fishing population within Bridgewood Lake. There is not a standard procedure to restock a lake after remediation. EPA anticipates that a Site-specific plan to address the fish population will be developed by Sherwin-Williams with EPA oversight in the remedial design phase. Stakeholders will be included in the development of this plan.

Comment #7: One commenter voiced concern about the disruption of recreational events on the south shore of Bridgewood Lake during sediment remediation. The commenter asked about providing input during the design phase and would like to discuss other options for their property, citing the extent of impact on other areas of the Sherwin-Williams Sites that are undergoing remediation. The commenter identified four or five acres that could potentially be used as a staging area for remediation of Bridgewood Lake.

EPA Response: Staging and storage areas will be identified during the remedial design phase with input from property owners and the affected community.

Comment #8: One commenter asked several questions related to the soil remediation: 1) Does EPA have longevity data (more than 50 years) for recontamination risk on partial remediation and capping; 2) How will the preferred soil remediation affect the recreational use (swimming) of Kirkwood lake after the cleanup; 3) When does monitoring end?

EPA Response: When properly built and maintained, a cap will keep contaminated material in place and eliminate contaminant exposure pathways to human and ecological receptors. Regular inspections will be conducted to ensure the cap continues to function as designed and is protective of human health and the

environment. In addition to such inspections, EPA will conduct a review of the soil remedy every five years to assess the remedy's protectiveness. It is expected that removal of approximately 95% of the contaminant mass from soil and capping of approximately 5% of the contaminant mass located within the low energy floodplain will significantly reduce or eliminate the transport of contaminants from the soil to the waterbodies. The preferred soil remedy is expected to significantly improve surface water quality of the waterbodies, which in turn will add to their recreational utility. Monitoring of the capped areas will continue in perpetuity.

Comment #9: One commenter asked what season, or seasons, of the year will the remediation of Kirkwood Lake area take place? Specifically, this commenter wanted to know if consideration had been given to the active eagle nest and the feeding/fishing activity of eagles during the January-June time frame.

EPA Response: Any activities, including remediation, must consider the sensitive, threatened, and endangered plant and animal species that inhabit the Site. Prior to beginning remediation work, and in some instances, prior to remedial design investigations, the party performing the work is required to establish that the activities will comply with identified ARARs, including applicable federal and state laws and regulations that protect threatened or endangered species. Typically this will involve consultation with regulatory agencies, in a process that will develop specific timeframes during which certain activities are allowed on-Site and which may also identify restrictions applicable to geographical areas that are protected for the preservation of sensitive, threatened and endangered species. For example, to protect the nesting Bald Eagles along Kirkwood Lake, all activities will adhere to a strict timeframe, and observe boundaries to limit disturbance during the eagle nesting season. Remediation activities within the creek and lakes may also be limited during sensitive periods in the life cycle of fish and amphibians.

Comment #10: Two commenters asked what the usability of the remediated wetlands would be. Specifically, one commenter asked whether a trail network, or park, is considered an active use of the land or a public access for passive recreation?

EPA Response: The majority of the wetlands are owned by the Borough of Gibbsboro. For purposes of remedy selection, EPA considered that publicly owned land generally allows for public

accessibility. Wetlands are also mapped and managed by the New Jersey Department of Environmental Protection (NJDEP). If the Borough of Gibbsboro decided to build trails or walkways on the Site, it would need to adhere to applicable NJDEP regulations regarding the construction of publicly accessible paths and walkways within a wetland area.

Comment #11: One commenter asked if EPA will include the Square Circle Sportsmen Club leadership during the design phase. Specifically, the club is concerned about equipment staging, amount of tree removal, and restoration plans.

EPA Response: The design of the remediation at other Sherwin-Williams Sites has included input from the property owners and EPA will continue to include such input for future remediation work.

EPA expects to engage the membership of the Square Circle Sportsmen Club during the design, remediation, and restoration phases of work performed at the Square Circle Sportsmen Club property to obtain input into each of these phases of work.

Comment #12: One commenter asked if Sherwin-Williams signed off on and agreed on this plan.

EPA Response: Sherwin-Williams developed the alternatives in the Feasibility Study with EPA oversight. EPA is proposing the preferred alternative based on the Feasibility Study. Sherwin-Williams will be presented with an opportunity to perform EPA's selected remedy. If Sherwin-Williams elects to conduct the OU4 remedy, EPA and the United States Department of Justice will enter negotiations with Sherwin-Williams to conduct the work that is detailed in this Record of Decision. If an agreement is reached, such an agreement would be documented and formalized in an amendment to the existing judicial Consent Decree, that would be signed by EPA and Sherwin-Williams and presented for court approval.

Comment #13: Two commenters wanted to know the timeline for remediation. Specifically, will it be a ten-year project and is there time allocated for additional studies.

EPA Response: EPA anticipates that the remedial design for the selected soil and sediment alternatives, which will include additional studies, such as pre-design investigations, will take approximately three years to complete.

Once the remedial design is completed, the timeframes for the implementation of the selected remedies are 10 months for Soil Alternative 2 and 2.5 years for Sediment Alternative 3. The remediation of soil and sediment will be sequenced with the ongoing design and remediation that is underway at each of the three Sherwin-Williams Sites. This work might be dependent on the status of other OU remediation work.

Comment #14: One commenter stated that discussions between the Mayor of Gibbsboro, EPA and Sherwin-Williams should not be done behind closed doors and the public should be part of such discussions.

EPA Response: The Superfund remedy selection process is a transparent process and allows for public input at different stages of this process. EPA will continue to welcome public involvement, including directly from members of the public as well as their elected officials, during the design and remediation of the Sherwin-Williams Hilliards Creek Site, the United States Avenue Burn Site, and the Route 561 Dump Site.

Comment #15: Several commenters stated that the wetlands need to be protected.

EPA Response: Any remediated wetland will be fully restored. In Soil Alternative 2, portions of the high value forested wetland will be preserved.

Comment #16: In a response to a previous comment by the Mayor of Gibbsboro concerning unrestricted access to the wetlands, one commenter asked if the wetland areas will have unrestricted use.

EPA Response: Once completed, the implemented remedy will not restrict access for passive recreational use of the wetlands. NJDEP identified the wetlands as a designated wetland area. Such wetlands and any proposed land use of the wetlands would be reviewed and regulated by the NJDEP.

Comment #17: One commenter asked how will capped areas affect residents' property deeds.

EPA Response: A deed notice will be required for the portions of remediated wetland areas that will contain residual levels of soil contamination. These wetland areas are owned by the Borough of Gibbsboro. The deed notices are specific to the property to which they are applied and are not applied to the deeds of adjoining residential properties.

Comment #18: One commenter asked what is the contact information for submitting letters?

EPA Response: This information was presented at the public meeting and is available on the Site Profile Page (https://www.epa.gov/superfund/sherwin-williams). Comments were accepted by Julie Nace, 290 Broadway, NY, NY 10007, nace.julie@epa.gov, 212-637-4126.

Comment #19: One commenter stated that the date was incorrect on the introduction slide.

EPA Response: The date has been corrected and the presentation containing the corrected slide has been posted to the EPA's website: https://semspub.epa.gov/work/02/616703.pdf.

Comment #20: One commenter asked: once a Site is remediated, what information will be recorded in EPA's database of contaminated Sites. The commenter stated that the public would be interested in knowing if their property is in close proximity to a Site that has been remediated and is listed in a database managed by NJDEP or EPA. This commenter also stated that the Route 561 Dump Site will perpetually be listed as a contaminated Site.

EPA Response: EPA maintains a Site Profile Page (https://www.epa.gov/superfund/sherwin-williams)for every Superfund Site. This Site Profile Page contains the status of Site remediation and provides the public access to documents used to support Site remediation decisions.

Comment #21: One commenter asked when the transcripts of this presentation will be available, along with phone queries and answers, chat queries and answers, and other public comments?

EPA Response: The Responsiveness Summary addresses public comments from emails, phone calls, chat queries and written documents received during the public comment period. The transcript from this public meeting is also included in Attachment C to this Responsiveness Summary (Appendix V of the Record of Decision).

Comment #22: One commenter stated that property values will be negatively affected by Soil Alternative 2 which uses capping and deed notices as engineering and institutional controls and does not remove all soil contamination. Another commenter asked to clarify the effect on the property values on Kirkwood Lake.

EPA Response: Various studies have been conducted about the effect of Superfund cleanups on property values. There are many factors that affect property values near a Superfund Site. Based on past cleanups, EPA expects that a Superfund cleanup will have an overall beneficial impact on the community, including with respect to property values.

Comment #23: One commenter asked how the core samples were taken from the lakes and if additional core sampling would be required. If, yes, will vibracoring be required?

EPA Response: Aqua Survey was contracted to collect cores of the lakes for the sampling that was previously conducted. This sampling used vibracoring. The need for and the method of core sampling for waterbodies sediment will be determined in the remedial design phase of the project. It is possible that vibracoring will be used in future sampling efforts.

Comment #24: One commenter asked why not remediate 100 percent of the contaminants instead of capping contaminants.

EPA Response: EPA's preferred alternative for sediment includes full removal of sediment contamination to meet risk-based cleanup goals within Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake. For soil remediation see response to comment # 25 below.

Comment #25: One commenter asked about the impact of capping versus a full recovery of property values. This commenter stated that there are notification requirements in New Jersey that potentially affect property values. This commenter also stated that EPA should collect data for clean Sites that involve caps because there will be more than 100,000 cubic yards of contaminated soil being left between Voorhees and Gibbsboro in the ground at depth upon the completion of remediation.

EPA Response: Capping is a proven and effective engineering control used to eliminate the direct contact exposure pathway of contaminants to ecological and human receptors and has been utilized at multiple environmental remediation Sites. At this Site, capping is appropriate to address large volumes of soil with low levels of contamination. For EPA's preferred soil alternative, the cap will consist of a demarcation layer, 1 foot of clean common fill, 1 foot of clean topsoil, a fabric erosion control blanket, and a vegetative cover. This cap must be maintained in perpetuity. EPA and NJDEP, in conjunction with

Sherwin Williams if it conducts the OU4 remedy, will establish a maintenance and monitoring program for the capped areas. In addition to oversight of monitoring activities, every five years, EPA will review all monitoring data to ensure that the capping component of the remedy remains effective and continues to function as designed. Mitigative responses will be taken if problems are identified during monitoring.

Comment #26: Two commenters asked if they would have to disclose their property's proximity to residual contamination. One commenter also asked about the type of disclosure they may have to provide if they own remediated property and are also located near other remediated properties that include caps.

EPA Response: Some states have disclosure laws that require property owners to report contamination to buyers when they sell a property. Property owners should contact a real estate representative, state and/or local government agencies, or an attorney, for guidance on any required disclosures.

Comment #27: One commenter stated that EPA should provide more information about the longevity data of the cap and how it would affect property values so that property owners could make decisions.

EPA Response: Please see responses to Comment #8 and #22.

Comment #28: One commenter asked if complete cleanup means a complete clearcutting and a loss of wooded areas.

EPA Response: Soil alternative 3 includes the full removal of soil to meet cleanup goals. This alternative would include a complete removal of all wetlands areas that have contaminated soil which also includes the wooded areas. In contrast to the more than 7 acres of clearcutting included in soil alternative 3, soil alternative 2, EPA's preferred alternative, would maintain canopy cover in portions of the forested wetlands.

Comment #29: One commentor stated that the soil caps will be less than 50 feet from the commenter's property line. The commenter also stated that her property and many others will have a loss in value while she is paying the same tax rate as other residents in Voorhees. EPA's decision on whether to cap or not affects residents and part of the agency's decision should take that into consideration.

EPA Response: Please see response to Comment #22.

Comment #30: One commenter asked what happens to the Sherwin-Williams' monitoring of the remedy should Sherwin-Williams go out of business.

EPA Response: If Sherwin-Williams elects to perform the preferred alternatives under the Consent Decree (see response to Comment #12), Sherwin-Williams would be legally bound to conduct the remediation, long-term monitoring and maintenance, consistent with the terms of the Consent Decree. As required by the Consent Decree, Sherwin-Williams would provide financial assurance to the EPA, the purpose of which is to assure that if Sherwin-Williams is no longer conducting the work, funds are available for the remediation, long-term monitoring, and maintenance.

Comment #31: One commenter asked what is the value of that security? For example, If the cost is $100 million, would that be the value of the financial assurance?

EPA Response: If Sherwin-Williams elects to perform the preferred alternatives under the Consent Decree (see response to Comment #12), the financial assurance will be addressed in the Consent Decree amendment. Typically, financial assurance would address the estimated cost of implementing, maintaining, and monitoring the selected soil and sediment remedy. As described in response to Comment #30, the purpose of financial assurance is to assure that if a party is no longer conducting the work, funds are available for EPA to conduct and complete the work.

Comment #32: One commenter asked what is the process by which the public opinion is decided. For example, if we all write you emails, how do you determine what the public opinion is? If we're making comments and asking questions, how do you discern what it is that the majority of the people want? Is there a vote, does EPA go through all the e-mails? And how do you do that?

EPA Response: EPA collects public comment on its proposed plan by accepting written and oral comments during the public comment period. EPA carefully considers all public comments received during the comment period as part of the remedy selection process and provides responses to the public comments in this Responsiveness Summary. Although EPA takes public comment received during the public comment period for remedy selection very seriously, and gives such comments careful consideration, public opinion/input, as per the CERCLA statute, is not the sole

basis for remedy selection. EPA uses nine criteria to evaluate alternatives that are presented in the proposed plan, one of which is community acceptance. In the remedy selection process that is documented in this Record of Decision, EPA considers each of the nine criteria using an evaluation process established by EPA regulation and guidance, and selects an alternative that is found to provide the best balance of tradeoffs among the criteria with respect to other alternatives evaluated.

Comment #33: One commenter asked for an example of a time when EPA modified its decision based on public comment.

EPA Response: After presenting the preferred alternative for the Ellis Property Superfund Site, there was considerable concern over the amount of truck traffic associated with the excavation component of the preferred alternative. The preferred alternative was amended to reduce excavation quantities and truck traffic by using on-Site treatment of thermal remediation.

Comment #34: One commenter stated that the Route 561 Dump Site preferred alternative was opposed by the Gibbsboro Council, the Planning Board, the Environmental Commission, and the Sierra Club, and the State of New Jersey conditionally approved the preferred alternative if the property owners went along, which they did not, and it still was approved. If these groups oppose the Waterbodies soil and sediment remedies, will EPA still select these remedies?

EPA Response: Similar to the Route 561 Dump Site, the contaminants found in the soil and sediment of Operable Unit 4 of the Sherwin-Williams Hilliards Creek Site pose an unacceptable risk to human health and/or the environment. CERCLA requires that a remedy be protective of human health and the environment by management of the risk posed by the Site. Consistent with the Superfund Program expectations, EPA often uses engineering controls, such as containment, for waste that poses a relatively low long-term threat or where treatment is impracticable. EPA also employs institutional controls, such as deed restrictions, to supplement engineering controls for short- and long-term management to prevent or limit exposure to contaminants. EPA must evaluate and balance remedial alternatives using an analysis of nine criteria established by EPA regulation, as referenced in the Proposed Plan and the Record of Decision. For the soil remediation component of OU4, EPA identified that complete removal of residual levels of

contaminants at depth, as compared to the excavation of the top two feet, would present greater implementability challenges (one of the nine criteria) by increasing excavation depths below the groundwater table, and increasing the volume of soil to be dewatered and removed, and would result in a minimal gain in contaminant mass removal and long-term risk reduction. Potential short-term risks (another one of the nine criteria) to Site workers and the community would be increased by the escalation in volume of soil excavated and increase in water requiring containment and treatment generated by a remedial approach involving excavation to the full depth of residual exceedances. With respect to this OU4, NJDEP has submitted a letter indicating that the state concurs with EPA's selected remedy but will not concur with the use of deed notices as part of the remedy until the property owner of property requiring use restrictions has consented to the notice. This step, consent to deed notices, has not yet occurred.

Comment #35: One commenter asked if contaminated soil and sediment are left as is, would the property values be higher than post partial/complete cleanup.

EPA Response: A remediation that places controls on exposure of contaminants to ecological or human receptors would be beneficial to the community and the environment compared to leaving uncontrolled contaminants on the Site.

Comment #36: One commenter asked what is the point of asking for public opinion when it isn't seriously considered?

EPA Response: EPA takes public input seriously. There are often very different points of view on the alternatives that are taken into consideration during the remedy selection process. There is seldom unanimous public opinion on any alternative.

B. SUMMARY OF WRITTEN COMMENTS AND EPA'S RESPONSES RECEIVED DURING THE PUBLIC COMMENT PERIOD BETWEEN APRIL 1, 2021 AND MAY 3, 2021.

Comment #37: A representative of Camden County commented that it objects to the bifurcation of the remedial action into multiple operable units. The County also questioned the remediation timeframes outlined in the proposed plan and requested that EPA expedite the remediation of the widely utilized public water bodies to the maximum extent practicable.

EPA Response: Please see Comment #1.

Comment #38: A Camden County representative commented that it supports the selection of a full removal alternative to address contaminated sediment in the affected waterbodies.

EPA Response: Noted.

Comment #39. A representative of Camden County commented that it understands and is supportive of the ecological preservation goals outlined in the selected soil removal alternative, which leaves some contamination at depth under a soil and geotextile cap. The representative asserted that the county reserves the right to comment and object to the specifics of the plan as developed through the remedial design process.

EPA Response: EPA looks forward to stakeholder involvement in the remedial design and remedial action processes as has been done on previous operable units of the Sherwin-Williams/ Hilliards Creek Site, as well as the Route 561 Dump Site design and remediation.

Comment #40. A Camden County representative emphasized the importance of continued outreach and public input in the development of the final Record of Decision for the Waterbodies OU to ensure that the affected community is kept involved in the process of developing the remedies and that their concerns are adequately addressed - which is vital for maintaining a productive relationship with the various municipalities and residents involved.

EPA Response: EPA has involved the public in the remedy selection process. EPA will continue its community relations program, along with Sherwin-Williams, to work with stakeholders during the design process, as was done previously on other Sites and operable units. EPA looks forward to positive interaction with the public during the remediation process. EPA anticipates that EPA, and Sherwin-Williams, will continue to work with stakeholders during the design process.

Comment #41: The Borough of Gibbsboro fully supports the EPA's approach to the order in which it has dealt with the three Superfund Sites within Gibbsboro.

EPA Response: Noted.

Comment #42: The Borough of Gibbsboro asked that all the sediment (including clean sediment) be removed from Silver Lake

as a goodwill gesture and in the spirit of restoring the lake to its previous state, including east of Lakeview Drive.

EPA Response: EPA's authority under CERCLA is to remediate and restore areas of contamination.

Comment #43: The Borough of Gibbsboro requested that invasive eel species in Silver Lake be eradicated during remediation.

EPA Response: Contamination from the Sherwin-Williams/Hilliards Creek Site is limited to the lower lobe of Silver Lake. Contamination associated with the Site will be remediated, consistent with the preferred sediment alternative, within the lower lobe of Silver Lake. The existing invasive eel species is not within the scope of the remediation project.

Comment #44: The Borough of Gibbsboro asked if it is possible to determine if trout from a stocking program still exist. The Borough of Gibbsboro also asked whether trout and gamefish populations in streams and lakes can be restored after remediation.

EPA Response: Fish populations will be assessed during the design of the sediment remedy. There may be loss of fish populations during remediation. The current habitat of some of the waterbodies will differ after remediation. EPA will work with stakeholders on a restoration plan to restore native fish population to the extent practicable.

Comment #45: The Borough of Gibbsboro inquired about the integrity of soil caps, specifically, how would uprooted trees affect the integrity of the soil cap and how would such occurrences be addressed.

EPA Response: Areas of soil capping would be monitored in perpetuity. The monitoring plan for capped areas will provide for an appropriate response to windfallen trees in circumstances where such tree falls threaten the integrity of the soil cap.

Comment #46: The Borough of Gibbsboro asked that existing and planned utility corridors be cleaned, or a provision be provided to address future soil excavation in support of utility work.

EPA Response: Existing utilities and plans for future public utility corridors will be given consideration during the design phase of the soil remedy. Provisions to address future excavation in support of unplanned utility work will be included in a deed notice, where applicable.

Comment #47: The Borough of Gibbsboro asked that all agencies coordinate issuance of permits to enable construction of a bikeway and trail network within Hilliards Creek Wildlife Preserve.

EPA Response: EPA, NJDEP and Sherwin-Williams have developed an efficient working relationship regarding the timely issuance of permits and permit equivalencies and will continue to coordinate permitting aspects of the project with the Borough regarding remediation and restoration activities, however, the landowner is responsible for applying for all applicable permits not directly related to remediation and remedial restoration.

Comment #48: The Borough of Gibbsboro asked that invasive species management occur within the wetlands during and after remediation.

EPA Response: EPA's preferred alternative for wetland areas has been developed with the goal of preserving a portion of the wooded wetlands. In areas where vegetation and soil must be removed, native plants will be used for restoration. In accordance with NJDEP regulations, these areas of wetland restoration will be monitored for native plant success and invasive species intrusion for a period of five years. In addition, the preferred alternative would replace phragmites wetlands with native wetland plants.

Comment #49: The Borough of Gibbsboro requested continued briefings of local government officials.

EPA Response: EPA will continue to brief local government during design and remediation stages of the project.

Comment #50: The Borough of Gibbsboro asked for continued regular briefings to local governments.

EPA Response: EPA will continue to brief local governments during the design and remediation phases of the project.

Comment #51: The Borough of Gibbsboro asked for information to be provided for Borough newsletters.

EPA Response: EPA will continue to provide information to the Borough for local newsletters.

Comment #52: The Borough of Gibbsboro asked to establish an air quality monitoring program during bioremediation.

EPA Response: There is no bioremediation in the preferred alternative however, as with all prior remedies being implemented at the Sherwin-Williams Sites, an air monitoring program will be developed and implemented during remediation.

Comment #53: The Borough of Gibbsboro asked that EPA provide a 30-day advance notice of remediation for nearby residents, local police, and governing bodies, with final confirmation within 7 days.

EPA Response: EPA will continue to provide advance notice of design and remediation field activities to nearby residents, local police, and governing bodies.

Comment #54: The Borough of Gibbsboro asked that EPA contract necessary security through the Borough of Gibbsboro.

EPA Response: As with past remediation activities in the Borough of Gibbsboro, security needs will be appropriately addressed.

Comment #55: The Borough of Gibbsboro asked that EPA implement dust control measures that address how contaminated particles of dust will be collected and processed.

EPA Response: Dust control and mitigation will be planned as it has in previous remediation designs and remedial actions.

Comment #56: The Borough of Gibbsboro asked that expenses be covered by Sherwin-Williams if a resident needs to vacate a property.

EPA Response: Relocation of residents is not anticipated to implement the preferred soil and sediment remedies. However, if temporary relocation is required by EPA, such temporary relocation will be conducted consistent with the Uniform Relocation Assistance and Real Properties Acquisitions Act regulations.

Comment #57: The Borough of Gibbsboro proposed that location of stockpile areas should have public approval, as well as secure locations that are screened and hidden from public view.

EPA Response: Stockpile areas will be planned during remedial design to take into account public acceptance and security. Efforts will be made to screen and hide stockpile and operation areas to the extent practicable.

Comment #58: The Borough of Gibbsboro asked that transportation routes be disclosed.

EPA Response: Transportation routes will be planned and disclosed in the remedial design phase.

Comment #59: The Borough of Gibbsboro asked that transportation of contaminated soils should be transported in sealed drums.

EPA Response: It is impracticable to drum 42,000 cubic yards of soil for the purpose of transporting it to an approved disposal facility. Contaminated soil and sediment will be transported to approved off-Site disposal facilities in sealed roll-off containers, sealed dump trucks, or similar equipment.

Comment #60: The Borough of Gibbsboro asked that no material be stored at off-Site staging areas for more than 7 days.

EPA Response: All soil storage and stockpiling will comply with the requirements of the Resource Conservation and Recovery Act regulations. Every effort will be made to limit the amount of time that stockpiled sediment or soil is stored on-Site prior to shipment off-Site to approved disposal facilities.

Comment #61: The Borough of Gibbsboro asked that construction vehicles be properly decontaminated.

EPA Response: All vehicles involved in remediation of contaminated sediment or soil will be decontaminated prior to leaving remediation work areas.

Comment #62: The Borough of Gibbsboro asked that all local ordinances be followed.

EPA Response: Applicable local ordinances will be followed during design and remediation.

Comment #63: Several commenters oppose Soil Alternative #2 (targeted removal of soil) and support Soil Alternative #3 (full removal of soil). These commenters expressed a desire to have all contaminated soil removed.

EPA Response: Please see response to Comment #34. EPA uses an analysis of nine criteria established by EPA regulation, to evaluate alternatives that are presented in the proposed plan. EPA takes all nine criteria into consideration to determine whether a remedial alternative is protective of human health and the environment and examines whether the alternatives will meet remedial action objectives. In the remedy selection process, EPA considers each of the nine criteria and selects an alternative that is found to provide the best balance of tradeoffs among the

criteria with respect to other alternatives evaluated. Based on this evaluation, EPA concluded that Soil Alternative #2 is protective of human health and the environment and provides the best balance of tradeoffs among the criteria utilized for remedy selection.

Comment #64: One commenter asked that dredging efforts protect the fish in the lakes as well as the freshwater clams, mussels, crayfish, and other benthic populations. The commenter asserted that repopulation of the lakes will be needed upon completion of the remedial work.

EPA Response: The specifics of the dredging operations will be determined during remedial design. The impact that dredging operations will have on each lake will vary depending on the nature of the lake and scope of remediation required at each lake. The design of each lake remediation will include plans to address plant and wildlife populations within the areas to be dredged.

Comment #65: One commenter stated that the dredging operation should have contingencies for dealing with sunken debris such as trees, car parts, old boats and possibly drums of unknown materials.

EPA Response: Plans to identify and address such obstacles will be developed during the remedial design.

Comment #66: One commenter stated that the Waterbodies Site Location Map of OU4 in the Proposed Plan used an outdated base map that did not include over 200 homes that have been built near the Site in Gibbsboro and Voorhees. The commenter pointed out that the map is missing all the homes of Stevens Drive, Glenview Way East and the Carriagebrooke Farms Development. The commenter stated that this map should not have been used in the Proposed Plan.

EPA Response: EPA considered the current surrounding land uses during the remedial alternative development, evaluation, and selection process. EPA used the Waterbodies Site Location Map of OU4 to illustrate the boundaries and location of Operable Unit 4 (Waterbodies)of the Sherwin-Williams/Hilliards Creek Site. As in previous phases of remedial investigation, more updated maps depicting surrounding property locations will be used during the remedial design and are accurate with respect to the remedy.

Comment #67: One commenter stated that when the floodplain/wetlands excavations are completed, the revegetation should have a multi-year guarantee. The commenter stated that one-year replacement of plants may not be enough to ensure wetland restoration. The commenter also stated that active management will be needed to ensure phragmites do not reestablish.

EPA Response: EPA will work within NJDEP guidelines for wetland restoration. These include a five-year monitoring plan to ensure the success of native wetland plantings and control of invasive plant species. This plan will be part of an Operations and Maintenance Plan that will address all long-term monitoring and maintenance activities to ensure the remedy remains protective and the wetland restoration is successful.

Comment #68: One commenter asked that the public be given opportunities to hear the design plans before they become final. The commenter remarked that, at the public meeting, property owners will be given briefings of the project/design and asked that the general public be given similar access to hear about the design of this work.

EPA Response: Please see response to Comment #40.

Comment #69: One commenter opposed Soil Alternative 2 (targeted soil removal) due to environmental concerns associated with a soil a cap such as 1) spread of contamination from burrowing animals, 2) tree blow downs, 3) flooding, and 4) erosion. The commenter stated it does not cost much more to excavate all contamination.

EPA Response: Please see response to Comments #25 and #34. Removing soils to a depth of two feet will be protective of human health and the environment. For OU4, EPA has made a Site-specific determination that the removal of soil contamination to a depth of two feet, combined with the use of cap and deed notices, will be effective in containing the residual contamination that remains below two feet and controlling/ eliminating exposure pathways.

Attachment A: Proposed Plan

Superfund Proposed Plan

U.S. Environmental Protection Agency, Region II

Sherwin-Williams/Hilliards Creek
Operable Unit 4
Gibbsboro, New Jersey

March 2021

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the Preferred Alternatives to address contaminated soil and sediment at the Sherwin-Williams/Hilliards Creek Superfund site, Operable Unit 4 (OU 4), known as the "Waterbodies OU." The Waterbodies OU is located in Gibbsboro and Voorhees, New Jersey (Figure 1). The contamination is associated with the former Sherwin-Williams paint and varnish manufacturing plant located in Gibbsboro, New Jersey.

The Preferred Alternatives call for the excavation of sediment; and excavation and capping, as necessary, of soil. Excavated material will be disposed of offsite. Surface water will be monitored. Institutional controls will be implemented as needed.

A comprehensive Remedial Investigation (RI) took place under a 1999 Administrative Order on Consent (AOC) with the Sherwin-Williams Company (Sherwin-Williams). The RI activities were conducted by Sherwin-Williams and were overseen by the U.S. Environmental Protection Agency (EPA). The RI included sampling of soil, sediment, surface water and groundwater throughout the Waterbodies OU. The results of this investigation identified areas within the Waterbodies OU where remedial action is required.

This Proposed Plan contains descriptions and evaluations of the cleanup alternatives considered for the Waterbodies OU. This Proposed Plan was developed by EPA, the lead agency, in consultation with the New Jersey Department of Environmental Protection (NJDEP), the support agency. EPA, in consultation with NJDEP, will select a final remedy for contaminated soil and sediment after reviewing and considering all information submitted during the 30-day public comment period.

EPA, in consultation with NJDEP, may modify the Preferred Alternatives or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public

616751

MARK YOUR CALENDARS

PUBLIC COMMENT PERIOD
April 1, 2021 – May 3, 2021
EPA will accept written comments on the Proposed Plan during the public comment period.

PUBLIC MEETING
April 12, 2021 at 7PM – 9PM
EPA will hold a virtual public meeting to explain the Proposed Plan and alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. To register for the pubic meeting, please follow this link: https://epa-sherwin-williams-ou4.eventbrite.com

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

EPA Records Center, Region 2
290 Broadway, 18th Floor
New York, New York 10007-1866
(212) 637-4308
Hours: Monday-Friday – 9 A.M. to 5 P.M. by appointment

Gibbsboro Borough Hall/Library
49 Kirkwood Road
Gibbsboro, New Jersey 08026
For Library Hours:
http://www.gibbsborotownhall.com/index.php/library

M. Allan Vogelson Regional Branch Library – Voorhees
203 Laurel Road
Voorhees, New Jersey 08043
For Library Hours:
http://www.camdencountylibrary.org/voorhees-branch

Send comments on the Proposed Plan to:

Julie Nace, Remedial Project Manger
U.S. EPA, Region 2
290 Broadway, 19th Floor
New York, NY 10007-1866
Telephone: 212-637-4126
Email: nace.julie@epa.gov

EPA's website for the Sherwin-Williams Site is:
https://www.epa.gov/superfund/sherwin-williams

is encouraged to review and comment on the alternatives presented in this Proposed Plan.

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, or Superfund) 42 U.S.C. 9617(a), and Section 300.435(c)(2)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in the Waterbodies Site RI and Feasibility Study (FS) Reports as well as other related documents contained in the Administrative Record file. The location of the Administrative Record is provided on the previous page. EPA and NJDEP encourage the public to review these documents to gain a more comprehensive understanding of the site-related Superfund activities performed by Sherwin-Williams, under EPA and NJDEP oversight.

SITE DESCRIPTION

Three sites collectively make up what is commonly referred to as the "Sherwin-Williams Sites," which are located in areas of Gibbsboro and Voorhees, New Jersey. These sites are the *Sherwin-Williams/Hilliard's Creek Superfund Site* located in both Gibbsboro and Voorhees, the *Route 561 Dump Site* (Dump Site) in Gibbsboro and the *United States Avenue Burn Superfund Site* (Burn Site) in Gibbsboro. The Sites represent source areas from which contamination has migrated, predominantly through natural processes, to downgradient areas within Gibbsboro and Voorhees.

Sherwin-Williams/Hilliards Creek Superfund Site: The Sherwin-Williams/Hilliards Creek Superfund Site has been divided into several OUs to more efficiently remediate the contamination. OU1 includes a number of residential properties and is being addressed separately. OU2 includes the Former Manufacturing Plant (FMP) and the upper portion of Hilliards Creek. OU3 includes the groundwater at the Site. OU4 (Waterbodies) includes the lower portion of Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake.

Hilliards Creek flows in a southerly direction from Silver Lake, through the FMP area, and continues downstream through residential and undeveloped areas. At approximately one mile from its origin, Hilliards Creek empties into Kirkwood Lake. Kirkwood Lake is approximately 25 acres, located in Voorhees, New Jersey with residential properties lining its northern shore. For more efficient remediation, Silver Lake (14 acres) and Bridgewood Lake (9 acres) were also added to OU4 (Waterbodies) so the lakes could be remediated in conjunction with each other, see Figure 3.

Route 561 Dump Site: The Dump Site is located approximately 700 feet to the east of the FMP area. It includes retail businesses, a portion of a residential area, wooded vacant lots and a small creek. A fenced portion of the Dump Site is located at the base of an earthen dam that forms Clement Lake. White Sand Branch is a small creek which originates at the dam and flows in a southwest direction for approximately 1,650 feet where it enters the fenced portion of the Burn Site.

United States Avenue Burn Superfund Site: The fenced portion of the Burn Site and its associated contamination is approximately thirteen acres in size and encloses the remaining 400 feet of White Sand Branch. A 500-foot portion of a small creek, Honey Run Brook, enters the Burn Site where it joins White Sand Branch before it passes beneath United States Avenue and enters Bridgewood Lake in Gibbsboro. The six-acre Bridgewood Lake empties through a culvert beneath West Clementon Road and forms a 400-foot long tributary that joins Hilliards Creek at a point approximately 1,000 feet downstream from the FMP area.

SITE HISTORY

The former paint and varnish manufacturing plant property in Gibbsboro, New Jersey, was developed in the early 1800s as a sawmill, and later as a grain mill. In 1851, John Lucas & Co., Inc. (Lucas), purchased the property and converted the grain mill into a paint and varnish manufacturing facility that produced oil-based paints, varnishes and lacquers. Sherwin-Williams purchased Lucas in the early 1930s and expanded operations at the facility. Historic features at the FMP included wastewater lagoons, above-ground storage tanks, a railroad line and spur, drum storage areas, and numerous production and warehouse buildings. The facility was closed in 1977 and was sold to a developer in 1981.

In 1978, after plant operations ceased, NJDEP issued an administrative order directing Sherwin-Williams to

excavate and properly dispose of the waste material remaining in the lagoons. During the 1980s, NJDEP issued an administrative order to Sherwin-Williams ordering it to take actions to contain and characterize contaminated groundwater and a petroleum-like seep in the FMP area. In 1990, NJDEP entered into an administrative consent order (ACO) with Sherwin-Willams to investigate the extent of groundwater contamination and the petroleum-like seep. During the 1990s, NJDEP discovered two additional source areas, the Dump Site and the Burn Site. Contamination in both areas are attributable to historic dumping activities associated with the FMP.

In the mid-1990s, enforcement responsibilities for the Dump Site and the Burn Site were transferred from NJDEP to EPA. EPA issued several administrative orders to Sherwin-Williams in 1995 and 1997, directing Sherwin-Williams to further characterize and delineate the extent of contamination associated with these areas and to fence them off to minimize the potential for human exposure. EPA proposed the Dump Site to the National Priorities List (NPL) in 1998. The Burn Site was added to the NPL in 1999.

In 1998, EPA sampled the upper portions of Hilliards Creek and several residential properties. Contaminants (mainly lead and arsenic) were detected in these soil and sediment samples. EPA then entered into two additional AOCs with Sherwin-Williams in 1999. Under the first AOC Sherwin-Williams conducted additional sampling of Hilliards Creek and Kirkwood Lake to further characterize the extent of contamination. This sampling, which concluded in 2003, included residential properties along Hilliards Creek and Kirkwood Lake. The second AOC, signed in September 1999, required Sherwin-Williams to conduct a Remedial Investigation/Feasibility Study (RI/FS) for the Dump Site, the Burn Site and Sherwin-Williams/Hilliards Creek Site that included the area known today as the Waterbodies OU. The Sherwin-Williams/Hilliards Creek Site, which includes the FMP OU and the Waterbodies OU, was added to the NPL in 2008.

SITE CHARACTERISTICS OF THE SHERWIN WILLIAMS/HILLIARDS CREEK SITE – OPERABLE UNIT 4

Operable Unit 4 (Waterbodies OU) is part of the Sherwin-Williams/Hilliards Creek site. It includes Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek (Figure 3). All of the lakes have been created by the construction of dams along Hilliards Creek. The Waterbodies OU has been divided into four study areas:

1. **Silver Lake**: Silver Lake is approximately fourteen (14) acres, is located at the northern boundary of the FMP and is the most upgradient waterbody at the Sites. It is surrounded by mixed use properties including commercial and light industry, parking lots and undeveloped areas. Its depth can reach up to nine feet. Silver Lake outflows through an underground conveyance system from the FMP area via a culvert under Foster Avenue before discharging into Hilliards Creek.
2. **Bridgewood Lake**: Bridgewood Lake is approximately nine acres, is divided into two lobes, and reaches depths of up to five feet. The shoreline is undeveloped except for a private sportsman's club on the southwestern corner. It receives the combined flow of White Sand Branch and Honey Run and discharges into Hilliards Creek.
3. **Hilliards Creek**: The reach of Hilliards Creek that is included in the Waterbodies OU, begins south of the FMP and continues to Kirkwood Lake. A small portion of Hilliards Creek adjacent to the FMP is being addressed separately under OU2. It is a shallow stream with depths ranging from less than one foot to three feet. Its width ranges from five feet to twenty feet. The wider areas are characterized by a series of braided, interconnected small streams. There are approximately 40 acres of NJDEP mapped wetlands within the Site boundary along the entire length of Hilliards Creek. The wetlands include high-quality, high-value forested habitat, medium-quality, medium-value emergent habitat and low-quality, low-value phragmites habitat, see Figure 2. The wetlands provide substantial benefits to the community and the environment.
4. **Kirkwood Lake**: Kirkwood Lake is approximately 25 acres. It is two-thirds of a mile long and up to 400 feet wide. It reaches depths of up to four feet. The north side of the lake is developed with residential properties along its shore. The south shore is undeveloped except for a rail yard. The

lake discharges through the spillway of Kirkwood Lake dam into the Cooper River.

Summary of OU4 Waterbodies Investigations

Pre-Remedial Investigation Activities

The 2018 RI Report contains a comprehensive description of all pre-RI investigation activities. Investigations of Bridgewood Lake, Hilliards Creek and Kirkwood Lake were conducted by Sherwin-Williams under the direction of NJDEP and the EPA.

Bridgewood Lake:
The earliest investigation of Bridgewood Lake occurred in 1995 and 1996 during a removal action investigation of the Burn Site. Sediment sampling indicated elevated levels of lead.

Hilliards Creek:
In 1998, NJDEP collected sediment samples from an area known as the Wildlife Refuge and braided stream area. EPA also conducted sediment sampling within this area in 1998. In addition, EPA also conducted an investigation of Hilliards Creek from Silver Lake to Hilliards Road in 1998. In 1999, EPA conducted a soil investigation along the banks and in the floodplain of Hilliards Creek.

Starting in 1999 and continuing through 2001, there was a four-phase investigation of Hilliards Creek conducted by Sherwin-Williams with EPA oversight. This investigation included soil and sediment transects across Hilliards Creek, soil samples from the southern bank, soil samples from a berm surrounding an artificial pond on a residential property, and soil samples from multiple residential properties along Kirkwood Lake.

Pursuant to the findings of this sampling, a removal action was taken at select locations for arsenic and lead. Installation of fencing occurred at the end of the walking path leading to the southern bank of Kirkwood Lake, across from Steven Drive, in the wetland area of Glenview Drive, on the south side of Hilliards Creek near North and West Roads, and the Wildlife Refuge and braided stream area.

Kirkwood Lake:
An investigation of the soil, sediment and surface water was conducted by Sherwin-Williams for Kirkwood Lake with oversight from the EPA in 2002 and 2003. Soil shoreline samples and sediment samples from within Kirkwood Lake were obtained and analyzed in this investigation.

In 2002, under the direction of NJDEP, Sherwin-Williams conducted a study of fish tissue in Kirkwood Lake. This study consisted of interviews with local anglers, fish collection and fish tissue analysis.

Summary of the Remedial Investigation

The full results of the RI can be found in the Waterbodies Remedial Investigation Report (January 2018) which is in the Administrative Record file.

RI sampling of soil, sediment and surface water by Sherwin-Williams, under EPA oversight, began in 2005 and continued to 2008. Additional sampling was conducted in 2017 and 2018 for the Human Health Risk Assessment and Baseline Ecological Risk Assessment.

The results of sample analyses were screened to determine if the levels of contamination posed a potential harm to human health and/or the environment. This was done by comparing the measured values of contaminants to standards that are protective of human health or ecological receptors.

The soil sample analytical results were compared to NJDEP's Residential Direct Contact Soil Remediation Standards (RDCSRS) referred to hereafter as residential cleanup goals, and the Non-residential Direct Contact Soil Remediation Standards (NRDCSRS), referred to hereafter as non-residential cleanup goals, depending on the zoning and land use. The sediment sample analytical results were compared to the lowest effect levels for ecological receptors and surface water results were compared to the New Jersey Surface Water Quality Standards (NJSWQS) for Fresh Water. In addition, a human health risk assessment and an ecological risk assessment were conducted to determine if levels of contaminants exceeded EPA's acceptable risk range. Explanations of the results of the human health and ecological risk assessments are provided in separate sections later in this document.
The results of the RI showed that lead and arsenic are the major contaminants of concern (COCs) in all media tested throughout the Waterbodies. Other contaminants, such as chromium and cyanide, were also found and they were generally co-located with lead and arsenic.

Soil:

Soil samples were taken from over 4,700 sample locations from the ground surface to depths of approximately ten feet in the floodplain soils around Hilliards Creek and the southern shore of Kirkwood Lake.

Lead and arsenic are the main contaminants of concern and were found most frequently and at the greatest concentrations above the NJDEP RDCSRS. Other contaminants that were found in the soil above the standard include hexavalent chromium and other metals, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs). Based on the sampling results and a comparison of these results to the RDCSRS, lead and arsenic were identified as the main contaminants of concern in the soil.

The most highly contaminated soil was found closest to the banks of the stream and the levels decline within a relatively short distance from the stream bank. The stream has higher flow rates and water levels are higher during the spring season due to higher rainfall. During storm events, there is more transport of sediments downstream but overall, this is a low energy system. The highest concentrations of lead and arsenic can be found along Hilliards Creek in an area called the Wildlife Refuge (Figure 3).

Most of the contamination in soil is located in the upper six inches but can be found at depths to five feet. The concentration of lead in soils range from less than the NJDEP residential standard of 400 milligrams/kilogram (mg/kg) to levels exceeding 100,000 mg/kg in the Wildlife Refuge area. The concentration of arsenic in soil ranges from less than the NJDEP residential standard of 19 mg/kg to levels exceeding 3,000 mg/kg in the Wildlife Refuge area. These high levels are due to the release of contaminants associated with the FMP.

Sediment:

*S*ediment samples were taken from more than 2,200 locations in Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek.

Lead and arsenic were the most common contaminants found at the highest concentrations above the NJDEP lowest effect levels for ecological receptors, which are 31 mg/kg for lead and 6 mg/kg for arsenic. Contaminants in sediment that exceed the lowest effect level criteria generally require further evaluation. Other constituents found above this criterion were cadmium, chromium, copper, cyanide, mercury and zinc, PAHs, pesticides and PCBs. These other constituents were found less frequently and are co-located with lead and arsenic.

Lead and arsenic exceedances were found in sediment throughout Bridgewood Lake, Kirkwood Lake, Hilliards Creek and a portion of Silver Lake. The concentration of lead varies from below the lowest effect level for ecological receptors to 39,200 mg/kg. The arsenic levels varied from below the lowest effects level for ecological receptors to over 1,900 mg/kg. For both metals, the highest values were found within Hilliards Creek near the Wildlife Refuge area.

WHAT ARE THE "CONTAMINANTS OF CONCERN" (COCs)?

EPA has identified two metals as the primary contaminants of concern within the Waterbodies OU that pose the greatest potential risk to human health and the environment. The primary contaminants of concern within the Waterbodies OU are lead and arsenic.

Lead: Lead was historically used as a pigment in paint. As a pigment, lead II chromate "chrome yellow" and lead II carbonate "white lead" being the most common. Lead is hazardous. At high levels of exposure lead can cause nervous system damage, stunted growth, kidney damage, and delayed development. Lead is considered a possible carcinogen.

Arsenic: Arsenic compounds began to be used in agriculture as ingredients in insecticides, rodenticides, herbicides, wood preservers and pigments in paints. Long-term exposure to high levels of inorganic arsenic (e.g. through drinking-water and food) are usually observed in the skin, and include pigmentation changes and skin lesions. Often, prolong exposure can lead to skin cancer. In addition to skin cancer, long-term exposure may lead to cancers of the bladder and lungs.

Surface Water:

Over 700 surface water samples were collected from Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek. Analyses of the surface water showed exceedances of the NJSWQS for Fresh Water for aluminum, iron, zinc, cyanide, arsenic, lead, and cadmium. As with the other media, lead and arsenic are the main contaminant of concern.

The concentrations of metals in surface water were compared to the NJSWQS for Fresh Water of 5.4 micrograms/Liter (µg/L) for lead and 150 µg/L for arsenic. The total lead and total arsenic values varied from below the NJSWQS for Fresh Water to over 3,990 µg/L for total lead and over 329 µg/L for total arsenic. The highest concentrations in surface water were found in Hilliards Creek near the Wildlife Refuge Area.

SCOPE AND ROLE OF OPERABLE UNIT

The Sherwin-Williams/Hilliards Creek Superfund Site has been divided into several OUs to more efficiently remediate the contamination. OU1 includes all the residential properties and is being addressed separately. OU2 includes the FMP and a portion of Hilliards Creek. OU3 includes the groundwater at the Site. OU4 includes the rest of Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake. This Proposed Plan addresses Operable Unit 4 of Sherwin-Williams/Hilliards Creek Superfund Site which consists of the soil, sediment, and surface water of Silver Lake, Bridgewood Lake, Kirkwood Lake, and Hilliards Creek. The table below lists the Record of Decision for the Sherwin-Williams Sites.

Sherwin-Williams/Hilliards Creek Site

Operable Unit	Record of Decision
1 - Residential	2015
2 - Former Manufacturing Plant	2020
3 - Groundwater	Anticipated 2022
4 - Waterbodies	Anticipated 2021

United States Avenue Burn Site

Operable Unit	Record of Decision
1 Residential	2015
2 - Soil and Sediment	2017
3 - Groundwater	TBD

Route 561 Dump Site

Operable Unit	Record of Decision
1 - Residential	2015
2 - Soil and Sediment	2016
3 - Groundwater	TBD

PRINCIPAL THREAT WASTE

Principal Threat Waste is defined in the box above. Although lead and arsenic in soil and sediment act as sources to surface water, these sources are not highly mobile and are not considered principal threat wastes at this OU. Principal threat waste within the FMP (OU2) is being addressed separately.

WHAT IS A "PRINCIPAL THREAT"?

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)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to ground water, surface water or air, or acts as a source for direct exposure. Contaminated ground water generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (NAPLs) in ground water 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. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria. This analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element.

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 potential concern (COPCs) 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 and ingestion of and dermal contact with contaminated groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the frequency and duration of that exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other noncancer health hazards, 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 noncancer health hazards.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks for all COPCs. Exposures are evaluated based on the potential risk of developing cancer and the potential for noncancer 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 identified in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-6}, corresponding to a one in ten thousand to a one in a million excess cancer risk. For noncancer health effects, a "hazard index" (HI) is calculated. The key concept for a noncancer HI is that a "threshold" (measured as an HI of less than or equal to 1) exists below which noncancer health hazards are not expected to occur. The goal of protection is 10^{-6} for cancer risk and an HI of 1 for a noncancer health hazard. Chemicals that exceed a 10^{-4} cancer risk or an HI of 1 are typically those that will require remedial action at the site.

SUMMARY OF SITE RISKS

As part of the RI/FS, a baseline risk assessment consisting of a Human Health Risk Assessment (HHRA) and Baseline Ecological Risk Assessment (BERA) were conducted to estimate current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects caused by hazardous substance exposure in the absence of any actions to control or mitigate these exposures under current and future site uses.

In the HHRA, cancer risk and noncancer health hazard estimates are based on current and future reasonable maximum exposure (RME) scenarios. These estimates were developed by taking into account various health protective estimates about the concentrations, frequency and duration of an individual's exposure to chemicals selected as contaminants of potential concern (COPCs), as well as the toxicity of these contaminants.

For the ecological risk assessment, representative ecological receptors were identified, and measurement and assessment endpoints were developed during the BERA to identify those receptors and areas where unacceptable risks are present. The final, EPA-approved, HHRA (2018) and BERA (2019) can be found in the EPA Administrative Record file. The following information is a summary of the findings of human health and ecological risks.

Human Health Risk Assessment Summary

EPA follows a four-step human health risk assessment process for assessing site-related cancer risks and noncancer health hazards. The four-step process is comprised of: Hazard Identification, Exposure Assessment, Toxicity Assessment, and Risk Characterization (see adjoining box "What is Risk and How is it Calculated" for more details on the risk assessment process).

The HHRA began with selecting COPCs in the various media (*i.e*., soil, surface water, sediment, and fish tissue) that could potentially cause adverse effects in exposed populations. COPCs are selected by comparing the maximum detected concentrations of each chemical identified with state and federal risk-based screening

values. The screening of each COPC was then conducted separately for each exposure area.

For purposes of the HHRA, the Waterbodies (OU4) was divided into four separate exposure areas. Exposure areas are geographical designations created for the risk assessment in order to define areas of a site with similar anticipated use (based on zoning and other considerations) or similar levels of contamination. The exposure areas evaluated in the HHRA include Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek.

Potential Exposure Pathways

Silver Lake is surrounded by a walking trail. The soil associated with the walking trail was assessed separately as part of OU2 (FMP). This lake is not currently used for recreation as swimming and boating are prohibited by the lake owner. Bridgewood Lake is privately owned by a sportsmen club and is used for catch-and-release fishing and boating. This lake is primarily surrounded by undeveloped, wooded land used for passive recreation. Kirkwood Lake is used for recreational activities such as fishing and boating and may be used for swimming. This lake is bordered by residential properties to the north, which were evaluated as part of OU1, and undeveloped land potentially used for passive recreation to the south.

The Hilliards Creek corridor includes the creek itself and adjacent floodplain soils. Hilliards Creek ranges from 0.5-3 feet deep and may be used for recreational wading. The upland areas surrounding Hilliards Creek include walking trails as well. Because this exposure area includes the creek and associated wetlands, development in this type of habitat is highly regulated in New Jersey. Therefore, future development in this area is unlikely. As such, the following current and future receptor populations and routes of exposure were considered at the Site for OU4:

- Recreator (adult, adolescent [6-16 years], and child [0-6 years]): incidental ingestion, dermal contact, and inhalation of particulates and volatiles released from surface (0-2 feet) soils surrounding Bridgewood Lake, the southern portion of Kirkwood Lake and Hilliards Creek. Exposures to sediment and surface water via incidental ingestion and dermal contact within Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek were also evaluated for these receptors.

- Angler (adult, adolescent [6-16 years] and child [0-6 years]): ingestion of fish caught from Kirkwood Lake.

Pathways specific to future scenarios only included:

- Swimmer (adult, adolescent [6-16 years] and child [0-6 years]): incidental ingestion and dermal contact with sediment and surface water while swimming in Silver Lake, Bridgewood Lake and Kirkwood Lake.

Contaminant Exposure Evaluation Process (other than lead)

For contaminants other than lead, exposure point concentrations (EPCs) were estimated using either the maximum detected concentration of a contaminant or the 95% upper-confidence limit (UCL) of the average concentration. Chronic daily intakes were calculated based on 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.

In the absence of speciated chromium data, two EPCs were used to evaluate risk for current/future recreators, swimmers and anglers exposed to chromium in soil, sediment, and/or fish tissue. The first conservatively assumed that all of the total chromium identified exists in the more toxic, hexavalent (Cr[VI]) form to represent the "worst-case" scenario. The second adjusted the total chromium EPC to 5% for each of these media to reflect the hexavalent to total chromium ratio in soil developed during the OU2 (FMP) RI. This ratio was considered appropriate for the waterbodies since contaminants from OU2 were likely distributed downstream via surface water and sediment within Hilliards Creek. Periodic stream flooding likely deposited those contaminants onto floodplain soils as well. Chromium detected in surface water was conservatively assumed to be 100% Cr[VI].

Lead Exposure Evaluation Process

It is not possible to evaluate risks from lead exposure

using the same methodology as the other COPCs because there are no published quantitative toxicity values for lead. However, since the toxicokinetics (the absorption, distribution, metabolism, and excretion of toxins in the body) of lead are well understood, lead risks are assessed based on blood lead level (PbB), which can be correlated with both exposure and adverse health effects. Consequently, lead risks were evaluated using blood lead models, which predict PbB based on the total lead intake from various environmental media. Lead risks for adolescent and adult receptors were assessed using the EPA Adult Lead Model (ALM). The target receptor for this model includes an adult female (of childbearing age) in order to protect a developing fetus. Lead risks for children were evaluated using the Integrated Exposure and Uptake Biokinetic (IEUBK) model. Both models estimate a central tendency (geometric mean) PbB on the basis of average or typical exposure parameter values. Therefore, the exposure point concentrations (EPCs) for lead were the arithmetic mean of all the samples within the exposure area from the appropriate depth interval.

Human Health Risk Assessment Findings by Media

In the risk assessment, two types of toxic health effects were evaluated for COPCs other than lead: cancer risk and noncancer hazard. Calculated cancer risk estimates for each receptor were compared to EPA's target risk range of $1x10^{-6}$ (one-in-one million) to $1x10^{-4}$ (one-in-ten thousand). The calculated noncancer hazard index (HI) estimates were compared to EPA's target threshold value of 1. This section provides an overview of the human health risks resulting from exposures to contaminants exceeding the target cancer risk and noncancer hazard thresholds. Risks associated with lead are discussed separately.

Surface Soil Findings

Risks and hazards were evaluated for current and potential future exposure to surface soil within the Bridgewood Lake, Kirkwood Lake and Hilliards Creek exposure areas. Table 1-1 below summarizes the risk and hazards to receptor populations in each exposure area, assessed in the HHRA, that were found to exceed EPA's cancer risk range and/or noncancer threshold criteria. As shown, the child recreator in Hilliards Creek was the only receptor associated with unacceptable risk resulting from direct contact with soils. Arsenic comprised the majority of risk and hazard in this exposure area. Risk and hazard increased slightly when all of the chromium present was assumed to be in the hexavalent form. No contaminants were associated with risks or hazards above EPA thresholds from soils surrounding Bridgewood Lake or Kirkwood Lake.

Table 1-1: Summary of hazard and/or risk exceedances for surface soil by exposure area

Receptor	Hazard Index	Cancer Risk
Hilliards Creek		
Current/Future Child Recreator (5% Cr[VI])	**6**	**2×10^{-4}**
Current/Future Child Recreator (100% Cr[VI])	**7**	**1×10^{-3}**

*Bold indicates value above the acceptable risk range or value.

Surface Water and Sediment Findings

Exposures to surface water and sediments within Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek for future child, adolescent, and adult recreators who may wade into these waterbodies were evaluated. Exposure to these media for child, adolescent and adult swimmers in Silver Lake, Bridgewood Lake and Kirkwood Lake were also assessed. Table 1-2 summarizes the risk and hazards to receptor populations in each exposure area, assessed in the HHRA, that were found to exceed EPA's cancer risk range and/or noncancer threshold criteria. No contaminants were associated with risks or hazards above EPA thresholds to recreational receptors resulting from surface water or sediment exposure within the exposure areas evaluated., Arsenic contributed to slightly elevated hazard for swimmers exposed to sediment within Bridgewood Lake. Assuming 100% Cr[VI], there was an increased cancer risk that is marginally above the target risk range for both Bridgewood and Kirkwood Lake sediment as well. In addition, elevated cancer risk was identified for the child swimmer in Silver Lake, although the majority of risk was the result of PAHs in surface water. These chemicals, however, were found at the highest concentrations in stormwater influent

locations and are, therefore, not considered to be site-related. Thallium was the primary chemical accounting for elevated hazard in Kirkwood Lake surface water. This metal, however, was infrequently detected throughout all site media. Concentrations detected within soil and sediment were also similar to or below background levels. Therefore, the presence of thallium is likely attributable to natural background conditions.

Table 1-2: Summary of hazard and/or risk exceedances for surface water and sediment by exposure area

Receptor	Hazard Index	Cancer Risk
Surface Water		
Silver Lake		
Future Child Swimmer (100% Cr[VI])	1	**2×10^{-4}**
Kirkwood Lake		
Future Child Swimmer (100% Cr[VI])	**4**	4×10^{-5}
Sediment		
Bridgewood Lake		
Future Child Swimmer (5% Cr[VI])	**2**	9×10^{-5}
Future Child Swimmer (100% Cr[VI])	**3**	**3×10^{-4}**
Kirkwood Lake		
Future Child Swimmer (100% Cr[VI])	1	**2×10^{-4}**

*Bold indicates value above the acceptable risk range or value.

Fish Tissue Findings

The risks and hazards associated with consuming fish caught by adult and child anglers were evaluated for Kirkwood Lake. During the RI, fish tissue samples were collected from a variety of species within the lake. These fish samples were comprised of two target feeding guilds. The benthic omnivore feeding guild included brown bullhead (*Ameiurus nebulosus*), common carp (*Cyprinus carpio*), and channel catfish (*Ictalurus punctatus*) as the target species. The sport fish feeding guild included largemouth bass (*Micropterus salmoides*), black crappie (*Pomoxis nigromaculatus*), and sunfish (*Lepomis sp.*) as the target species. Data from these fish species were combined into one dataset for the HHRA. This reflects the assumption that an angler would catch and consume a mix of species over time. As indicated in Table 1-3, a hazard slightly above the EPA threshold was identified for the child angler only when assuming 5% of the total chromium present exists in the hexavalent form. The noncancer hazard identified was attributed to PCB Aroclors 1254 and 1260. It is important to note, however, that the EPCs used to calculate risk vary by species. The highest PCB EPCs were found in the benthic omnivore species, specifically the common carp. Thus, risks may be higher for an angler who preferentially consumes these types of fish. Conversely, the EPCs for sport fish were lower than those in the combined dataset for the two Aroclors; thus, the risks may be lower than those estimated in this HHRA for an angler who preferentially consumes sport fish. Assuming 100% Cr[VI] in fish increased risk and hazard to levels slightly above EPA thresholds for each receptor evaluated. However, these risks are considered to be overestimated as explained under the conclusions section below.

Table 1-3: Summary of hazard and/or risk exceedances for fish tissue consumption in Kirkwood Lake

Receptor	Hazard Index	Cancer Risk
Kirkwood Lake (5% Cr[VI])		
Current/Future Child Angler	**2**	3×10^{-5}
Kirkwood Lake (100% Cr[VI])		
Current/Future Adult Angler	**2**	**3×10^{-4}**
Current/Future Adolescent Angler	**2**	**4×10^{-4}**
Current/Future Child Angler	**3**	**8×10^{-4}**

*Bold indicates value above the acceptable risk range or value.

Lead Results

Since there are no published quantitative toxicity values for lead, it is not possible to evaluate cancer and non-cancer risk estimates from lead using the same methodology as the other COCs. Consistent with EPA guidance, exposure to lead was evaluated separately from the other contaminants using blood lead modeling. The risk reduction goal for lead in soils at the Site is to limit the probability of a child or developing fetus' PbB from exceeding 5 micrograms per deciliter (µg/dL) to 5% or less.

Lead was identified at levels contributing to PbB above the risk reduction goal within each exposure area evaluated. The media and receptors associated with elevated lead risks are summarized in Table 2.

Table 2: Summary of lead risks by exposure area

Receptor	Media	Probability of PbB > 5 µg/dL
Silver Lake		
Future Child Swimmer	Sediment	**8%**
Bridgewood Lake		
Current/Future Child Recreator	Surface Soil/Sediment	**73%**
Future Adult Swimmer	Sediment	**25%**
Future Child Swimmer	Sediment/Surface Water	**98%**
Kirkwood Lake		
Current/Future Child Recreator	Surface Soil/Sediment	**61%**
Future Adult Swimmer	Sediment	**11%**
Future Child Swimmer	Sediment/Surface Water	**93%**
Hilliards Creek		
Current/Future Adult Recreator	Surface Soil/Sediment	**38%**
Current/Future Child Recreator	Surface Soil/Sediment	**99%**

Conclusions

Exposure to lead was found to exceed EPA's threshold criteria from surface soil and surface water from Bridgewood Lake and Kirkwood Lake, surface soil from Hilliards Creek, and sediment from each exposure area evaluated. Exposure to arsenic in Hilliards Creek surface soil and Bridgewood Lake sediment was also associated with elevated noncancer hazard. Based on these results, arsenic and lead were identified as the primary COCs impacting human health at OU4, although the ingestion of PCBs in fish caught from Kirkwood Lake slightly exceeded the noncancer threshold as well.

Chromium exposure further led to risks exceeding EPA thresholds in Hilliards Creek floodplain soils and sediment, Bridgewood and Kirkwood Lake sediment and Kirkwood Lake fish when assuming all the chromium present exists in the hexavalent state. This assumption, however, likely overestimates risk. Since contamination from OU2 was likely distributed downstream via surface water and sediment within Hilliards Creek, the Cr[VI] content in downgradient soil, sediment and fish tissue is not likely to be higher than that in OU2 soils. The conditions along Hilliards Creek (*e.g.*, high total organic carbon from decaying vegetation) favor a more reducing environment resulting in higher concentrations of the less toxic, trivalent chromium as well. Therefore, Cr[VI] in soil, sediment, surface water, and fish tissue, if present at all, is likely to be far less than 100% of the total chromium concentration. In addition, the PAHs and thallium associated with elevated risk or hazard in surface water from Silver Lake and Kirkwood Lake, respectively, were attributed to anthropogenic or natural background sources.

Ecological Risk Assessment

Sediment, surface water, pore water, soil, and biota tissue samples (i.e., benthic invertebrates, fish, and soil invertebrates) were collected as part of the BERA. Sediment toxicity testing was also conducted at the Site. The areas evaluated include Hilliards Creek, Kirkwood Lake, Bridgewood Lake, and Silver Lake. Hilliards Creek was further divided into upper (UHC) which will be addressed as part of OU2, with middle (MHC), and lower (LHC) portions being addressed as part of OU4. The following receptor groups were evaluated in the BERA: benthic invertebrates, fish, aquatic and terrestrial plants, soil invertebrates and wildlife (birds, mammals, amphibians, and reptiles). Surrogate wildlife species that were selected to represent a variety of wildlife in the BERA included Mallard, Muskrat, Spotted Sandpiper, Lesser Scaup, Great Blue Heron, Bald Eagle, Mink, American Robin, Short-tailed Shrew, Northern Bobwhite, Meadow Vole, Raccoon, Red-tailed Hawk, and Red Fox.

The BERA concluded, based on a weight-of-evidence (WOE) analysis of multiple lines of evidence (LOEs), that the potential for unacceptable ecological risks from sediment in Hilliards Creek, Kirkwood Lake, and Bridgewood Lake were primarily associated with the COCs arsenic, chromium, cyanide, and lead. The highest ecological risks were predicted for Hilliards Creek and were primarily associated with elevated concentrations of arsenic, chromium, cyanide, and lead in the upstream portions of MHC. Small aquatic and terrestrial invertivorous wildlife (i.e., represented by the Spotted Sandpiper, American Robin, and Short-tailed Shrew) were identified as the most sensitive receptors at Hilliards Creek. Concentrations of arsenic and lead in Kirkwood Lake and Bridgewood Lake surface sediments were found to be uniformly elevated, resulting in unacceptable risks to several receptors. Risks in Silver Lake were predicted to be the lowest, consistent with background, and driven by localized metal concentrations in the southernmost portion of the lake.

Finally, unacceptable risks were identified for terrestrial invertivores (American Robin and Short-tailed Shrew) south of Kirkwood Lake, primarily from exposure to lead in dietary items (earthworms). However, these risk estimates were deemed uncertain given the small sample size and the wide range of detected lead concentrations in earthworm tissues (reflecting a wide

WHAT IS *ECOLOGICAL* RISK AND HOW IS IT CALCULATED?

A Superfund baseline ecological risk assessment is an analysis of the potential adverse health effects to biota caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current and future land and resource uses. The process used for assessing site-related ecological risks includes:

Problem Formulation: In this step, the contaminants of potential ecological concern (COPECs) at the site are identified. Assessment endpoints are defined to determine what ecological entities are important to protect. Then, the specific attributes of the entities that are potentially at risk and important to protect are determined. This provides a basis for measurement in the risk assessment. Once assessment endpoints are chosen, a conceptual model is developed to provide a visual representation of hypothesized relationships between ecological entities (receptors) and the stressors to which they may be exposed.

Exposure Assessment: In this step, a quantitative evaluation is made of what plants and animals are exposed to and to what degree they are exposed. This estimation of exposure point concentrations includes various parameters to determine the levels of exposure to a chemical contaminant by a selected plant or animal (receptor), such as area use (how much of the site an animal typically uses during normal activities); food ingestion rate (how much food is consumed by an animal over a period of time); bioaccumulation rates (the process by which chemicals are taken up by a plant or animal either directly from exposure to contaminated soil, sediment or water, or by eating contaminated food); bioavailability (how easily a plant or animal can take up a contaminant from the environment); and life stage (e.g., juvenile, adult).

Ecological Effects Assessment: In this step, literature reviews, field studies or toxicity tests are conducted to describe the relationship between chemical contaminant concentrations and their effects on ecological receptors, on a media-, receptor- and chemical-specific basis. In order to provide upper and lower bound estimates of risk, toxicological benchmarks are identified to describe the level of contamination below which adverse effects are unlikely to occur and the level of contamination at which adverse effects are more likely to occur.

Risk Characterization: In this step, the results of the previous steps are used to estimate the risk posed to ecological receptors. Individual risk estimates for a given receptor for each chemical are calculated as a hazard quotient (HQ), which is the ratio of contaminant concentration to a given toxicological benchmark.

In general, an HQ above 1 indicates the potential for unacceptable risk. The risk is described, including the overall degree of confidence in the risk estimates, summarizing uncertainties, citing evidence supporting the risk estimates and interpreting the adversity of ecological effects.

range of lead soil-to-earthworm bioaccumulation factors (BAFs) in Kirkwood Lake, as compared to the BAFs developed for Hilliards Creek).

Based on the results of the HHRA and BERA, a remedial action is necessary to protect public health, welfare, and the environment from actual or threatened releases of hazardous substances.

REMEDIAL ACTION OBJECTIVES

The following remedial action objectives (RAOs) for contaminated media address the human health and ecological risks for the Waterbodies OU:

Soil

- Prevent potential current and future unacceptable risks to human and ecological receptors resulting from exposure (via direct contact, ingestion and uptake into the food chain) to contaminants in soil.

- Minimize migration of Site-related contaminants in the soil to sediment and surface water.

Sediment

- Prevent potential current and future unacceptable risks to human and ecological receptors resulting from exposure (via direct contact, ingestion and uptake into the food chain) to contaminants in sediment.

- Minimize migration of site-related contaminants from the sediment to surface water and downgradient areas.

It is expected that removal of sediment, combined with soil removal, and/or capping will result in a decrease of surface water contaminants to levels below NJSWQS. If monitoring indicates that surface water contamination levels have not decreased to below the NJSWQS, EPA may require an action in the future.

To achieve RAOs, EPA has selected soil and sediment preliminary remedial goals (PRGs) for the major COCs, arsenic and lead. Chromium and other contaminants were found less frequently than and are co-located with lead and arsenic. They will be addressed by actions developed using the cleanup goals for lead and arsenic; therefore, separate PRGs were not identified. The PRG for arsenic is based on the New Jersey background level of 19 mg/kg. The PRGs for lead is based on the lower of the New Jersey human health direct contact (residential) standards or ecological risk-based goals.

The Waterbodies Operable Unit is comprised of lakes, a creek and wetlands. These areas are zoned for multiple uses that include residential, industrial and office technical park usage; however, all areas currently contain ecological habitat. A residential zoning standard, which is consistent with ecological standards, was selected so that the cleanup is consistent across the OU.

Soil ecological cleanup goals for lead are based on the most sensitive terrestrial wildlife receptors and apply to the top foot of soil at all properties within the Waterbodies OU that contain ecological habitat. As a result, the ecological cleanup goals apply to the top one foot of soil and residential cleanup goals apply through the remaining soil depth.

The soil PRG for lead in the top one foot of soil is the site-specific ecological cleanup goal of 213 mg/kg. The soil PRG for lead below one foot in depth is the human health cleanup goal of no concentration above 400 mg/kg, with an average at or below 200 mg/kg. The approach for lead would achieve the risk reduction goal established for the Site, which is to limit the probability of a child's blood lead level exceeding 5 µg/dL to 5% or less.

The sediment PRG for lead is the ecological cleanup goal of 213 mg/kg, which is based on the dietary update of the spotted sandpiper. The use of this sediment value will result in the protection of avian species, which are the most sensitive receptor group.

The PRGs will be employed using several methods. This are discussed in the Summary of Alternatives by media type.

In summary, the PRGs for the Waterbodies are as follows:

Soil:

Arsenic:

- Residential cleanup goal: 19 mg/kg
- Ecological cleanup goal: 19 mg/kg

Lead:

- Residential cleanup goal: 400/200 mg/kg
- Ecological cleanup goal: 213 mg/kg

Sediment:

Arsenic: 19 mg/kg
Lead: 213 mg/kg

SUMMARY OF REMEDIAL ALTERNATIVES

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

Potential technologies applicable to soil or sediment remediation were identified and screened by effectiveness, implementability, and cost criteria, with emphasis on effectiveness. Those technologies that passed the initial screening were then assembled into remedial alternatives.

For the soil and sediment alternatives, the proposed depths of excavation are based on the soil boring data taken during the RI. These depths were used to estimate the quantity of soil to be remediated and the associated costs. The actual depths and quantity of soil to be remediated will be finalized during the remedial design phase and implementation of the selected remedy. Full descriptions of each proposed alternative can be found in the 2020 Feasibility Study Report which is in the Administrative Record file.

The time frames below are for construction and do not include the time to negotiate with the responsible party, design a remedy or the time to procure necessary contracts. Five-year reviews will be conducted as a component of the alternatives that would leave contamination in place above levels that allow for unlimited use and unrestricted exposure.

For all soil and sediment alternatives, the Present Worth Cost includes the periodic present worth cost of five-year reviews.

Soil Alternatives:

Alternative 1 - No Action

Capital Cost: *$0*
Annual O&M Cost: *$0*
Present Worth Cost: *$0*
Timeframe: *0 years*

The NCP requires that a "No Action" alternative be evaluated to establish a baseline for comparison with other remedial alternatives. Under this alternative, no action would be taken to remediate the contaminated soil within the Waterbodies OU.

Alternative 2 – Targeted Soil Removal, Capping and Institutional Controls

Capital Cost: *$28,757,660*
Annual O&M Cost: *$354,200*
Present Worth Cost: *$30,920,667*
Construction Time Frame: *10 months*

This alternative would remove the highest concentrations of arsenic and lead (and other contaminants) in soils while preserving, to the extent possible, valuable wetlands and forested areas. Under this alternative, the average surface concentrations (0 - 2 feet) of arsenic and lead remaining in soil will meet the PRGs in areas with valuable wetlands.

Based on the preliminary application of the averaging methodology, approximately 42,000 cubic yards (cy) of soil would be excavated from the floodplain soils within Hilliards Creek for removal and to accommodate a cap where needed. The floodplain consists of sensitive wetlands and forested land. The 42,000 cy consists of approximately 16 acres, up to two feet in depth, of wetlands and forested areas would be excavated and restored. This alternative would, to the extent practicable, preserve the forest in the high and medium quality wetland areas and provide a higher probability of restoring the current functions and values of these areas. To the extent possible during excavation,

the existing high and medium-quality wetlands would be preserved, and low-quality wetlands would be targeted for removal. All areas would be restored with native species. The excavated soil would be transported to an appropriate disposal facility.

As part of this alternative, areas that have met the PRGs through averaging would not require capping or deed notices. Capping with vegetative cover would be required for soils below two feet where contaminants remain at concentrations exceeding the RDCSRS. Institutional controls (deed notice) would be required for areas where the RDCSRS have not been attained. Five-year reviews would be conducted since contamination would remain above levels that allow for unlimited use and unrestricted exposure. Reviews would include monitoring for the success of the ecological restoration.

Alternative 3 – Excavation to Preliminary Remediation Goals

Capital Cost:	*$59,445,435*
Annual O&M Cost:	*$478,720*
Present Worth Cost:	*$62,261,469*
Construction Time Frame:	*3 years*

This alternative would remove all soil exceeding the applicable PRGs in ecological habitat areas with no preservation of wetlands or forested areas. Under this alternative, it would not be possible to preserve the forested areas because of the nature and extent of soil contamination. Clear cutting of all vegetation at distances ranging from approximately 50 to more than 200 feet from the stream bank would be required to excavate the soil. The excavation would extend to depths of 5 feet or more in some locations, with the greatest depths immediately adjacent to the stream channel.

Approximately 114,000 cubic yards of soil would be excavated. Approximately 23 acres of wetlands and forested areas would be completely cleared and impacted. The excavated soil would be transported to an appropriate disposal facility. The excavation area would be backfilled and revegetated with native species. No five-year reviews would be required. Reviews would be needed to monitor for the success of the ecological restoration.

Common Element for Sediment Alternatives:

Surface water monitoring is included as part of each sediment remedial alternative except for No Action. Monitoring would be conducted on a quarterly basis to assess any changes in contaminant conditions over time. It is expected that removal of sediment, combined with soil removal, and/or capping will result in a decrease of surface water contaminants to levels below NJSWQS. If monitoring indicates that surface water contamination levels have not decreased to below the NJSWQS, EPA may require an action in the future.

Sediment Alternatives:

Alternative 1 – No Action

Capital Cost:	*$0*
Annual O&M Cost:	*$0*
Present Worth Cost:	*$0*
Timeframe:	*0 years*

The NCP requires that a "No Action" alternative be evaluated to establish a baseline for comparison with other remedial alternatives. Under this alternative, no action would be taken to remediate the contaminated sediment within the Waterbodies OU.

Alternative 2 – Partial Dredging, Capping and Natural Recovery

Capital Cost:	*$39,393,693*
Annual O&M Cost:	*$462,060*
Present Worth Cost:	*$40,261,013*
Construction Timeframe:	*2 years*

Under this Alternative, one foot of sediment would be dredged, or removed, in areas of Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake within OU4 that contain site-related contaminants at concentrations exceeding the sediment PRGs. In areas where contamination remains above PRGs below one foot, a cap would be installed. The cap would be constructed of a layer of sand and stone. Natural sedimentation would then fill in above the cap and allow for restoration of habitat for the benthic community. Approximately 60,000 cubic yards of sediment would be removed under this alternative. Capping would require approximately 29,000 cubic yards of sand and 14,500 cubic yards of stone to be placed in Hilliards Creek, Bridgewood Lake, and Kirkwood Lake.

Sampling would take place to confirm that restoration was successful. Five-year reviews would be conducted since contamination would remain above levels that allow for unlimited use and unrestricted exposure.

Alternative 3 –Full Dredging

Capital Cost:	*$57,760,606*
Annual O&M Cost:	*$150,600*
Present Worth Cost:	*$59,105,902*
Construction Timeframe:	*2.5 years*

This alternative consists of the dredging, or removal, of all sediment with site-related contaminants exceeding PRGs. No capping of sediments is expected since all sediment exceeding the cleanup goals would be removed and transported to an approved off-site disposal facility. Capping would be considered if residual contamination extends to unexpected depths. Lake areas will not be backfilled, but one foot of sand will be placed within Hilliards Creek for stream flow stabilization during natural sedimentation and the area restored. Streams areas would need to be diverted during dredging activities. All sediment would be dewatered and processed prior to transport off-site.

It is estimated that 128,000 cubic yards of sediment would be removed under this alternative, resulting in

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.

removal of 100% of contaminated sediments. Approximately three feet of sediment would be removed from Hilliards Creek, and between two and five feet of sediment from Silver Lake, Bridgewood Lake and Kirkwood Lake.

After remediation of sediment, the effectiveness of the removal will be verified by chemical monitoring of the post-removal sediment bed. Stream banks, riparian zone and wetlands would also be monitored for a period of five years to assure successful restoration of these areas. In addition, a minimum of five years of surface water monitoring would be conducted to ensure that the concentration surface water contaminants are below NJSWQS levels. Five Year Reviews would also be employed to assess the effectiveness of the remedy.

EVALUATION OF ALTERNATIVES

The NCP lists nine criteria that EPA uses to evaluate the remedial alternatives individually and against each other to select a remedy. This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. Seven of the nine evaluation criteria are discussed below. The final two criteria, "State Acceptance" and "Community Acceptance" are discussed at the end of the document. A detailed analysis of each of the alternatives is in the FS Report.

Evaluation of Soil Alternatives

1. Overall Protection of Human Health and the Environment

Overall protection evaluates whether and how an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

Alternative 1, No Action, would not be protective of human health or the environment since it does not include measures to prevent exposure to contaminated soil.
Alternative 2 would be protective of human health and ecological receptors by removing surface soil to meet PRGs. The areas to be excavated will be calculated by using averages for each wetland habitat (forested, emergent, and phragmites) created for lead, arsenic and chromium. The use of averaging is predicted to reduce contamination up to 96% depending on habitat area and specific contaminant. The use of averaging will meet the PRG and be protective of public health and the environment while preserving sensitive habitat and open space. The highest concentrations of contamination in surface soils would be removed and those areas would be revegetated and stabilized. The average concentration of lead and arsenic in soil throughout the remediation area would meet soil PRGs. Engineering controls would be applied in the form a cap that is comprised of vegetative covering and institutional controls in the form of deed notices would be required for areas that have lead and arsenic contamination remaining above the RDCSRS. The cap would consist of a demarcation layer, 1 foot of common fill, 1 foot of topsoil, and a fabric erosion control blanket. This would prevent the transport of contamination to surface water by contamination left below the surface.

Alternative 3 would also be protective of human health and ecological receptors by removing all surface soil to meet PRGs based on ecological criteria in ecological habitat areas. In addition, all subsurface contamination, below two feet, exceeding RDCSRS would be removed.

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

Actions taken at any Superfund site must meet all applicable or relevant and appropriate requirements under federal and state laws or provide grounds for invoking a waiver of those requirements.

Alternative 1, No Action, would not meet ARARs.

Alternatives 2 and 3 would be in compliance with chemical-specific ARARs by either removing contaminated surface and subsurface soil with lead and arsenic at concentrations exceeding the New Jersey RDCSRS (Alternative 3), or through a combination of excavation and capping and application of institutional controls (Alternative 2). Ecological risk-based remedial goals (PRGs) will also be used to determine the extent of excavation and capping.
Alternative 2 would also be consistent with To Be Considered (TBC) criterion in the NJDEP Ecological Evaluation Technical Guidance (2015). This guidance states that where remediation may do more harm than good, a risk management decision can be made. This

alternative is designed to minimize damage to ecological habitat and provide the greatest potential for complete restoration of the functions and values of these habitats by achieving the ecological risk-based remedial goals using averaging.

Action-specific ARARs would be met by Alternatives 2 and 3 during the construction phase by proper design and implementation of the action including disposal of excavated soil at the appropriate disposal facility. These alternatives would also meet location-specific ARARs, such as NJDEP Wetlands Protection Act Rules.

3. Long-Term Effectiveness and Permanence

Long-term effectiveness considers the ability of an alternative to maintain protection of human health and the environment over the long term.

Alternative 1 would not provide long-term effectiveness or permanent protection to ecological or human receptors because the soil contaminants would remain uncontrolled.

Alternative 2 provides long-term effectiveness and permanence by controlling direct contact exposure to human health and ecological receptors to site-related contamination in soil. This alternative removes the highest concentrations of lead and arsenic contamination based on an averaging methodology, and caps the remaining contamination at depth, thereby preventing humans and wildlife from coming into direct contact with the contamination. Also, by preserving valuable wetland habitat and maximizing the potential for successful restoration, Alternative 2 helps ensure the long-term viability of the wetlands.

Alternative 3 would provide a greater degree of long-term effectiveness and permanence than Alternative 2 when considering exposure to lead and arsenic in soil because Alternative 3 removes all of the contamination.

4. Reduction of Toxicity, Mobility, or Volume through Treatment

None of the soil alternatives include treatment, so there would be no reduction of toxicity, mobility or volume through treatment under any alternative; however, treatment of contaminated soil may be required prior to disposal.

5. Short-Term Effectiveness

Short-term effectiveness considers the effects the implementation of an alternative will have on the community, workers and the environment and the amount of time until an alternative effectively protects human health and the environment.

Alternative 1 does not present any short-term risks to site workers, the community, or the environment because it does not include active remediation work.

Alternatives 2 and 3 each have significant short-term impacts upon the community and the environment. Both would have negative short-term impacts to the ecological habitat that currently exists. Overall, the short-term impacts of Alternative 2, although significant, are less than those of Alternative 3, as less habitat will be disturbed.

Risks to site workers, the community and the environment include potential short-term exposure to contaminants during excavation of soil. Potential exposures and environmental impacts associated with dust and runoff would be minimized with proper installation and implementation of dust and erosion control measures and monitoring. Worker safety issues would be significant for both Alternative 2 and Alternative 3, but Alternative 3 would require more time at the site therefore expose workers to risks for a longer period of time (three years) compared to Alternative 2 (10 months).

Alternatives in which the largest quantity of soil is removed would have the greatest area of impact, would require the longest period of time to complete, and would have the highest potential for short–term adverse effects. Alternative 2 would take 10 months to complete. Alternative 3 would take 3 years to complete and includes almost three times the amount of soil removal compared to Alternative 2. This amount of soil will also generate 16,000 truck trips for Alternative 3 compared to 5,900 truck trips for Alternative 2. Short-term impacts would be greater for Alternative 3 because of this longer timeframe and greater quantities of soil.

6. Implementability

Alternative 1 does not entail any construction so it can be easily implemented.

Alternatives 2 and 3 have common implementability issues related to the removal of large amounts of soil, water management, installation of the caps (for Alternative 2), and restoration. These issues also include conducting large-scale construction activities in wetland areas and the need for specialized equipment, establishing routes to the soil removal areas, dewatering of the contaminated soil, the management of invasive species and protection of native species during restoration.

The increased volume of soil removal, and the need for large scale wetland restoration, associated with Alternative 3 increases the implementation difficulties compared to Alternative 2. Alternative 2 would also have implementability issues with targeted removal of soil, but they would be to a lesser extent than Alternative 3 due to reduced amounts of soil removal. Alternative 3 would remove more high value, sensitive wetland habitats creating implementability issues for restoration. These implementability issues are caused by the larger size and complexity of working in wetland and riparian areas. A substantial amount of water management will be required, and access to and from the removal areas will be limited.

7. Cost

The total estimated present worth costs increase with the amount of material removed. The estimated costs, calculated using a 7% discount rate, are: $0 for Alternative 1; $30,920,667 for Alternative 2; and $62,261,469 for Alternative 3.

Evaluation of Sediment Alternatives

1. Overall Protection of Human Health and the Environment

Alternative 1 is not protective of human health or the environment because no action would be taken to address sediment contamination.

Alternative 2 would provide protection of human health and the environment by removing the sediment containing the highest concentrations of lead and arsenic and capping of the areas of remaining sediment that contains arsenic and lead at concentrations greater than the PRGs to prevent human and ecological exposure. Maintenance of the cap would be required to assure continued protection of human health and the environment over time.

Alternative 3 would provide human health and ecological receptor protection by removing all sediment containing contaminants at concentrations greater than the PRGs. Preventing exposure to sediment at concentrations greater than PRGs would protect ecological receptors and prevent risks associated with fish ingestion.

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

Alternative 1 would not meet ARARs.

Alternatives 2 and 3 would comply with action and location-specific ARARs, including those that apply to remediation and filling in floodplains, work in wetland areas (NJDEP Wetlands Protection Act Rules), waste management (Resource Conservation Recovery Act Land Disposal Restrictions), and storm water management.

3. Long-Term Effectiveness and Permanence

Alternative 1 does not remove existing contamination and exposures and risks would remain. This alternative does not offer any long-term effectiveness or permanence.

Alternative 2 would provide long-term effectiveness and permanence by removing the most contaminated surface sediments in the OU and using capping to prevent exposure to the underlying contaminants. Capped areas would need to be properly maintained to assure long-term protectiveness.

Alternative 3 would provide the highest degree of long-term permanence and effectiveness because all lead and arsenic at concentrations exceeding risk-based PRGs, would be removed.

4. Reduction of Toxicity, Mobility, or Volume through Treatment

Since removal and containment are the technologies that would be used for the remediation of sediment, none of the alternatives provide reduction of toxicity, mobility, or volume through treatment; however, treatment of contaminated sediment may be required prior to disposal.

5. Short-Term Effectiveness

Alternative 1 does not present any short-term risks to the community, site workers or the environment because this alternative does not include any active remediation work.

Alternatives 2 and 3 involve dredging and thus have potential for short-term adverse effects that include ecological damage to and loss of habitat, and construction within the community that adds noise, odor and limits access to public areas. Potential risks posed to site workers, the community and the environment during implementation of Alternatives 2 and 3 could be due to wind-blown or surface water transport of contaminated sediments. Any potential impacts associated with dust and runoff would be minimized through proper installation and implementation of dust and erosion control measures. Contaminated sediments may become suspended in the water column during dredging activities. Sediment control mechanisms such as sediment curtains will be used to control sediment migration. The areas would be monitored throughout the construction. Adverse short-term impacts to the community include increased truck traffic, potential odors, and increased noise. The extent of the short-term impacts associated with Alternatives 2 and 3 would be similar since the remediation footprint for both alternatives is similar.

Alternative 2 would take two years to complete, as compared to 2.5 years for Alternative 3, so Alternative 3 would have a slightly higher potential for short–term adverse effects than Alternative 2.

6. Implementability

Alternative 1 would not include any activity, so no implementation is required.

Alternatives 2 and 3 require sediment removal and face similar implementability challenges. Such challenges include access through private property to the remediation areas, the need for barge or boat mounted dredging equipment, controlling sediment resuspension, transportation of dredged materials, controlling the flow of surface water and the influx of groundwater, and streambed stabilization and wetland restoration.

It is expected that the degree of implementability difficulties for Alternative 3 would be somewhat greater than those for Alternative 2. The primary differences between the two alternatives are the volumes of sediment that would be removed (128,000 cubic yards for Alternative 3 compared to 60,000 cubic yards for Alternative 2) and the placement of the cap in Alternative 2. Dredging and dredge material processing (Alternative 3) is expected to be slightly more difficult than cap placement (Alternative 2). Because the dredging activities in Hilliards Creek would be conducted for a longer period under Alternative 3 than Alternative 2, the water diversion structures would need to be maintained for longer.

7. Cost

The total estimated present worth costs, calculated using a 7% discount rate, are: $0 for Alternative 1; $43,968,919 for Alternative 2; and $58,207,732 for Alternative 3.

PREFERRED ALTERNATIVE

The preferred soil alternative for cleanup of the Waterbodies is Alternative 2, Targeted Soil Removal, Capping and Institutional Controls. For the sediment, the preferred alternative is Alternative 3, Full Dredging. As discussed above, the surface water will be monitored to determine the effectiveness of the implemented soil and sediment remedies. Together, these two elements comprise EPA's Preferred Alternative.

Soil:

The Preferred Soil Alternative 2 (Figure 4) involves excavation, capping, and off-site disposal of soil. The major components of the Preferred Soil Alternative include:

- Excavation to depths up to two feet, transportation and disposal of approximately 41,200 cubic yards of contaminated soil;
- Installation of a cap in remediated areas;
- Restoration and revegetation of the Hilliards Creek flood plain and a small area on the south shore of Kirkwood lake; and
- Institutional controls, such as a deed notice, to prevent exposure to residual soil that exceed levels that allow for unrestricted use.
- Monitoring of restoration activities.

This alternative would remove the soil containing the

highest concentrations of arsenic and lead (and other constituents co-located with the areas targeted for excavation) from the Hilliards Creek flood plain. To the extent possible during excavation, the existing high- and medium-quality wetlands would be preserved, and low-quality wetlands would be targeted for removal. All areas would be restored with native species. Under this alternative, surface soil containing the highest concentrations of arsenic or lead at concentrations greater than the PRGs and subsurface soil containing the highest concentrations of arsenic and lead at concentrations greater than the PRGs would be removed to a depth of up to 2 feet. The areas to be excavated and the depth of excavation will be calculated by using averaging in the remedial design phase. After excavation the average concentration of lead and arsenic in soil throughout would meet soil PRGs. This will reduce exposure to levels that are protective of human health and the environment and will also prevent the transport of soil contamination to surface water.

As part of the alternative, a cap consisting of a vegetative soil cover would be installed in those areas within the floodplain soils of Hilliards Creek where lead and arsenic remain in soil at concentrations greater than RDCSRS at depth, and an institutional control in the form of a deed notice would be required to ensure that future use of the Site recognizes and maintains the cap. This alternative would, to the extent practicable, preserve the forest canopy in the high- and medium-quality wetland areas, while removing the most highly contaminated soils.

Preferred Soil Alternative 2 will provide an equivalent degree of protection to Soil Alternative 3, but has fewer implementability issues, and greater short-term effectiveness.

The Soil Alternative 2 is preferred over other alternatives because it is expected to achieve substantial and long-term risk reduction through off-site disposal, and is expected to preserve valuable wetlands, forests and open space while being protective for human health and the environment. The Preferred Soil Alternative reduces the risk within a reasonable time frame, at a lower cost compared to other alternatives and is protective in the long-term.

The Preferred Soil Alternative would achieve cleanup goals that are protective for residential use in the surficial floodplain soils adjoining Hilliards Creek. Though the remedy would be protective, it would not achieve levels that would allow for unrestricted use at depth, and therefore, institutional controls, such as deed notices would be required. Five-year reviews would be conducted since contamination would remain above levels that allow for unlimited use and unrestricted exposure.

Sediment:
The Preferred Sediment Alternative 3 (Figure 5 – lakes, and Figure 6 – creeks) includes full excavation of sediment with contaminant levels greater than the PRGs from Silver Lake, Bridgewood Lake, Kirkwood Lake and Hilliards Creek. The major components of the Preferred Sediment Alternative include:

- Construction of a stream diversion system to allow access to sediments;
- Land and barge-based dredging of the lakes;
- Dredging, transportation and disposal of approximately128,000 cubic yards of contaminated sediment;
- Dewatering and processing of excavated sediment; and
- Stream bank remediation followed by revegetation and restoration that includes engineering controls to stabilize stream banks as needed.
- Monitoring of restoration activities.

Approximately three feet of sediment would be removed from Hilliards Creek, and between two and five feet of sediment from Silver Lake, Bridgewood Lake and Kirkwood Lake. After verification of remedial success via chemical monitoring, the stream banks, riparian zone and wetlands would be monitored for a period of five years to assure successful restoration of these areas.

The Preferred Sediment Alternative was selected over other alternatives because it is expected to achieve substantial and long-term risk reduction with greater certainty and less long-term monitoring and maintenance than Alternative 2, through off-site disposal of sediment by reducing contaminant levels in Hilliards Creek, Silver Lake, Bridgewood Lake and Kirkwood Lake. The Preferred Sediment Alternative 3 reduces risk within a reasonable timeframe, at a cost comparable to the other alternatives and provides for long-term effectiveness of the remedy.

Surface water monitoring would be conducted on a regular basis to assess any changes in contaminant conditions over time. It is expected that removal of contaminated sediment, combined with soil removal, and capping will result in a decrease of surface water contaminants to levels below NJSWQS. If monitoring indicates that contamination levels have not decreased to below the NJSWQS, EPA may require an action in the future.

The Preferred Alternatives are believed to provide the best balance of tradeoffs among the alternatives based on the information available to EPA at this time. EPA believes the Preferred Alternatives would be protective of human health and the environment, would comply with ARARs, would be cost-effective and would utilize permanent solutions, to the extent practicable. Final selected alternatives may change in response to public comment or new information. The total present worth cost for both the soil and sediment Preferred Alternatives is $90,974,604. Consistent with EPA Region 2's Clean and Green policy, EPA will evaluate the use of sustainable technologies and practices with respect to implementation of a selected remedy.

State Acceptance
The state of New Jersey concurs with the Preferred Alternatives for soil and sediment. However, the state defers concurrence with the capping and institutional control component of the preferred soil alternative until property owners provide their consent to the placement of a cap and a deed notice.

Community Acceptance
Community acceptance of the Preferred Alternatives will be evaluated after the public comment period ends and will be described in the Record of Decision. Based on public comment, the Preferred Alternatives could be modified from the version presented in this proposed plan. The Record of Decision is the document that formalizes the selection of the remedy for a site.

Community Participation
EPA provided information regarding the cleanup of the Waterbodies OU through meetings, the Administrative Record file for the Waterbodies OU and announcements published in the local newspaper and online. EPA encourages the public to gain a more comprehensive understanding of the Site and the RI activities that have been conducted at them.

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

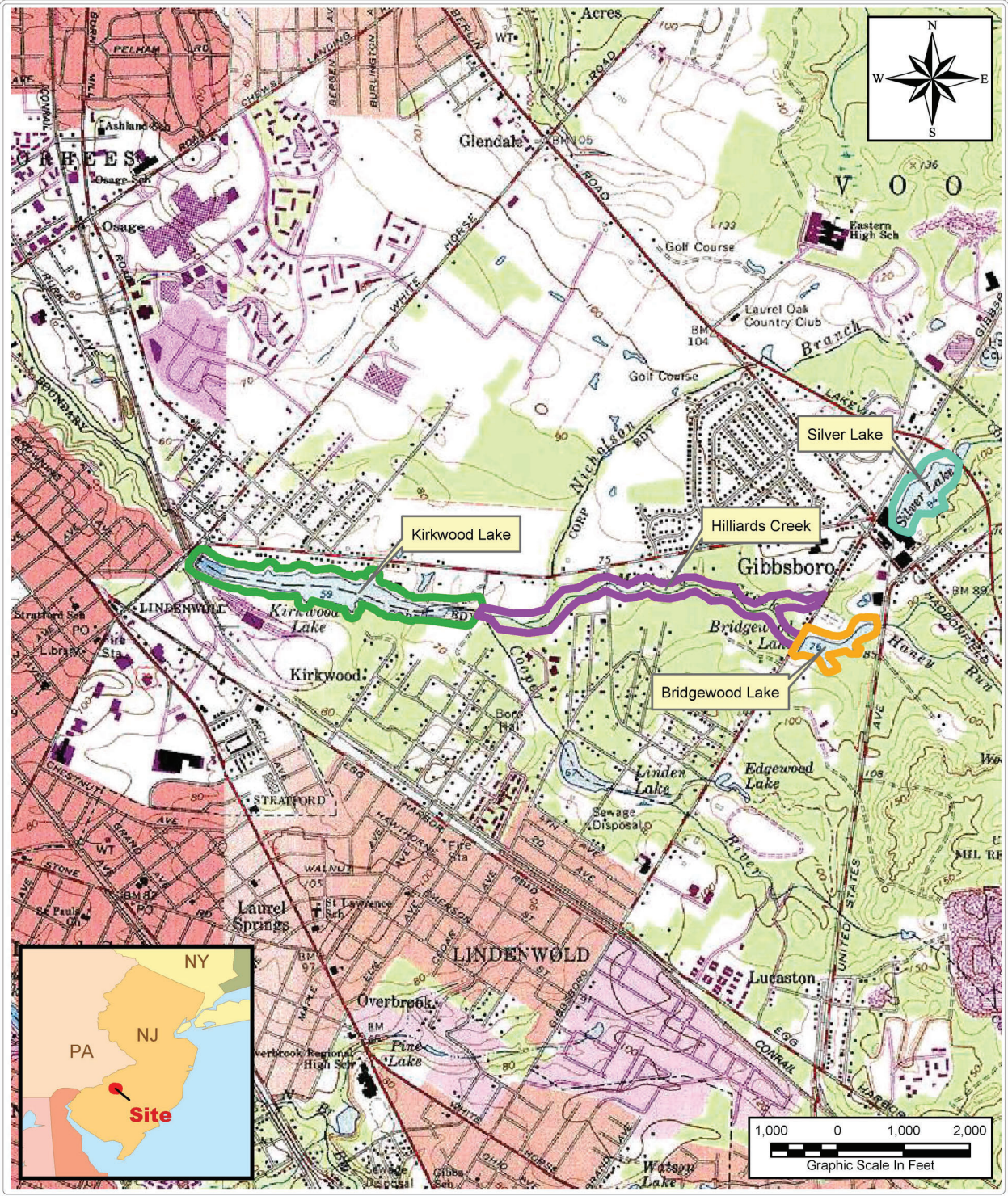
For further information on EPA's Preferred Alternative for the Sherwin-Williams/Hilliards Creek – Waterbodies OU contact:

Julie Nace, Remedial Project Manager
Nace.Julie@epa.gov
(212) 637-4126

Pat Seppi, Community Relations
Seppi.Pat@epa.gov
(212) 637-3679

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

On the Web at:
https://www.epa.gov/superfund/sherwin-williams



LEGEND: Bridgewood Lake, Kirkwood Lake, Hilliards Creek, Silver Lake

SOURCE: National Geographic TOPO! U.S. Geologic Survey (USGS). 7.5 Minute Series (Topographic) Quadrangles: Clementon, NJ, 1981.

TITLE:

WATERBODIES
SITE LOCATION MAP

PROJECT: Waterbodies Feasibility Study

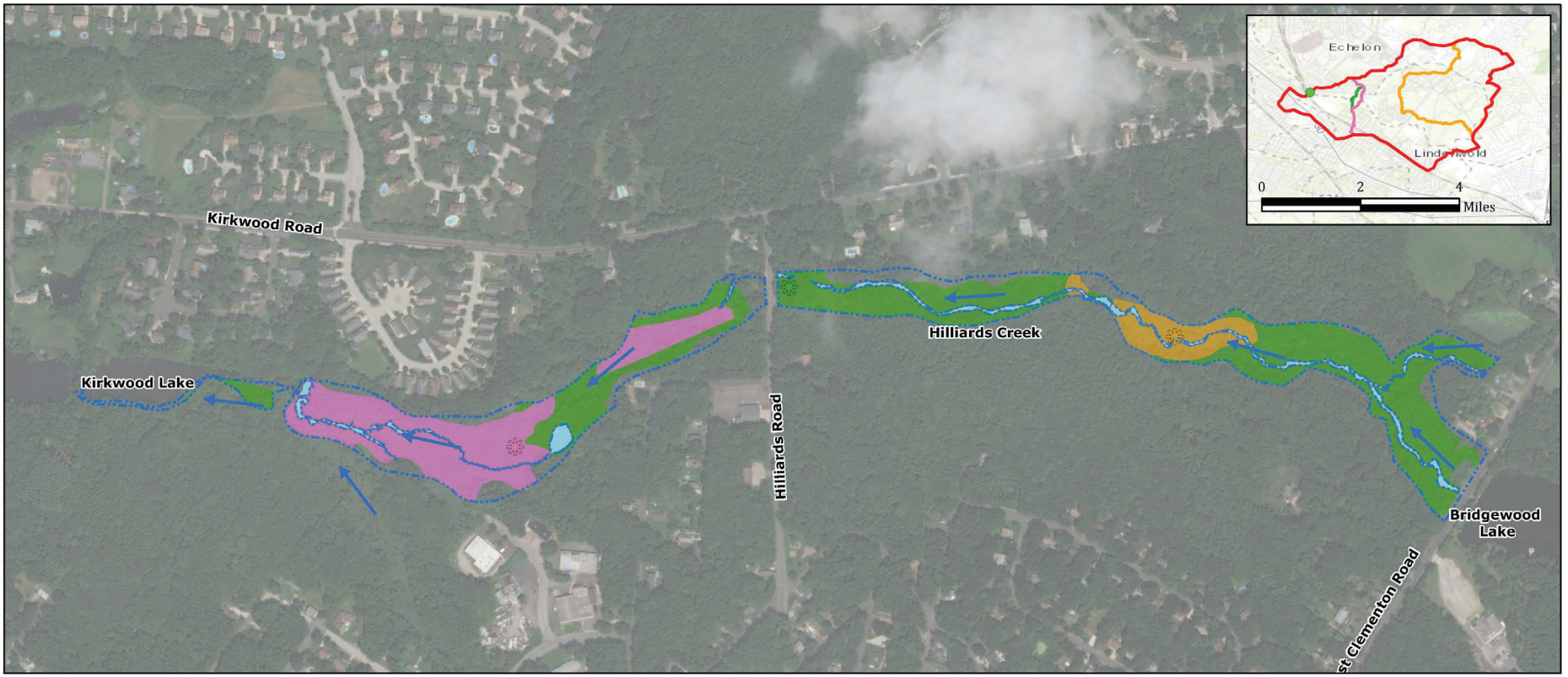
CLIENT NAME: The Sherwin-Williams Company

WESTON SOLUTIONS

DATE: October 2019

FIGURE #: 1

L:\SHERWIN\GIS\MXD\2019_03_Waterbodies_FS\23891_Site_Location_Map.mxd



LEGEND

- WATERBODIES PROJECT BOUNDARY
- OPEN WATER
- DIRECTION OF WATER FLOW

ASSESSMENT AREAS

- HILLIARD CREEK EMERGENT WETLANDS (2.01 ACRES)
- HILLIARD CREEK FORESTED WETLANDS (13.94 ACRES)
- HILLIARD CREEK PHRAGMITES WETLANDS (6.78 ACRES)
- APPROXIMATE ASSESSMENT AREA CENTER

INSET LEGEND

- SERVICE AREA WATERSHED (5.05 SQ MI)
- EMERGENT WETLAND WATERSHED (1.83 SQ MI)
- FORESTED WETLAND WATERSHED (4.24 SQ MI)
- PHRAGMITES WETLAND WATERSHED (4.2 SQ MI)
- SERVICE AREA EXTENT

NOTES:
1. BASED ON WETLAND EVALUATION TECHNIQUE VOLUME II (WETII) METHODOLOGY, SERVICE AREA IS DEFINED AS THE POINT TO WHICH SERVICES ARE DELIVERED AND IS DETERMINED TO BE 5 MILES DOWNSTREAM OF THE ASSESSMENT AREA'S OUTLET OR UNTIL A DAM IS REACHED. FOR THE PURPOSES OF THIS ANALYSIS, THE IMPOUNDMENT AT THE DOWNSTREAM PORTION OF KIRKWOOD LAKE IS THE EXTENT OF THE SERVICE AREA FOR ALL AAS AND THE MOST DOWNSTREAM EXTENT OF THE SERVICE AREA WATERSHED.
2. WATERSHEDS WERE CALCULATED USING UNITED STATES GEOLOGICAL SURVEY, STREAMSTATS PROGRAM. COLORED PORTIONS OF WETLAND REPRESENT THE DOWNSTREAM EXTENTS OF THE ASSESSMENT AREAS AND SERVICE AREAS EXTENT.
3. OPEN WATER SHOWN FOR HILLIARDS CREEK FORESTED WETLANDS (1.51 ACRES), HILLIARDS CREEK PHRAGMITES WETLANDS (0.4 ACRES), AND HILLIARDS CREEK EMERGENT WETLANDS (0.23 ACRES) WERE BASED ON ROBINSON AERIAL SURVEY, INC. OPEN WATER AREAS SHOWN WERE INCLUDED WITHIN THE OVERALL AA ACREAGE.
4. WETLAND EXTENTS WERE BASED ON A COMBINATION OF DELINEATIONS COMPLETED BY THE ELM GROUP, INC AND WESTON SOLUTIONS WHERE POSSIBLE AND NATIONAL WETLAND INVENTORY MAPS WHERE NECESSARY. WETLAND AA WERE CLIPPED TO THE WATERBODIES PROJECT BOUNDARY.
5. HILLIARDS CREEK IS REFERRED TO ON MAPS OF THE AREA TYPICALLY AS "MILLARD CREEK". IT IS ALSO REFERRED TO AS "HILLIARD CREEK". HOWEVER, THE SHERWIN-WILLIAMS SITE HAD HISTORICALLY BEEN REFERRED TO AS "HILLIARDS CREEK", SO THAT IS HOW IT IS REFERENCED IN THIS DOCUMENT.

SOURCE:
1.SOURCES: ESRI, HERE, DELORME, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), SWISSTOPO, MAPMYINDIA, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY
2. UNITED STATES GEOLOGICAL SURVEY. 2018. THE STREAMSTATS PROGRAM. HTTP://STREAMSTATS.USGS.GOV
3. UNITED STATES FISH AND WILDLIFE SERVICE. 2018. NATIONAL WETLANDS INVENTORY WEBSITE. U.S. DEPARTMENT OF THE INTERIOR, FISH AND WILDLIFE SERVICE. WASHINGTON, D.C. HTTP://WWW.FWS.GOV/WETLANDS/

0 400 800

SCALE:1 " = 400 '

TITLE:

FIGURE 2
WATERBODIES OU FUNCTIONS AND VALUES SITE MAP

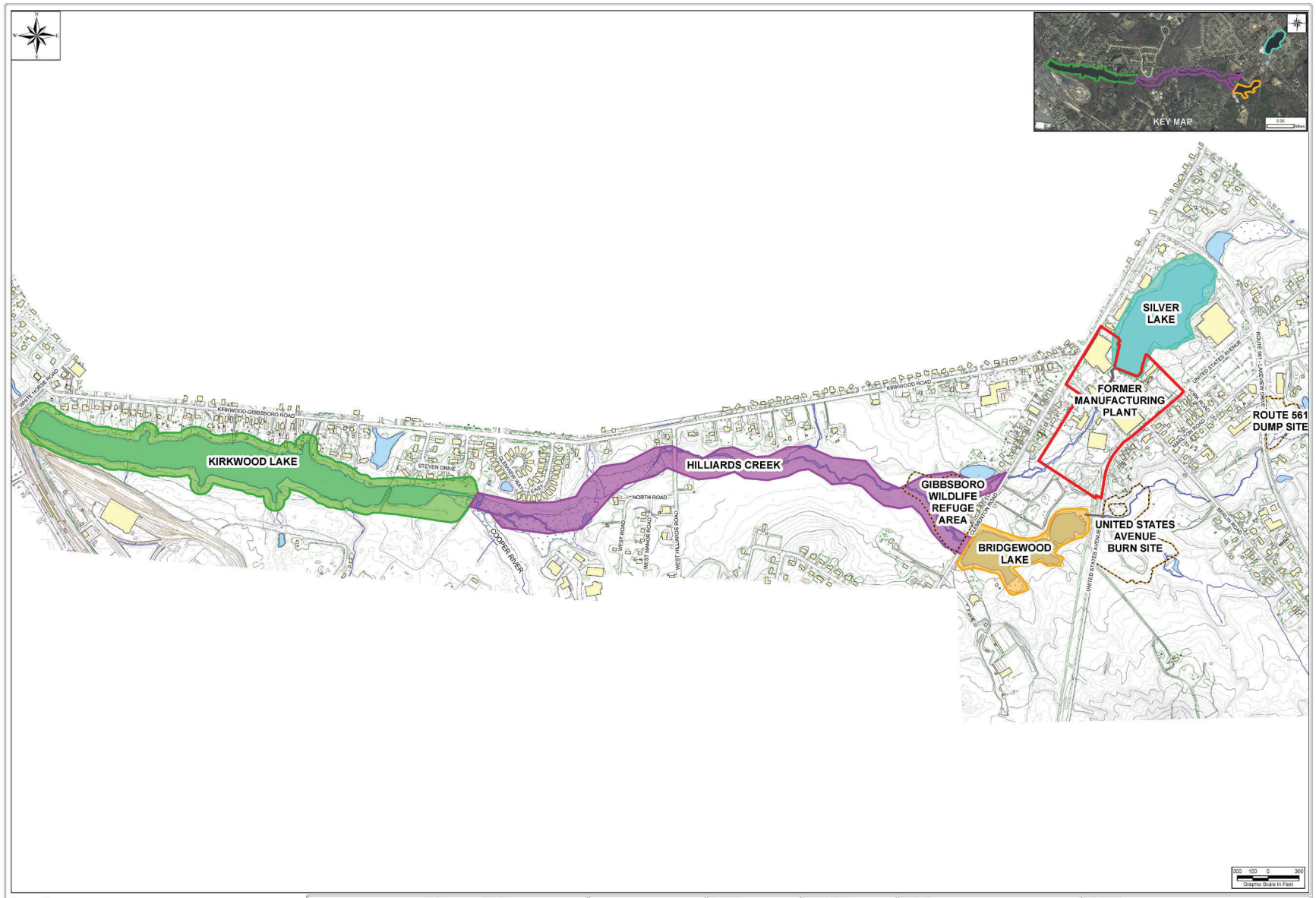
LOCATION:
SHERWIN WILLIAMS
WATERBODIES OPERABLE UNIT
GIBBSBORO, NEW JERSEY

DATE:
03/19/2019

FILENAME:
204027_WB_Functions_Values.mxd

THE ELM GROUP
345 WALL STREET, PRINCETON, NEW JERSEY 08540
4936 YORK ROAD, SUITE 1000, HOLICONG, PENNSYLVANIA 18928
2591 BAGLYOS CIRCLE, SUITE C45, BETHLEHEM, PENNSYLVANIA 18020
WWW.exploreELM.com

K:\204027_Sherwin-Williams_Gibbsboro\DATA_MANGEMENT\GIS\WP\Map Documents\RDP\204027_WB_Functions_Values.mxd



Legend

- Silver Lake
- Bridgewood Lake
- Hilliards Creek
- Kirkwood Lake
- Former Manufacturing Plant Extent
- Fence Boundary
- Approximate Location of Silver Lake Conveyance
- Approximate Location of Culvert Under United States Avenue
- Perennial Stream Channel
- Intermittent Stream Channel

Weston Solutions, Inc.
205 Campus Drive Edison, New Jersey 08837-3939
TEL. (732) 417-5800 Fax. (732) 417-5801
http://www.westonsolutions.com

REPORT DATE: October 2019	PROJECT MANAGER: R. Brown	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: COMPREHENSIVE SITE MAP
DRAWING: 20892_Comprehensive_Site_Map.mxd PATH: L:\SHERWIN\GIS\MXD\2019_03_Waterbodies_FS\	CHECKED BY: A. Fischer		
REVISION No. 0	CONTRACT No. DELIVERY ORDER NO.	PROJECT NAME: Waterbodies Feasibility Study	
WORK ORDER No. 20076.022.092.0008	DRAWN/MODIFIED BY: J. Heaton DATE CREATED: 4/16/2019		FIGURE: 3 / SCALE: 1 " = 300 ' / DATE: 10/3/2019

Legend

- Two-Foot Depth Removal Area and Backfill with a Marker Layer, then One-Foot Common Fill Overlaid by One-Foot Topsoil
- Phragmites Wetland
- Fence Boundary

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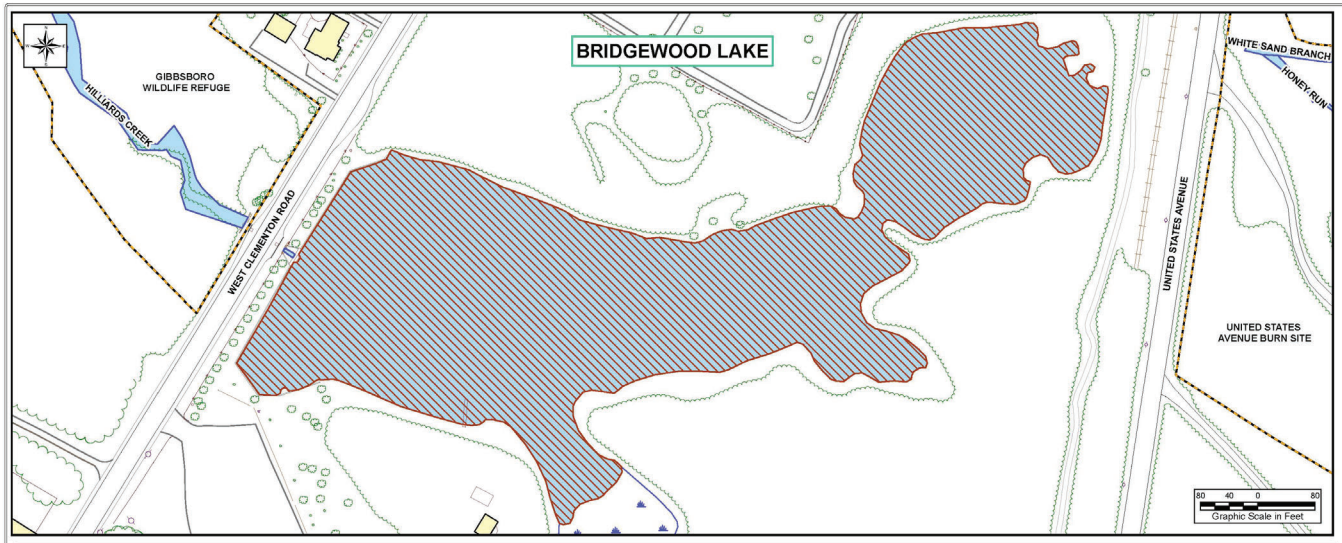
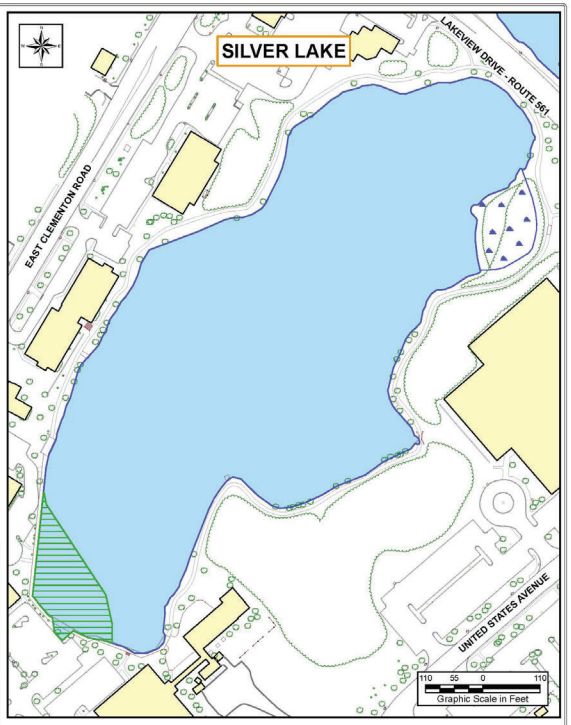
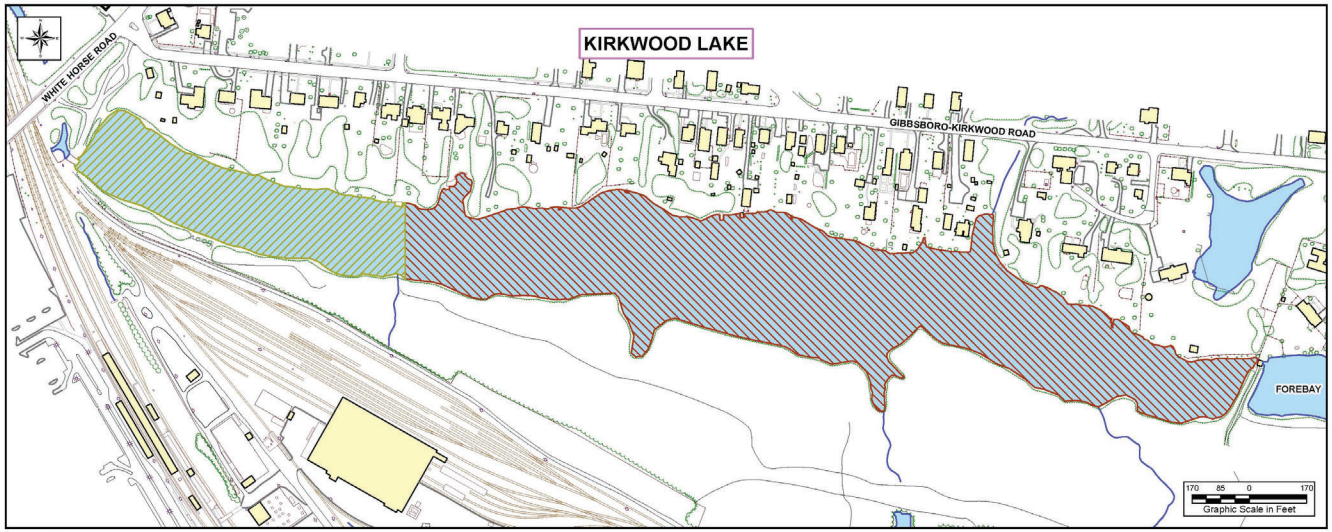
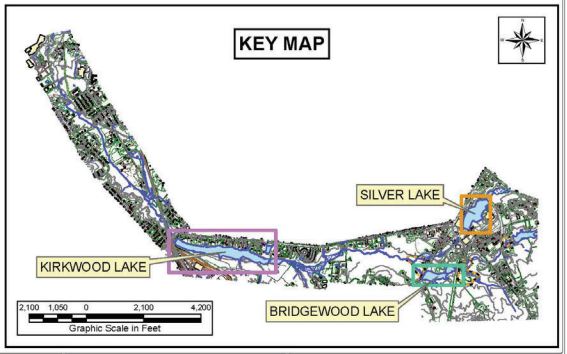
205 Campus Drive Edison, New Jersey 08837-3939
TEL: (732) 417-5800 Fax: (732) 417-5801
http://www.westonsolutions.com

REPORT DATE: April 2020	PROJECT MANAGER: R. Brown	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: HILLIARDS CREEK SOIL ALTERNATIVE 2 TWO-FOOT REMOVAL AND CAP
DRAWING: 26447_Waterbodies_HC_Soil_Alternative2.mxd PATH: L:\SHERWIN\GIS\MXD\26000_01_Waterbodies_FS\	CHECKED BY: A. Fischer		
REVISION No:	CONTRACT No: DELIVERY ORDER NO:	PROJECT NAME: Waterbodies Feasibility Study	
WORK ORDER No: 20076.022.092.0008	DRAWN/MODIFIED BY: J. Heaton DATE CREATED: 5/15/2019		FIGURE: 4 SCALE: 1 " = 200 ' DATE: 4/9/2020









Legend

- One-Foot Average Sediment Removal, No Backfill (Silver Lake)
- Two-Foot Average Sediment Removal, No Backfill (Bridgewood & Kirkwood Lakes)
- Three-Foot Average Sediment Removal, No Backfill (Kirkwood Lake)

Notes:
1. The sediment thickness varies from no sediment present along the lake margines with greater thicknesses occurring towards the centerline of the lake.
2. The overall sediment removal depths are sufficient for cost estimating purposes since, in addition to locations where the removal may extend deeper, there are also locations where the removal will be less than the stated average removal.

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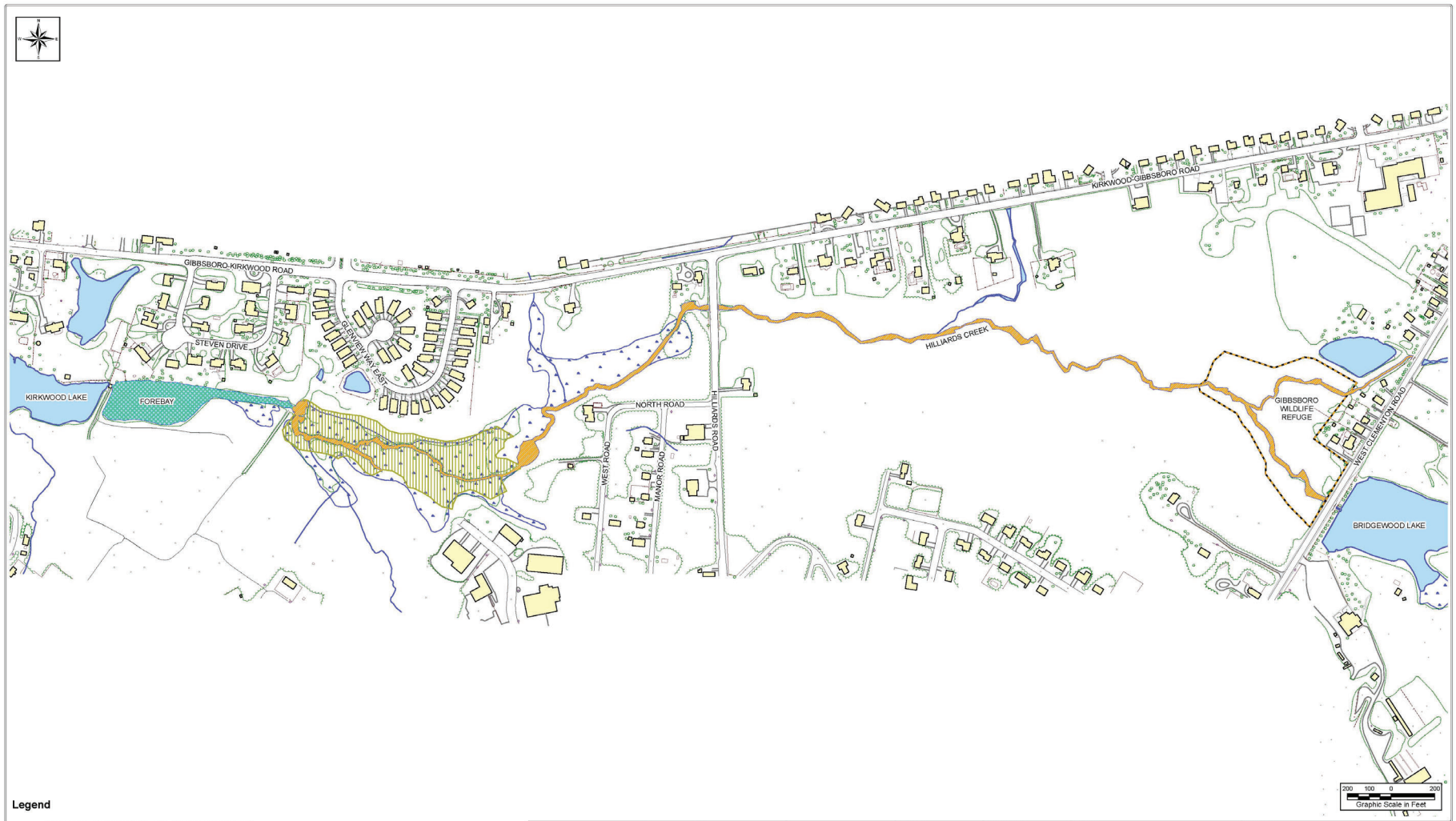
205 Campus Drive Edison, New Jersey 08837-3939
TEL: (732) 417-5000 Fax: (732) 417-5801
http://www.westonsolutions.com

SHERWIN WILLIAMS

REPORT DATE: April 2020	PROJECT MANAGER: R. Brown	CLIENT NAME: The Sherwin-Williams Company
DRAWING: L:\SHERWIN\GIS\MXD\2020_01_Waterbodies_FS1.mxd DATA: 2004_Waterbodies_Sediment_Alternative2.mxd	CHECKED BY: A. Fischer	
REVISION No:	CONTRACT No: DELIVERY ORDER NO:	PROJECT NAME: Waterbodies Feasibility Study
WORK ORDER No: 20076.022.092.0008	DRAWN/MODIFIED BY: J. Heaton DATE CREATED: 6/6/2019	

DRAWING TITLE: SILVER, BRIDGEWOOD, AND KIRKWOOD LAKES ALTERNATIVE 3 – REMOVAL OF SEDIMENT TO MEET PRGS

FIGURE: 5 | SCALE: 1 " = 170 ' | DATE: 4/9/2020



Legend

- Two and a Half-Foot Stream Channel Sediment Removal and Installation of a One-Foot Sand Stabilization Layer
- Three-Foot Sediment Removal Only
- Phragmites Wetland Area (To Be Considered Soil)
- Fence Boundary

Weston Solutions, Inc.
205 Campus Drive Edison, New Jersey 08837-3939
TEL (732) 417-5800 Fax (732) 417-5801
http://www.westonsolutions.com

REPORT DATE: April 2020	PROJECT MANAGER: R. Brown	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: HILLIARDS CREEK SEDIMENT ALTERNATIVE 3 REMOVAL OF SEDIMENT TO MEET PRGS
DRAWING: PATH:	CHECKED BY: A. Fischer		
REVISION No.	CONTRACT No. DELIVERY ORDER NO.	PROJECT NAME: Waterbodies Feasibility Study	
WORK ORDER No. 20076.022.092.0008	DRAWN/MODIFIED BY: J. Heaton DATE CREATED: 5/15/2019		FIGURE: 6 SCALE: 1 " = 200 ' DATE: 4/9/2020

Attachment B: Public Notice

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

INVITES PUBLIC COMMENT ON THE PROPOSED PLAN

FOR THE OPERABLE UNIT 4 WATERBODIES PORTION

OF THE SHERWIN WILLIAMS/HILLIARDS CREEK SUPERFUND SITE

GIBBSBORO AND VOORHEES, NEW JERSEY

The U.S. Environmental Protection Agency (EPA) announces the opening of a 30-day comment period on the preferred plan to address contaminated soil and sediment related to the Waterbodies (OU4) portion of the Sherwin Williams/Hilliards Creek Superfund site located in Gibbsboro and Voorhees, NJ, Camden County, New Jersey. The preferred remedy and other alternatives are identified in the Proposed Plan.

The comment period begins on April 1, 2021 and ends on May 3, 2021. As part of the public comment period, EPA will hold a virtual public meeting on Monday, April 12, 2021 from 7:00 p.m. – 9:00 p.m.

The Proposed Plan is available on the EPA website:

https://www.epa.gov/superfund/sherwin-williams

To register for the virtual meeting, please visit: https://epa-sherwin-williams-ou4.eventbrite.com

or contact Ms. Pat Seppi, Community Liaison, at seppi.pat@epa.gov or by phone at 646.369.0068

Comments on the Proposed Plan may be emailed to nace.julie@epa.gov by close of business (COB) May 3, 2021 or mailed to Julie Nace, US EPA, 290 Broadway, 19th Floor, New York, NY 10007-1866 by COB.

The Administrative Record files are available for public review at the following information repositories:

USEPA – Region 2, Superfund Records Center, 290 Broadway, 18th Floor, New York, NY 10007-1866 or at the Gibbsboro Borough Hall/Library, 49 Kirkwood Rd., Gibbsboro, NJ.

Attachment C: Public Meeting Transcript

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

* *

SHERWIN-WILLIAMS PROPOSED PLAN PUBLIC MEETING

VIRTUAL PUBLIC INFORMATION SESSION

* *

Monday, April 12, 2021
7:00 p.m. to 8:51 p.m.

REPORTED BY LISA M. ROLLINS
REGISTERED PROFESSIONAL REPORTER

* *

(Due to technical difficulties, the Certified Stenographer was unable to remotely access the conference until approximately 7:14 p.m. EST.)

MAYOR ED CAMPBELL: ... milestone. I'm looking forward to hearing all the questions that the public has on the proposed plan, but I have looked at it. I've been briefed, and I believe that it will significantly clean up the remaining issues in the waterbodies. And with that, thank you. Thank you very much, EPA, and appreciate the cooperation between Westin and Sherwin-Williams, EPA, the DEP, and our town which is where most of the pollution and the cleanup has taken place. Thank you.

PAT SEPPI: Thank you very much, Mayor. We appreciate your comments.

So, now, I'd like to turn the meeting over to Julie so she'll be able to present her presentation. Julie, please, go ahead.

JULIE NACE: Thank you, Pat. Just checking that everyone can hear me?

PAT SEPPI: Yeah, I think so.

JULIE NACE: Okay. So, good evening. Again, my name is Julie Nace, and I'm the project manager for a portion of the Sherwin-Williams Superfund site. And I'm here tonight to talk to you about the clean-up plan for

the portion of the lake and creek areas of that Sherwin Superfund site -- Sherwin-Williams Superfund site that we refer to as the waterbodies.

So this presentation will give you information about the proposed plan and you can get more details by reading the plan. My discussion, as you can see on the slide, will be broken down into four parts that include a brief background; the clean-up plans for both sediment and soil; and lastly, a summary. And the presentation will last about 20 minutes.

So, as the Mayor just spoke about, and as you may have seen, there's a lot of cleanup activity in and around your community. You may have seen Sherwin-Williams construction vehicles leading this cleanup around the residential properties of Kirkwood Lake, as well as near the Wawa and other commercial properties along Route 561.

Sherwin-Williams has been actively cleaning up these areas from past contamination from the paint factory that used to be here in Gibbsboro, but there's also a lot going on behind the scenes and that includes planning the cleanup in the area between the residential properties and the commercial properties. And this area contains Hilliard's Creek, Silver Lake, Bridgewood Lake, and Kirkwood Lake, and again, we refer to this as the

waterbodies.

So tonight's presentation will give you an overview of the cleanup plan for these waterbodies and a more-detailed description of this cleanup plan is available in the proposed plan. And if you haven't looked through the proposed plan, I encourage you to read it, and it's available on our website. And I'll give you that information at the end of the presentation.

So the first part of this discussion will give you a background of the waterbodies. So this is a photo showing the overall area that the Sherwin-Williams Superfund site is located within. So to orient you, I'll point out Gibbsboro on the right side of your screen down toward Voorhees on the left side of your screen.

Now, the three major areas of contamination are outlined in black. So this area is the former manufacturing plant located near Silver Lake. To the right, you can see the Route 561 dumpsite where the paint waste was dumped. And then down to your left, you can see the United States Avenue Burn Site where waste from the paint manufacturing was burned. These three major areas of contamination are the source for the lead and arsenic contamination that we find throughout the waterbodies.

So, what areas are included in the waterbodies? So,

look at the map and look at the areas in blue. These are all the lakes and creeks. And the waterbodies cleanup area will include Silver Lake, Bridgewood Lake, Kirkwood Lake all the way to your left, and then a portion of Hilliards Creek. So for many years, the waterbodies has been investigated and sampled and studied. What was found was that levels of lead and arsenic within these areas pose an unacceptable risk to human health and the environment. So lead and arsenic are found throughout the soft bottom sediment of Hilliards Creek, Bridgewood Lake, Kirkwood Lake and a portion of Silver Lake. And lead and arsenic can also be found in the soil areas along Hilliards Creek and some limited areas along the south shore of Kirkwood Lake.

So our goal for this cleanup is to prevent human contact with this contamination and to prevent the contamination from migrating anywhere else. So in the next slide, I'm going to zoom in on the creek and lakes that make up the waterbodies. So this slide shows you the four key areas of the waterbodies that are part of this cleanup plan. The flow of water is downstream from the right to the left on your screen. So you can see Silver Lake in blue on the right side of your screen, and then below and to the left, you can see Bridgewood Lake in yellow, and the water will flow through

Hilliards Creek in purple, and then it flows into Kirkwood Lake in green.

Also, you probably noticed that some creeks -- some portions of the creeks are not highlighted. So this portion of Hilliards Creek will be cleaned up with the former manufacturing plant. And this portion of White Sand Branch is currently being cleaned up with the Route 561 dumpsite. And this portion of White Sand Branch and Honey Run is currently in design and will be cleaned up with the United States Avenue Burn Site.

So now that you know more about the waterbodies area, I'm going to move on to the second portion of the discussion and talk about the plan to cleanup sediment. So sediment is defined as the soft, wet material that we find at the bottom of the creeks and lakes. So the sediment here can range in depth from two feet in the shallow creeks to about eight feet in depth in the deeper parts of the lakes. So the sediment is where the lead and arsenic contamination can be found. And as we move to the next slide, you'll see the different alternatives developed for the cleanup of sediment.

So on your screen you can see the three alternatives that were created for sediment cleanup. The first alternative looks at what happens if we take no action. So this alternative is only used as a baseline to compare

to the other alternatives. The second alternative includes a partial removal of contaminated sediment in each waterbody, about 60,000 cubic yards, and the remaining contamination is capped in place using a layer of clean material.

And the third alternative, the preferred alternative, is a full removal, about 128,000 cubic yards, of the contaminated sediment within the creek and lakes. So let me show you a map of alternative three so you can get a better idea of the plan.

So here's our map of the waterbodies again. So instead of showing acreage, this map shows the amount of contaminated sediment removal. The preferred sediment cleanup calls for a partial dredge of Silver Lake because contamination is only found at one end of the lake near the location of the former manufacturing plant. It also calls for a complete dredge of Bridgewood Lake, Hilliards Creek, and Kirkwood Lake. So a complete dredge means that all the contaminated, soft sediment will be removed from shore to shore in those areas.

So EPA considered a number of criteria to identify a preferred alternative, and in the next slide, you can see the criteria and the comparison that was completed. So here's the comparison of sediment alternatives, and along the top of the table, you can see each cleanup

alternative: One, two, and three. And down the left side of your table, you can see all the criteria that EPA uses to compare the alternatives.

So EPA uses these criteria for a comparative analysis of the alternatives. No single criteria will determine what cleanup alternative is selected. EPA uses all the criteria to select a balanced alternative, and we look at criteria like protectiveness, effectiveness, ease of implementing, and cost.

So this comparison shows that sediment alternative two and three are similar, but that sediment alternative three provides the most long-term effectiveness by completely removing the contaminated sediment in the creek and lakes. So from this comparison, the preferred alternative for sediment is number three, the full sediment removal, and it's highlighted in pink on your screen.

So that wraps up the overview of sediment cleanup, but if you remember, the proposed plan also addresses the soils alongside of Hilliards Creek in those few areas along the south shore of Kirkwood Lake. So let's move on to the third portion of tonight's discussion and turn our attention to soil cleanup.

So, I'm showing you this slide again, but now it shows you the areas of soil contamination that will be

addressed as part of this proposed plan. It includes all the soils within the purple area of Hilliards Creek and some isolated spots in red along the south shore of Kirkwood Lake.

So while developing plans for this cleanup, EPA took in consideration many different aspects including the natural resources like the extensive wetlands within this waterbodies area. So before we move on to the alternatives that were developed, I would like to talk to you briefly about these natural resources.

So the map that you're looking at now shows, in green, all of the wetlands, most of them forested, surrounding the creeks and lakes. So here's Silver Lake and here's Hilliards Creek running through the middle of your screen, down to Kirkwood Lake. I just wanted you to see how the waterbodies is the center of a large, wetland complex and what has been done to protect this area.

So the state of New Jersey recognizes the value of the natural resources of this area and has put a lot of effort into protecting this habitat. These brown areas on your screen surrounding the creek and the lakes are New Jersey Green Acres which is land that has been put into preservation. And the green areas on the left side of your screen show habitat for bald eagles. And as many of you know, there's an active bald eagle nest on

Kirkwood Lake. So the waterbodies is part of a large, open space or green corridor within your community.

So EPA also recognizes the importance of these wetlands and conducted an assessment of the wetlands prior to developing cleanup alternatives. So the assessment looked at different things like biodiversity and the health of the wetland areas. So looking at this map, if you add it all up, you can see approximately 38 acres of wetlands have contaminated soil. And from our assessment, about 25 acres were identified as high-value, forested wetland. There were also two other types of wetlands identified but were considered low to medium value. So within the alternatives that are being considered, low and medium values would be completely removed, cleaned up, and restored and a large portion of the forested wetlands would have to be removed and restored, but we are looking at an alternative that will preserve a portion of this area.

So the next photo will show you what the forested wetlands look like, and I'll explain a little bit more about the cleanup and restoration of the forested wetlands. So here's a photo from the waterbodies, and you can see some of the nice, mature trees. So this type of wetland is very important for wildlife, and it's a great source of open space for the community and is

extremely difficult to restore.

So to that end, we developed a balanced, cleanup alternative using a method called compliance averaging, and that's a tool used by EPA in New Jersey Department of Environmental Protection in specific circumstances like this one. And this method will allow us to target the soil removal in these forested wetlands thereby retaining a portion of these wetlands. And this method averages the contamination levels over the entire area when developing cleanup designs. So now I'm going to move on to the next slide that shows you the three cleanup alternatives that were developed for soil.

So here they are, three cleanup alternatives for soil. The first alternative, again, looks at what happens if we take no action, and this alternative is only used as a baseline to compare to the other alternatives. Alternative two, which we are proposing as the preferred alternative, meets cleanup goals on an average basis; removes up to 95 percent of contamination, about 42,000 cubic yards of contamination -- of contaminated soil would be removed, and uses clean material to cap any residual contamination. And alternative three removes all contamination which is 114,000 cubic yards of contaminated soil, and any soil removed, as well as any sediment from the previous

alternatives, will be disposed of off-site at an approved facility.

So the next couple of slides will give you more details on the soil alternatives and our decision process. So these maps show you a comparison of soil alternative two and three. Soil alternative two is on the top of your screen and this is that targeted soil removal, and soil alternative three, the full removal, is on the bottom of your screen. So if you look at this shaded area along Hilliards Creek, you can see the smaller excavation footprint in soil alternative two compared to the full excavation footprint in alternative three shown on the bottom of your screen.

Now, the majority of lead and arsenic contamination is found within the top two feet of soil near the water along Hilliards Creek. And soil alternative two is a balanced strategy that targets the top two feet along Hilliards Creek and removes up to 95 percent of the contamination. Now, you can see on the bottom of your screen that alternative three clear-cuts about 23 acres of that forested wetland, but on the top of your screen, that number is reduced to 16 acres, and it will be a targeted removal instead of a complete clearcut.

So, like for sediment, EPA considered a number of criteria to identify a preferred soil alternative. And

in the next slide, you can see the criteria and the comparison that was completed. So here's that table again and along the top, we have our three alternatives: One, two, and three, and then along the left side are all the criteria that we used to compare the alternatives. And EPA uses these criterias for a comparative analysis of the alternatives. And I know I'm repeating myself: But no single criteria will determine what the cleanup -- what cleanup alternative is selected. EPA uses all of the criteria to select a balanced alternative.

And you can see we look at protectiveness, effectiveness, ease of implementing and cost and as well as several other things. And this comparison shows us that the main differences between soil alternative two and soil alternative three, are short-term effectiveness or how will it impact the community while under construction and implementability or the availability of various services and materials required.

So soil alternative two has smaller volumes of soil removal, smaller excavation footprint within the forested wetland area, and it takes less time. And as I pointed out in the previous slide, soil alternative two targets areas where most of the contamination can be found and result in up to 95 percent removal of contamination. So from this analysis, the preferred soil alternative is

number two, and it's highlighted in pink.

So I know I just threw a lot of information at you and I encourage you to read the proposed plan that's available on our website, but right now I'm going to move on to the last portion of the discussion and show you one final summary slide to wrap up.

So there are two tables on this final slide. The top table is a summary of the sediment alternatives and the bottom table is a summary for the soil alternatives. The preferred cleanup options are in pink boxes. So to summarize, the preferred sediment cleanup is number three, a full removal of sediment in Hilliards Creek, Bridgewood Lake, Kirkwood Lake and a portion of Silver Lake. And the preferred soil cleanup is number two, a targeted removal of soil resulting in up to 95 percent contamination removal.

You can also see the amounts of supplement and soil that will be removed in each alternative as well as the cost of each alternative. And the total cost for the preferred alternatives is approximately $90 million. So, I anticipate that you probably have a lot of questions, but first, I want to thank you for listening. And I'm going to turn the presentation back over to Pat so we can get to those questions.

PAT SEPPI: Thank you, Julie. Thank you for your --

JULIE NACE: Thanks, Pat.

PAT SEPPI: Oh, I think -- Yeah. Can you -- can you mute that please Julie, because I think there's some feedback.

JULIE NACE: Okay.

PAT SEPPI: Thank you. Okay. So we're about one minute away from the reason that we are here this evening, and that is to hear your comments and you can ask your questions, but I just wanted to, for one minute, bring Shereen back so she can remind you about how to use the chatbox for your questions. And I know quite a few people came in after we started, so, Shereen, if you could go just over that again, quickly, before we get to the questions.

SHEREEN KANDIL: Sure. Thanks, Pat. Good evening, Everyone. Again, my name is Shereen Kandil. I'm the Community Affairs Team Leader for EPA and just -- we are going to receive questions and respond to questions in two different ways. We have the chatbox, and in order to ask your questions via the chat, there's an icon on the top of your screen for those of you who have joined via the Microsoft Teams link. It looks like a little thought bubble. If you click on that, the chat opens. I've been adding a few comments throughout the presentation, so the link to the Sherwin-Williams -- our EPA's

Sherwin-Williams page and a reminder that you can make comments in the chatbox. But if you open that up, you'll be able to ask your questions that way. And because we do have a transcriber, we ask that you state your first and last name, plus your affiliation, and your comment or question. So I would write, "Shereen Kandil, resident of Staten Island" and then my comment or question.

Once we go through the questions in the chatbox, we will then turn to the phone lines. And as I mentioned earlier, it's going to be a little bit tedious, but we do this on purpose, and it goes by pretty quickly. Pat is going to facilitate the phone lines. And the way we're going to do that is by category and alphabetically. So Pat will ask for any elected officials with the last names A through G, for instance, to unmute their lines and ask their questions. She'll go through the alphabet, and then we'll go to residents and then businesses and then the general public. And then if there are questions that come in in the chatbox while we are responding to questions via the phone, we will then turn back to the chatbox. So please -- please don't hesitate to ask your questions during that time.

So for now, Pat, I don't see any questions in the chatbox. So, maybe we can turn to the -- Oh, we do have one. Would you like to start now, Pat?

PAT SEPPI: Sure. That would be fine. Why don't you read them, and then we can send it over to the right person to respond?

SHEREEN KANDIL: Sure. Okay. So the first question -- and please forgive me if I pronounce your last name wrong, but it is Nathan Ruhl, Resident: "Will the upstream site remediation be completed before the downstream remediation? If not, how will contamination be contained during the remediation of upstream sites?"

PAT SEPPI: Julie, do you want to take that?

JULIE NACE: Sure. So to answer your question, we are generally remediating in an upstream to downstream sequence. So you can see the residential properties are not quite in that order, but they're happening first. But then we move to the dumpsite which is currently being remediated. Then our plan will be to go the United States Avenue Burn Site and then the former manufacturing plant. And the next would be the waterbodies which will go from upstream from Silver Lake, down through Bridgewood Lake, Hilliards Creek and down to Kirkwood Lake, in general. And none of that has been designed yet.

PAT SEPPI: Does that answer your question --

JULIE NACE: -- has another question.

PAT SEPPI: Okay. Sure. Go ahead, Nathan.

SHEREEN KANDIL: "How will effluent from dredging operations be contained, prevented from flowing further downstream?"

JULIE NACE: Right. So when we dredge, we'll have -- we'll put things in place to prevent contamination from flowing downstream, either it will be curtains or anything to prevent any of that soft sediment from going from one area to another. And ultimately, when the remediation is finished, we will sample so we know that we didn't contaminate anything downstream.

PAT SEPPI: If you could explain a little bit, Julie, what does that mean?

JULIE NACE: There's different ways to contain the soft sediment while you're doing dredging. And they'll put in almost like a -- like, if you see, like, a bloom in the water when there's an oil spill and it contains the oil, so we'll be doing something different to contain the sediment as we stir it up and remove it from the lakes.

PAT SEPPI: Okay. Does that answer your question, Nathan, or is there --

SHEREEN KANDIL: There's a couple more follow-ups, Pat.

PAT SEPPI: Okay.

SHEREEN KANDIL: So the first one is: "Will the

wetland corridor along the stream be restored to an inaccessible wetland, high value for wildlife, or highly accessible, low value for wildlife?"

JULIE NACE: So, a lot of that wetland is currently in New Jersey Green Acres which is preserved. I believe it does provide some access to the public, but I believe it will be just restored in kind. So we'll have a lot of inaccessible areas, but we also will provide what is currently -- and this has to be developed and designed in conjunction with the community and some accessibility for people. And it's a vague answer, but it all will come out in design, but our goal would be to retain the wildlife value and also provide access to people.

PAT SEPPI: Okay.

SHEREEN KANDIL: Thank you.

PAT SEPPI: Couple more chat questions there?

SHEREEN KANDIL: Yes. Yes. Also, from Nathan: "What is the actual estimate of contamination removed in soil alternative two? You said 'up to 95 percent.' What is the actual estimate for contamination removal, plus or minus error?"

JULIE NACE: I don't have those exact numbers. We have large data gaps in our sampling, and after we get to a ROD, the record of decision, we'll move into pre-design investigation, which will have a complete sampling

effort. So we'll know exactly where the delineation of the contamination is and what we'll be taking out. So I don't have the plus or minus error numbers for you right now, but we will eventually have that for you.

SHEREEN KANDIL: We have a few more questions online in the chat.

PAT SEPPI: Yes.

SHEREEN KANDIL: Scott Smith, Board Chair Square Circle, owner of 75 percent of Bridgewood Lake. "I have several questions I would like to ask." Oh, Scott, would you like to ask via the phone? We'll turn to the phone lines if -- if -- you know, and you can ask verbally if you'd like to do that.

SCOTT SMITH: Yes. I would like to ask verbally.

PAT SEPPI: Yeah. Go ahead, Scott. Thank you.

SCOTT SMITH: Okay. The first thing, I just wanted to ask -- and I think I know the answer already, but is hydraulic dredging ever considered? Our lake would seem like it would lend itself to hydraulic dredging, but I can't imagine that you would be able to do the post-excavation sampling very easily if the water was left in the lake, but is that ever considered in a situation like this or is it all done by lowering the lakes, dewatering, and exposing all the soils?

JULIE NACE: So, again, we haven't designed it yet,

but I believe that we're looking at hydraulic dredging or mechanical dredging without draining the lakes.

SCOTT SMITH: Well, that would be wonderful if we could.

JULIE NACE: But again, that will come out in design when we finalize it --

SCOTT SMITH: Okay. And as far as fish removal, we have a well-managed lake as far as our fish population --

JULIE NACE: Uh-huh.

SCOTT SMITH: -- how does the EPA address that or is that addressed by a joint effort with Fish and Wildlife as far as transplanting what we have and then replacing what we have when everything is finished?

JULIE NACE: So I sound repetitive, but, yeah, that will all be in design. So prior to any dredging, you'd make a plan for the wildlife in the lake, what to do with it --

SCOTT SMITH: -- and that is a standard procedure, then, to address that?

JULIE NACE: I think I'm going to -- Pat, I think you can answer this because on one of your sites, they did go through and remove fish and wildlife from the lake so it wouldn't be damaged prior to dredging.

PAT SEPPI: We did --

JULIE NACE: Yeah.

PAT SEPPI: -- lake site when we were dredging the lake. I mean, I don't know. I'm not a scientist, and I don't know the exact process of how they did it, but, you know, we did it there, and it was very successful and the people were very happy that we were able to remove, you know, the fish and then get them back in after the dredging was done.

But like Julie says, there is so much of it that is done during the design --

SCOTT SMITH: Right --

PAT SEPPI: -- you know, that we just don't have the answers to now, but we will --

SCOTT SMITH: Understood.

PAT SEPPI: Yeah. Thanks, Scott.

SCOTT SMITH: All right. When -- and again, this would be way down the road and another question at the design phase, but we do have other options as far as the property that we own. We own the north side of the lake as well. We've got four or five acres in there. And we would prefer to have that used for all the staging; especially, after having watched all of the procedures at the Deichert property. Pretty frightening. The south shoreline is used by our club almost all year. It's a Picnic Grove. We can -- we hold events out there. So, we'll be sure to convey that when we get the construction

phase. Thank you.

JULIE NACE: Yes. So -- Yes. Thank you.

PAT SEPPI: Shereen, is there another chat question?

SHEREEN KANDIL: We do. We have a few more.

PAT SEPPI: Okay. Thanks.

JULIE NACE: So Lauren Jenkins, Resident, has two questions. The first one is: "What kind of longevity data do you have on partial remediation and capping?" That's the first question.

JULIE NACE: Right. I'm reading it.

So it depends on the -- So for us in particular at this site, we're looking at the energy level of the system, and we felt that the energy level within the creek and lakes is high enough that it warranted the full sediment removal, but in the flood plains away from the creek, it becomes very low energy. It's a depositional site. Things up there. And we felt that's where the partial soil removal could take place and the capping would be very successful. And that would, in turn, able -- enable us to preserve a portion of that forested wetland which would make the area more -- more receptive to restoration. I don't have handy any longevity data, but I can follow up with you.

SHEREEN KANDIL: Thank you, Julie. The second question from Lauren is, "How will the preferred soil

remediation affect the use of Kirkwood lake after the cleanup?"

JULIE NACE: So I just want to make sure I understand the question, because the soil cleanup in this plan -- it affects about five small areas along the south shore of Kirkwood Lake, but Kirkwood Lake, for the sediment, the whole thing will be dredged, and I -- You mean, like human recreational use or -- I just need a clarification of that question.

LAUREN JENKINS: Yes. So for my first question, I was wondering about what kind of longevity data you have regarding capping and the risk of recontamination, and with a partial remediation, how does that affect recreational use of the lake thereafter?

JULIE NACE: So the lake will have a full remediation and even though what we're calling partial or the targeted soil removal, all the levels will be below cleanup goals. So it will be -- it will be human -- at least protective of human health and environment so you can use the areas.

LAUREN JENKINS: So you're saying that this would make all the waterbodies swimmable? They'd be that safe?

JULIE NACE: Yes.

LAUREN JENKINS: And that's including doing the preferred soil remediation, but what about in the

long-term? What about when the capping starts to wear over time? What about 50 years from now?

JULIE NACE: Well, these -- these alternatives are developed to look beyond that. And we feel that it's -- it's a low energy system. The residual contamination that is left in the soil is deeper. It will be well-capped. It will be vegetated. And it -- the -- there's low risk of it moving.

RICH PUVOGEL: And Julie, if I can --

JULIE NACE: Yeah. Go ahead.

RICH PUVOGEL: -- this is Rich Puvogel. One, there's also a monitoring that goes along with the capping remedy. We reassess the quality of the cap on an annual basis. Sherwin-Williams would be there to do that work for EPA as long as that cap remains. And every five years, the data collected during the monitoring term is assessed and we conduct a five-year review of the remedy which would focus on areas of the cap to ensure that it's protective. And if it would need to be adjusted or touched up again as time goes by, that maintenance would be conducted by Sherwin-Williams with EPA oversight.

LAUREN JENKINS: And is there ever an amount of time where that surveillance stops or do you continue here forth?

JULIE NACE: -- continue --

RICH PUVOGEL: That continues as long as the cap remains.

LAUREN JENKINS: Thank you.

PAT SEPPI: So I'm going -- I was going to say do you have another --

SHEREEN KANDIL: Thank you. The question -- Nathan wanted to clarify a question: "Will the stream corridor be restored to a park or a forest?"

JULIE NACE: So I think I addressed that previously, but we're going to restore the wetlands to their current -- to what they currently are. We're not going to put a path through the middle of the wetlands. I see -- I don't want to jump ahead, but Nathan -- It's not the next question. So, again, in design we will finalize how we will restore and what will be publicly accessible and what will not.

SHEREEN KANDIL: Nathan says, "Great. Thanks."

JULIE NACE: Oh, okay.

SHEREEN KANDIL: There's a final chat question for now that comes from Dave Evans, Gibbsboro: "What season or seasons of the year will the remediation of Kirkwood Lake, Kirkwood Forebay, and Phragmites Wetland" -- sorry -- "Has consideration been given to the active eagle nest and the feeding/fishing activity of eagles during the January-June time frame? This nest has

produced successfully for the last two years with three eaglets. Disruption of waterbodies during this active feeding time would disrupt continuation of this nesting site."

JULIE NACE: That's a great question. And any remediation particularly in wetland areas, particularly with threatened, endangered species, has -- we have very specific windows dictated by New Jersey Department of Environmental Protection of when we can go in and remediate and we already adhere to that so for nesting season for bald eagles, within a certain -- within their -- their area, we cannot enter that area for remediation. Also, for certain species of fish, that prevents us from dredging during certain times of the year. So we adhere to all of that, and we're very aware of the eagles, very aware of the wildlife species within the area.

PAT SEPPI: And that goes -- and that goes for bats also --

JULIE NACE: And for bats.

PAT SEPPI: -- we're very careful about their nesting season.

JULIE NACE: Yeah. And we're also very aware of any sensitive plants, even though they don't really have the feeding and migrating schedule like the animals.

SHEREEN KANDIL: Thank you. Dave says, "Thank you, Pat." That's the end of the questions in the chat for now. But if you all want to continue asking questions via chat, you may do so; but we will be opening the phone lines right now.

PAT SEPPI: Okay. So do you have a -- any phone lines or any questions from the phone or you're opening it now?

SHEREEN KANDIL: Yeah. Pat, you can facilitate. So you can call in the categories and alphabetically.

PAT SEPPI: Okay. So people on the phone, we're happy to have you here. And so what I'd like to do is just kind of try to keep it simple and not get confused. So if there are any elected officials out there who name -- last names begins with, let's say, A through G, if you have a comment or a question, please just jump in right now and ask it.

MAYOR ED CAMPBELL: Pat, this is Ed Campbell.

PAT SEPPI: Yes. You're a "C." That's good, Ed. Thanks. Go ahead.

MAYOR ED CAMPBELL: They say speed kills. I hope not. You have to be over 50 to know that one, I guess.

I would like to get a sidebar, Julie.

JULIE NACE: Yes.

MAYOR ED CAMPBELL: I have a lot of questions on

what --

JULIE NACE: Okay.

MAYOR ED CAMPBELL: -- usability of these wetlands were -- would be. I was led to believe that they would be pretty much unrestricted. So, I think in the comment period, we really want to understand what we're going to wind up with as the majority owner of these lands.

JULIE NACE: Yeah. And I need to -- Yeah. I can sit down with you and talk it out, but I believe you're right. I mean, these are going to be -- Most of the land will be owned by Gibbsboro or New Jersey Green Acres?

MAYOR ED CAMPBELL: No. It's Gibbsboro.

JULIE NACE: It will be Gibbsboro. Yeah. It'll be wetland areas owned by Gibbsobo considered open space.

MAYOR ED CAMPBELL: And that generally means unrestricted public access?

JULIE NACE: Right.

MAYOR ED CAMPBELL: That's what it means in New Jersey.

JULIE NACE: Yes. I'm in agreement with that. Yes. You have public access to it. It's just -- Yes.

MAYOR ED CAMPBELL: So it's -- you know, if an area is restricted, that's not public access.

JULIE NACE: No. If it's owned by the borough

Gibbsboro, it's unrestricted public access.

MAYOR ED CAMPBELL: So we'll set something up --

JULIE NACE: Yes. And that can really be -- and -- and to make it accessible, that would be in design. Like, where you want to put places for the public to use it.

MAYOR ED CAMPBELL: Okay. Thank you.

JULIE NACE: You're welcome.

PAT SEPPI: Mayor, any other questions now or are you going to wait and have a sidebar later?

MAYOR ED CAMPBELL: I have a bunch. I don't want to dominate the meeting. I -- I know how to reach you.

PAT SEPPI: Yeah. Okay. We'll talk to you later.

JULIE NACE: Okay. We'll have a separate meeting.

PAT SEPPI: If there are any other elected officials whose last names start with, let's say, N through O, if you have any comments or questions, please join in now. Unmute your phone and ask your question or give us your comment.

And how about any elected officials whose last names start with O and until Z, until the end of the alphabet, please, you're certainly welcome to give us your comment or ask a question now.

Okay. I'm hoping that if there's anybody out there, they're able to unmute themselves. So let's go on now to

residents. It's the same type of thing: Any residents out there who -- whose last names begin with A through G, please ask your question now from the phone. I always hate this part because I don't really know if somebody is trying to, you know, say something and maybe they just haven't unmuted their phone.

SHEREEN KANDIL: Just as a reminder, Pat, just for everybody's awareness, if you are trying to unmute your phone lines, you can press star six, if you called in. If, however you want to -- if you've joined via the link, the Microsoft Teams link, you can just unmute your microphone and speak into the microphone.

PAT SEPPI: All right. So let's -- let's move on with the residents. And don't forget what Shereen said: You know, you can -- if you're on the phone, just hit star six and that will unmute you.

So any residents whose last names begin with H through N, please unmute your phone, star six, and ask your question or give us your comment. Okay. I don't want to -- Give it enough time just in case.

All right. So let's move on to residents whose last names start with O and go through T; please feel free to unmute your phone, star six, and join in and -- with your comment or your question. I guess not. All right. So let's get to the end of the alphabet: Any residents

whose last name begins with U through Z, please, don't hesitate to get on now and ask your question or give us your comment.

I know -- Shereen, can you tell if there are people on the phone?

SHEREEN KANDIL: Yes. There are people on the phone.

PAT SEPPI: All right. Then let's move on to our next group which would be businesses. Anybody with a business whose last name begins with A through G, if you have a question, please unmute your phone, star six, and ask your question or give us your comment, please. I guess not.

All right. Same group: Businesses, last name starting with H through N. Please unmute your phone, star six, and ask your question or your -- give us your comment. All right. So let's move on to any business, last name beginning with O through T; if you have a question or a comment, please unmute your phone, star six, and let us know. All right. So let's go to the end of the alphabet; any businesses out there whose last name -- I guess last name of your business begins with U through Z, please, join in with a question or a comment.

All right. So our last category is the general public. So let's go back to the beginning of the

alphabet. Anybody in the general public on the phone whose last name begins with A through G, please unmute your phone, star six, and let us know your question or your comment.

JOHN CUSTODIO: I have a question. So my name -- Can you hear me now?

PAT SEPPI: Yes, we can.

JOHN CUSTODIO: My name is John Custodio. I guess we probably fall under a business, but we're with the Square Circle property. When you get into the design part of this, will you be sitting with our leadership over at the club to talk about exactly the areas that you're going to clear the specifics? I think our chairman asked you about the equipment staging and all that. Does that come into play? Obviously, it's going to be a clear or so down the road, but we will have a seat at the table to know exactly what you're doing.

Quite frankly, the Deichert property across the street that the Mayor mentioned earlier, was a huge shock to many of us, to see how it was just clear-cut all the way around their lake. And I know our members are very concerned about that, how it's going to look. And -- and if that's the case and that's what the EPA wants to do, you know, we -- we really want to see a plan of how the vegetation is going to be replaced on the Clementon Road

side, from the north side which is the cemetery side. There's a lot of questions yet. So will we -- And that's the question: Will we have a seat at the table to discuss all of those specifics as it relates to our property around that lake?

PAT SEPPI: Julie, do you want to take that or Julie or Rich?

JULIE NACE: I'm thinking maybe Rich can help me out. So a lot of what you're -- Rich, maybe you can start me off on this because --

RICH PUVOGEL: Sure.

JULIE NACE: -- operable units here and --

RICH PUVOGEL: Yeah. I'd be happy to. Thanks.

JULIE NACE: Okay.

RICH PUVOGEL: Hi, John. This is Rich.

JOHN CUSOTODIO: Hi, Rich.

RICH PUVOGEL: How are you?

The design process is inclusive of the property owners. Sherwin-Williams sits down with them -- with the property owners and runs through the design from the beginning of the design through the end. You're a bit of a -- your input is taken. Your voice is heard by Sherwin-Williams and EPA to, you know, guide that design so we know what -- what's important to you as you're just voicing here and we know how to work -- work around

certain issues that may come up.

So, as Sherwin-Williams has done on the other properties, they sit down and meet with the property owners at the beginning of the design, and they, basically, run through the design with the property owners. That's -- your input is throughout the whole design process. So that's an important part of this. And we welcome your voice in that process. And as you point out, it will be quite a while down the road before we get to that, but it's going to be there for sure.

JOHN CUSTODIO: Well, I appreciate that --

PAT SEPPI: Ray -- Oh, I'm sorry. Go ahead, John.

JOHN CUSTODIO: I was just going to say, you're right, and in the previous briefing that we've had, we kind of understood that some of this would be a few years out, but I would hate if the -- I'd be disappointed, rather; I don't hate it. I'd be disappointed if the EPA, DEP, and all the players met and started designing, then they meet with us because they've already done all that work -- I would hate for us not to be in on that process from the beginning. So I just wanted to really go on record to share that with you.

Our chairman is on the line here, and he can -- he can vouch for that or at least augment what I'm saying, but that's a huge concern. You know, we've been there

over 80 years. That's just a beautiful property, the contamination notwithstanding, and we want to keep it that way, but we're concerned about how much of it is going to be -- especially the trees and the banks and all that is going to be damaged, or you know, it's going to be cleared. I guess I should say that. But so, that's our big concern, and I see Scott Smith is on the call. He could also add to that if he wanted to.

PAT SEPPI: And he did have -- Yeah. He did have a question before, John, and that's a really, really good question. And you know, I was just going to call on Ray, just -- and I know that, you know, it's not part of this operable unit, but Ray, maybe you could let John know how active Sherwin-Williams is in meeting with residents, you know, whenever they're designing something. I think that's very important for people to know.

So, Ray, you want to address that a couple minutes?

RAYMOND KLIMCSAK: Sure. Hi, John --

JOHN CUSTODIO: Hi.

RAYMOND KLIMCSAK: -- my name is Ray Klimcsak. I'm the -- excuse me -- been the project manager for the residential properties. I'm very aware of the work that occurred at the Deichert's property, but I could also vouch that Sherwin-Williams will be an -- a very active player in the efforts to, you know, meet with -- not so

much the residents, but with you, and you know, over at the Square Circle gun club, the members that own the property. So, as Rich, you know, indicated, it's sort of a hand-in-hand process.

After the sampling is done and we move into pre -- call it like pre -- our removal action activities is the time when we really sit down with the property owner and walk through it. So, I'll -- I'll echo what Rich previously said.

JOHN CUSTODIO: Thank you. Thank you very much. I appreciate that.

SCOTT SMITH: Scott --

PAT SEPPI: Does that answer your question, John?

JOHN CUSTODIO: Yes, it does. Scott -- Did I just hear Scott?

SCOTT SMITH: Right. Yeah. I just wanted to say, you know, so far throughout this process we've been very pleased with the contact that Sherwin-Williams initiated with us several years ago. Probably ten years ago now. They just completed a public service presentation to us only a little over a month ago. They come in -- well, they didn't come in physically this time. It was on Zoom, but you know, they have maintained contact with us. And we certainly want to see that continue. And as John said, in the early stages and through every stage it

would be important. And just so everyone knows too, I have a -- kind of a -- a strange dual role here. We are also -- the company that I work for is -- we happen to represent the borough as their borough engineers.

So I also have information, you know, that I -- that is shared with us because of that position as well. So we're very happy with that. Ed Campbell, I've known him since he was five years old, so we have a long relationship. And I was a Gibbsboro resident from age zero to 25. And I've been a Square Circle member since I left. So, that's the way it's going to be, and I appreciate it all. Thank you.

MAYOR ED CAMPBELL: Scott, it wasn't that long ago.

PAT SEPPI: Any other -- any other chat questions come in, Shereen, or are we still on the phone?

SHEREEN KANDIL: I think you just have to finish up the phone lines and we do have a questions on the chat that came in.

PAT SEPPI: So if anybody else has a question -- anybody on the phone, please unmute your phone, star six, and ask your question. Anybody? General public or businesses or residents? Anybody else out there on the phone who has a question, please, ask your question or we're happy to hear your comment now.

MIHIR CHOKSHI: Hi. This is Mihir Chokshi, general

public. Has Sherwin-Williams signed off on, agreed on this plan to execute it, and have they been represented correctly here?

RICH PUVOGEL: This is Rich. I can try and answer that. Sherwin-Williams has worked with the Environmental Protection Agency and NJ DEP to conduct the feasibility study which they provided to us. That feasibility study has these options in -- or these alternatives in the feasibility study and EPA identified the preferred alternatives that EPA prefers with the -- with the NJ DEP concurrence on the preferred alternatives that we've identified here tonight and the preferred alternative that's in the proposed plan.

Sherwin-Williams will formally agree to the selected remedies that EPA eventually makes in their record of decision through a consent decree that we have worked on with Sherwin-Williams. This consent decree is used for -- has been used for the previous phases or operable units of the cleanups at the sites in Gibbsboro, and we would modify that consent decree with Sherwin-Williams and the Department of Justice. And Sherwin-Williams, if they choose to do so, they would sign on to the consent decree and agree to do the -- implement the preferred or the selected remedy as it's chosen.

MIHIR CHOKSHI: Thank you.

PAT SEPPI: And I think what Rich just said, is important to remember too that this wouldn't happen until after the record of decision, because at this point, this is still our preferred remedy. But once we have the record of decision, that will be our final remedy.

Anybody else out there on the phone who'd like to ask a question or make a comment, please unmute your phone, star six, and go ahead.

MIHIR CHOKSHI: This is Mihir Chokshi again, general public. I think somebody else, Russell Posser, asked the same question: What's the timeline? I understand the ROD is going to be signed sometime this year. You're looking at predesign investigation, I heard, then remedial design, and then construction? What's the timeline?

JULIE NACE: Right. So you have --

PAT SEPPI: Julie, why don't you get --

JULIE NACE: Yeah. So we need to get to the record of decision, and then we need to amend the consent decree, so there's some legal negotiations that have to happen. And then after that, we enter into that predesign investigation and then design. And that will probably take between two and three years before we're ready to put, like, shovels in the ground.

MIHIR CHOKSHI: Thank you.

PAT SEPPI: Does that give you a good idea for the time frame?

JULIE NACE: And also, it has to be sequenced with what's going on now with current remediation. So you see that there's active remediation ongoing, and again, I'll repeat: It's at the residential areas. It's at the commercial properties near the dumpsite. It's within the dumpsite. Then we'll move to the United States Avenue Burn Site, the former manufacturing plant, and then we'll move through the waterbody system, and it can happen concurrently or sequentially.

PAT SEPPI: So I hope that answers your question.

Anybody else out there on the phone that has a question, please don't hesitate to unmute your phone, star six, and ask your question or make a comment. Let's give it another few seconds. Anybody on the phone, business, general public, any residents who have -- might have a question or a comment, please, this is a good time; unmute your phone and let us hear your comment or your question.

All right. Well, I guess -- Shereen, why don't we go back to the chat and then if anybody else is on the phone, we can go back there again, if that -- if that works all right.

SHEREEN KANDIL: Sure. Thank you, Pat. So for the

sake of transparency and for the folks who can't read the chat, I -- I do want to read some comments and then go into the questions.

So I -- I believe when the Mayor was asking -- or making comments, there was a few comments that came in that said, "They need to be protected. Let's not do this behind closed doors. Let's discuss this in public." And then a question came in from Kathryn Mickle, Resident: "Is wetland unrestricted use," and I think we -- Go ahead.

JULIE NACE: This is Julie. So I think unrestricted use is not what the mayor was referring to. He said unrestricted access. So lands that are owned by a public entity generally have unrestricted access to the residents or to anyone in the area. So, a privately owned wetland is different. And I see she says "I was not allowed to have a wooden fence on my property line after remediation because it's protected." So that would be a different -- So that's a use. That's building. That's putting something in a wetland. It's different than just allowing access and walking around. So I don't know if that helps with that question.

SHEREEN KANDIL: Okay. Thank you, Julie. The next question comes from Alice Johnston: "How will capped areas affect residents' property deeds?"

JULIE NACE: Hi, Alice. It's Julie. So the land that will have some residual contamination and need a deed notice will, again, be publicly owned by the borough of Gibbsboro, and they would have the deed on that property and would not affect resident properties at all.

SHEREEN KANDIL: Thank you --

JULIE NACE: Go ahead --

SHEREEN KANDIL: Sorry. I didn't know if somebody was speaking --

(Parties speaking simultaneously.)

PAT SEPPI: Another question?

SHEREEN KANDIL: Yeah. There are a few more. So Nathan Ruhl, Resident, asks, "What is the contact information for submitting letters" and Julie has that up --

JULIE NACE: Yeah. That's up there, Nathan.

SHEREEN KANDIL: And we'll -- we'll mention again at the end of the meeting. Nathan also asks, "Will the public have a seat at the table when discussing how the remediation and design construction or will this be handled through back-door and sidebar conversations with the elected officials? The public should be voting on some of these issues, as it pertains to public lands."

JULIE NACE: So the whole Superfund process is a public process, so you should always have a voice in this

process. I think when the Mayor said he wanted a sidebar or conversation, he just had a bunch of questions for me. It will all be recorded in the responsiveness summary in this meeting. I think he just didn't want to take up all the time.

SHEREEN KANDIL: Thank you, Julie.

Russell Posser -- sorry: "What is the overall timeline for the project as it appears to be a ten-year project?" And I think you answered that already. "That seems to be very aggressive and has no allocation for additional studies, etc.," I guess that's in response to your --

JULIE NACE: Right. That would be a best-case scenario, but yes, there's always things that pop up, so that -- our timeline can change. But we are currently in remediation in portions of the Sherwin-Williams sites and anticipate being in remediation and just moving from one area to the next and just continuing on with the cleanup.

SHEREEN KANDIL: And then Nathan Ruhl, Resident, asks: "Is a trail network or park a use or an access?"

JULIE NACE: I need to follow up with that and look at the actual zoning and the rules within that county and the state.

SHEREEN KANDIL: Thank you, Julie. And then finally Lynn Vogel from DEP asks -- says, "Date is wrong."

JULIE NACE: I saw that, Lynn. It is 2021. Not 2020, Everybody.

SHEREEN KANDIL: Great. So that's it in the chat so far, but, Pat, if you want to open it up one more time.

PAT SEPPI: Yeah. Let's open the phone up one more time to anybody who may be out there wanting to ask a question. Anybody on a phone line who has a question, please, unmute your phone, star six, and we are happy to receive your comment or to answer your question. Is there anyone else out there on the phone?

MAYOR ED CAMPBELL: Ed Campbell again for Julie.

JULIE NACE: Yes.

MAYOR ED CAMPBELL: With respect to databases of contaminated sites when this is all over, what's going to be listed in the databases? I think the public would be interested in -- you know, if they own a property (Inaudible) might be cleaned, but it might be in close proximity to something that's in a DEP or EPA database as a result of the cleanup not being perfect. So my understanding is --

JULIE NACE: Yeah.

MAYOR ED CAMPBELL: -- 561 dumpsite will perpetually be listed as a contaminated site?

PAT SEPPI: But -- Okay. I'm not sure if I'm understanding. But it will always be listed, yes, as a

Route 561 dumpsite, that it was a contaminated site, but it will be listed as cleaned up.

MAYOR ED CAMPBELL: It's not cleaned up. There's still lots of contamination at depth --

JULIE NACE: And all of that will be detailed in the -- in the database.

MAYOR ED CAMPBELL: -- if somebody buys a property adjacent to that, right, there's going to be a disclosure from the person that's selling it that it is --

JULIE NACE: Yes. They should disclose with due diligence that they -- that that site is located near there.

MAYOR ED CAMPBELL: So how will that affect -- there's going to be some residual contamination at Kirkwood Lake and there's going to be some in the wetlands of Hilliards Creek. Are they going to be listed in databases so that the people that live along those properties are going to have this --

JULIE NACE: Yeah. It should be a transparent process. So, they should be able to see what was there, what was cleaned up, and what is still -- what is -- it will all be below cleanup levels, but what is still residual at depth won't be hidden. They'll be able to see all that.

MAYOR ED CAMPBELL: I just want to make sure people

understood that will be there.

SHEREEN KANDIL: Hi, Pat. There are a couple of questions over the chat.

PAT SEPPI: Okay. I see.

SHEREEN KANDIL: Tracy Haines asks when the transcripts of this presentation will be available, phone queries and answers, chat queries and answers, et cetera. Pat, you can answer -- I know you answered that earlier in the meeting.

PAT SEPPI: Yeah. And I'm happy to answer that, Tracy. We do have court reporter who is, you know, documenting this meeting. The whole -- everything -- all the questions, all the responses, everything. So we expect to get that transcript -- usually it takes about two to three weeks. So what will happen is when we issue the record of decision which is that final document -- it's a legally binding document that spells out what our final remedy is. Not preferred remedy. Final remedy. We'll have that online. Along with that, we'll have what's called a responsiveness summary which kind of is -- compiles all the questions, comments, and answers that went on tonight. That will be a part of it. And the third thing will be that transcript. So all three of those will come out at the same time. We'll make sure they're on our web page. I will send out an e-mail with

a link to that so everybody will be able to see it, but, you know, that kind of rides on when the record of decision is signed because even though we'll have the transcript and we might have the responsiveness summary, the determining factor is that record of decision, when that's ready to be signed and to go out. I hope that answers your question.

SHEREEN KANDIL: Thanks, Pat. Just a comment from Alice Johnston, "Our" -- Tracy says, "yes," by the way.

PAT SEPPI: Okay. I saw that.

SHEREEN KANDIL: Alice says, "Our property values are going to be negatively affected."

A question came in from Russell Posser: "How were the core samples taken from the lakes and will additional core sampling be required? If, yes, will vibracoring be required?"

JULIE NACE: I might ask Ray to help me on how the core samples were taken from the lakes because he was managing during that and some -- yes, and some additional sampling of the hard, sandy area beneath the sediment will be necessary in the predesign investigation. I don't know if Ray wants to speak to the original core samples --

PAT SEPPI: Ray, you want to add anything?

RAYMOND KLIMCSAK: Sure. That was a number of years

ago, but I do recall that Sherwin-Williams had to obtain a contractor who made use of a vibracore to collect the sample. But that's -- I mean, that's not the same as the vibration that's caused, you know, or due to putting in the sheet piling that's done as part of the remediation. So I'm not -- I'm not sure if it was just a question about what technology may be used or what potential disturbance, you know, could be caused by sampling.

PAT SEPPI: I don't see any other chat questions right now. Let's try one last time to go back to the phone. If there's anybody on the phone who would like to ask a question or provide a comment, please unmute your phone, star six, and we're happy to hear from you. I guess not.

So I see -- you see there's another question from Alice?

JULIE NACE: Yes.

PAT SEPPI: Julie? Do you see that? Yeah.

JULIE NACE: Yes. So just for the transcriber, I just want to read it out loud. Alice Johnston asks: "Why not remediate 100 percent versus capping? This will affect our value of property."

JULIE NACE: Okay. So just so everyone understands, for the sediments in the lakes and creeks, it will be 100 percent removal. 100 percent remediation. And for the

soil in those wetland floodplain areas around Hilliards Creek, we're trying to strike a balance between reaching our cleanup goals and preserving some portion of all those wetlands instead of clearcutting everything.

So I can't really speak to how that will affect your property value, but that's why we chose or we're proposing the preferred alternative of targeting that soil removal in an effort to preserve a portion of those forested wetlands.

SHEREEN KANDIL: Thank you, Julie. Another question from Lauren Jenkins: "Can you clarify the effect on the property values on Kirkwood Lake?"

JULIE NACE: I -- the effect of prior to cleanup and post cleanup? I don't know if I can speak to that. I mean, the property values should -- I mean, I don't know. Rich, do you want to --

RICH PUVOGEL: Yeah. Thanks, Julie. Yeah, it's hard to say what happens with the property values. There are so many other factors that go into the property values on specific residential properties. Generally, we find out when -- I think Pat and I worked on multiple residential properties throughout the state of New Jersey, where before we remediate, the property values are -- are -- were lower and after remediation, the property values have increased. That's just a -- a

general anecdotal observation from past sites that we've worked on.

PAT SEPPI: And that's correct, Rich. And that was -- studies had been done by our EPA headquarters and that's exactly what they found, that the property values did go up after the remediation, the cleanup was completed.

SHEREEN KANDIL: I just want to follow-up. Lauren followed up on her question: "Would the partial soil cleanup negatively affect the property values as opposed to a complete cleanup?"

RICH PUVOGEL: Yeah. This is Rich again. With regard to a partial cleanup or a remediation or alternative that includes capping, we attempt to do full cleanups on residential properties to avoid capping on residential properties. So if you don't own -- if you own a property that is -- does not have a cap and after remediation is completed, you know, you have a -- a fully cleaned property with no deeds notices attached to it that come with a capping. That's it.

PAT SEPPI: Okay. Lauren, I wish we had a better answer. That's a really tough one. I mean, we're not -- you know, we don't really understand the rise and fall of property values, and how it's related to specific Superfund sites. So, you know, it's kind of up in the

air for us right now, and we don't have a good answer for you.

MAYOR ED CAMPBELL: But Pat, I think the public would say you should have it. EPA has cleaned up a lot of sites.

PAT SEPPI: We should have a good answer?

MAYOR ED CAMPBELL: Yeah.

PAT SEPPI: Yeah. Well, I can agree with what Rich said before. He and I worked on many sites that were residential properties for the most part and there were some depleted property values and then after the cleanup was finished, the property values seemed to go right back up. So I mean, can we assume that that will happen here? I don't know if we can because we don't like to assume, but I would imagine it would be along the same lines, you know, because -- since that's what we found on the other sites. So I can't -- I don't -- I can't believe that it would negatively affect property values once the cleanup is completed.

MAYOR ED CAMPBELL: Agreed. But I think the question is where there are caps remaining afterwards, what is the impact versus a full recovery. You know, areas that have full recoveries versus areas where there are caps. And there are notification requirements in New Jersey that potentially affect property values. I just

think EPA should collect that data; clean sites, sites that involve caps. There's more than 100,000 cubic yards of contaminated soil being left between Voorhees and Gibbsboro in the ground at depth when all of this is done. A lot of contaminated soil. And it may be capped and it may be deep, but I think people are rightfully concerned about what happens 50 or 100 years from now. And there just isn't a lot of trust of the government, you know, that people are going to keep coming back and checking it and -- So what if there's a problem and it's been leaching for a year?

RICH PUVOGEL: This is Rich. Yeah. As I said before, EPA would go and work with Sherwin-Williams to establish a monitoring program to monitor those areas that were capped within the forested wetlands. And every five years we take all that data, review it to ensure that there are no problems with the cap. If problems were -- arose, we'd be able to see it on the monitoring of that wetland area and take appropriate action to have Sherwin-Williams address those areas.

SHEREEN KANDIL: Thank you. I just wanted to make -- make note that Mihir -- Mihir made the same comment that the Mayor made about how -- how many -- how much contaminated soil will be left in place.

Lauren Jenkins writes: "But will we have to

disclose proximity to continued contamination as owners near the 561 site do?"

JULIE NACE: Are you asking if you have to disclose proximity to the Superfund -- to the Route 561 dumpsite when you're selling your property? I'm not sure what the question is exactly asking me.

LAUREN JENKINS: So if the -- if you go with the option of capping --

JULIE NACE: Okay.

LAUREN JENKINS: -- and when I want to sell my house, am I -- what kind of disclosure am I going to have to give? My property has been remediated. It's on Kirkwood Lake. That will have been remediated, but presumably, there's areas on the lake that are still capped and areas upstream that are capped. So what does that mean for me when I want to sell my property?

JULIE NACE: So I -- I want to bring the map up again, but there won't be capping within Kirkwood Lake and there won't be capping on that south shore of Kirkwood Lake where the soils will be removed. It will be more upstream along the actual creek -- along Hilliards Creek where there's no residences right now.

LAUREN JENKINS: But to that point, the proximity thing that was raised, so if I'm in proximity to that and it's upstream from my house and my -- the water body that

my residence sits on, what does that mean -- what does that mean for the residents on the lake?

JULIE NACE: With the disclosure of those caps?

LAUREN JENKINS: Correct. So if you cap contamination, there's still contamination in the ground. And so, say, ten years from now I want to sell my house, do I have to make a disclosure that there's contamination still or is it considered fully remediated and it's a moot point?

RICH PUVOGEL: This is Rich --

JULIE NACE: Yeah.

RICH PUVOGEL: -- Thanks, Julie. On the question of how close a property has to be to an area that contains contamination to notify the previous property owner, I don't know. I think that's a legal issue and you're best contacting a lawyer about that. I can't answer that question for you. That's -- that's all I got on that one.

LAUREN JENKINS: I think these are answers that we have a right to have because how can we make an informed decision when you don't have longevity data, you don't have information about how it would affect our property values. It seems like there's a lot of unanswered questions.

PAT SEPPI: Well, I think as far as disclosure,

Lauren, you know, these -- Probably, like Rich suggested, maybe you need to talk to a lawyer about that. But also, I would think a Realtor because that's their job is, you know, to help a prospective seller fill out a disclosure statement. So I don't know offhand what it says. I don't know if it says "on my property" or "in close proximity to my property," but, you know, we'll look into that and see what we can find out.

SHEREEN KANDIL: Okay. So, Lauren, if you don't have any more questions, I can move on to the next questions on the chat.

So Nathan writes, "A 'complete' cleanup means a complete clearcutting and a loss of wooded areas, correct?"

JULIE NACE: Yes. So in our alternatives for soil, soil number three, the complete removal of soil to meet cleanup goals, would be a complete removal of all wetlands that have contaminated soil and that includes the wooded areas.

SHEREEN KANDIL: Thank you, Julie. Alice Johnston writes: "The caps will be less than 50 feet from my property line. My property and many others will have a loss in value. We are paying the same tax rate as other residents in Voorhees." Excuse me, my voice. "But our property value will be lower when we try to sell. EPA's

decision on whether to cap or not affects residents and part of the agency's decision should take that into consideration." That's a comment from Alice Johnston.

Russell Posser questions: "What happens to the Sherwin-Williams monitoring should Sherwin-Williams go out of business?"

JULIE NACE: I'm going to defer to you, Rich, on that.

PAT SEPPI: Yeah. I think we'll pitch to Rich on that one. Yeah.

RICH PUVOGEL: Sure. When Sherwin-Williams signs a consent decree with the EPA, there's a certain amount of financial assurance that goes behind any remedy that's selected by EPA. The same would hold true for the long-term operation and maintenance. There's a certain amount of financial assurance that EPA demands of Sherwin-Williams to put forth in case they do go out of business. The taxpayers are not footing the bill to do that long-term monitoring if Sherwin-Williams should -- should no longer be able to conduct that work.

SHEREEN KANDIL: Just to follow-up to that, Rich: "What is the value of that security?"

RICH PUVOGEL: That -- the value of the security is -- the financial assurance is dependent on the remedies selected. It would cover the costs of the

remedies as there -- as Julie provided in the early part of the presentation. The financial assurance would cover the cost of the remedies, the operation and maintenance of any long-term aspects of the remedies. So if Sherwin-Williams were to not be able to perform the work for whatever reason, the financial assurance would cover the cost of EPA conducting that work and completing the work.

SHEREEN KANDIL: Another follow-up, Rich: "If the cost is $100 million, would that be the value?"

RICH PUVOGEL: Specifically, I -- I don't know for sure. I would think it most likely would be, but I -- again, I -- we're not there yet, and I -- But that's a legal question. I'm going to defer to our lawyers, but we'll -- I don't have that answer for you right now, but I can get that for you. And that's about it.

CLARA BEITIN: Yeah, hey, Rich, this is Clara Beitin. I'm the site attorney for the Sherwin-Williams sites, and that is correct: If it's determined when the record of decision is signed that the cost of the work is $100 million, then Sherwin-Williams would be obligated to post financial assurance in that amount, $100 million. It's based on the value of the work.

RICH PUVOGEL: Thank you, Clara.

PAT SEPPI: Thank you.

CLARA BEITIN: Sure.

SHEREEN KANDIL: Lauren Jenkins asks, "What is the process by which the public opinion is decided?"

JULIE NACE: Well, this is the first step in it where we present the plan. And you can, also, again, go to the website and read the plan. And then you can ask questions. You can submit comments. And then we'll up -- we'll be going through that in the next few weeks.

RICH PUVOGEL: Yeah. And this is Rich. The public comment period, I think, is running through May 3rd, Julie; is that right?

JULIE NACE: Yeah. It's up on their screen now. It ends May 3rd. You can send a written comment. You can call. You can send an e-mail.

RICH PUVOGEL: And any written comments that we receive, we would provide responses to. In the responsiveness summary of the ROD that Pat had went through earlier describing the different sections of that record of decision document, there's a responsiveness summary part besides the transcripts that contains the answers to the questions that we -- we've taken here tonight and answers to any questions that we receive in writing later on from the public.

PAT SEPPI: Thank you, Rich --

LAUREN JENKINS: Thank you. I guess my question

is -- Oh.

PAT SEPPI: I just wanted to make a suggestion quickly: You know, you may go home from this meeting and come up with a few other questions or comments that you had, and as we said, the comment period closes, you know, the close of business on May 3rd, so don't think that this is your only opportunity to comment. It is in a public forum like this, but if you or anybody else who maybe couldn't make the meeting tonight you're aware of a comment or a question they have, please ask them to send it in. And I -- if I could suggest that we're probably better off e-mailing the comments to Julie only because our office in New York at 290 Broadway, it's -- the mail system is a little sketchy right now. I mean, we do get mail, but sometimes it's delayed. So if you want the comment to get to us in a timely fashion, probably e-mailing it would be best.

SHEREEN KANDIL: Thanks, Pat. Can -- can you describe what happens after May 3rd? So Julie wants to know the process. So when the public comment period ends, then what happens. So May 3rd ends the public comment period.

PAT SEPPI: Right.

SHEREEN KANDIL: And then what happens? How do we determine the public opinion?

PAT SEPPI: Well, once the public comment period ends, then Julie will start working on the record of decision. So when that's ready to be signed, that will go together, as I said, with the other documents as Rich just mentioned, the responsiveness summary and the transcript, and those will all go out together, sort of as a package, and they'd be available on our web page.

JULIE NACE: And --

PAT SEPPI: And the public opinion -- No. Go ahead, Julie. You wanted to add something?

JULIE NACE: So we're just following up with Lauren Jenkins, correct? "What happens on May 3rd? How do you determine the public opinion?"

PAT SEPPI: Yes.

SHEREEN KANDIL: Yeah. So how do take -- collect all of the public comments and --

JULIE NACE: Right. So you're sort of asking, like, if there's an overwhelming negative response to this preferred alternative, what happens? Is that what you're asking? If they want -- or if the public wants a different alternative? I just want to be clear on what I'm answering.

LAUREN JENKINS: Yeah. So if we all write you emails, how do you determine what the public opinion is? So, if we're making comments and asking questions, how do

you discern what it is that the majority of the people want? Is there a vote, or like, do you go through all the e-mails? And how do you do that?

JULIE NACE: So, I'll try and answer, Rich, but --

PAT SEPPI: Yeah. I was going to say maybe you and Rich because, yeah, there -- there is a --

JULIE NACE: Yeah. Do you want -- If there's a clear trend --

RICH PUVOGEL: I can --

JULIE NACE: Yeah. I'll let you go, Rich.

RICH PUVOGEL: Sorry. Yeah. What we do is we take all the public comments and consider them. And the chart that Julie had up earlier for the soil remedy and the sediment remedy shows a -- a list of criteria that EPA uses to evaluate all the alternatives that are put forth in the proposed plan. And we consider each one of those criterion, and we balance those criterion out taking into account community input as well as state acceptance and all the other criteria that were listing -- listed on that comparative analysis chart.

There's more information on that in the proposed plan if you'd like to read that. So we take all those criterion into consideration and come up with a recommendation of a final remedy for the site. The recommendation is made to EPA management and in this

case, it goes through EPA management in our Region 2 office, and also, would then go forward to the administrator of EPA. But again, all the public comments would be taken into consideration. And in the past, we've received public comments on multiple other proposed plans that we've done in the region, and there are countervailing views on the -- from the public on each one of those comments. There are pros and cons that the public voices on -- on every proposed plan that we put out there. So we -- we take them all into consideration and we weigh them against all the other criteria that we have. As Julie pointed out, no one criterion determines the selection of a remedy. It's a balancing of factors that we use to select remedies.

PAT SEPPI: Does that help, Lauren? Does that answer your question?

LAUREN JENKINS: I suppose. I -- I'm still not totally clear on how you determine what the public opinion is, but it's -- It's fine.

PAT SEPPI: Okay. Let's see. Shereen, any other chat questions? I see another one from Mr. Ruhl.

SHEREEN KANDIL: Yeah. Nathan Ruhl, Resident, asks: "Can you give an example of a time when EPA changed its decision based on public comment as part of this project?"

RICH PUVOGEL: Yeah, this is Rich. No. I don't -- I don't recall any -- that we've altered the preferred alternative in our proposed plan due to public comment. Again, we get multiple public comments from different points of view on these. I don't recall ever having a strong public comment in one direction on any of the proposed plans that we've received before, but we take them all into consideration, and again, as I said, we balance these criteria -- these selection criteria against each other.

PAT SEPPI: That's a good question, Nathan. And, you know, in an effort to be totally transparent, I would have to say that it's -- I don't know of any examples either. I'm sure there are examples out there, but, you know, none of the sites that I've ever worked on. But in most cases, in the majority of cases, we end up, as our final remedy, the same thing as our preferred remedy. I think it would have to be something, you know, pretty drastic and dramatic about the remedy that we've chosen for us to turn around and change that remedy and it's -- you know, we will look. We'll read all the comments very carefully, but yeah, I just want to be honest and tell you that it doesn't -- It happens very rarely.

MAYOR ED CAMPBELL: For the dumpsite, it was opposed by the Gibbsboro Council, the Planning Board, the

Environmental Commission, and the Sierra Club and the state of New Jersey conditionally approved it if the property owners went along, which they did not, and it still was approved.

PAT SEPPI: Right. You're right. That's absolutely right. That's why I say it's rare that it happens.

MAYOR ED CAMPBELL: It's a big mountain to climb.

PAT SEPPI: I'm just going to reach out to the phone one more time before we get back to the chat. If there's anyone out there on the phone who has a question or a comment, please unmute your phone, star six, and we're very happy to receive your comment or your question.

So, Shereen, I guess we're back to the chat.

SHEREEN KANDIL: Yep. One more came in, and I'm sorry if I pronounce your name incorrectly: Shaen Guang, grad student: "Just out of curiosity regarding property value, under the do-nothing scenario where contaminated soil and sediment are left as is right now, the property values would be higher than post partial/complete cleanup?"

JULIE NACE: So the -- we always have an alternative that's no action that we just use as comparison and "no action" would never be selected because it's not protective of human health and the environment. So any remediation done would -- I would assume as we talked

about before, would increase property values after remediation.

SHAEN GUANG: Hi, Julie. Yes. This is Shaen. I was just going over the chat questions, and I thought Pat and Rich have stated in previous spots where property values have increased, so I was a little confused regarding the concern over property value --

JULIE NACE: Right. So, yeah --

SHAEN GUANG: -- so that was --

JULIE NACE: So no action wouldn't be chosen. And property values had been shown to increase after remediation at Superfund sites.

SHAEN GUANG: Okay. Thank you, Julie.

JULIE NACE: You're welcome.

SHEREEN KANDIL: Another question came in from Alice Johnston: "So what is the point of asking for public opinion when it isn't seriously considered?"

RICH PUVOGEL: This is Rich. We -- we take public comment and public input seriously. It's one of the nine criteria. There are very different points of view on the preferred alternatives that we -- we've made in the past. We don't usually have unanimous public opinion on any preferred alternative. We hear your voices and we give them a thorough analysis or a thorough write-up in the responsiveness summary of the record of decision.

RAYMOND KLIMCSAK: Yeah, Rich. This is -- This is Ray. I'd like to make a statement about that. Alice, you know, during the time of the public comment period for the residential properties, I know the mayor, Ed Campbell, had raised concerns about sampling the Gibbsboro Elementary School property grounds, so EPA worked with Sherwin-Williams. We did complete that. I know that Ed Campbell -- I know the borough raised concerns during the OU2 public comment period for the Sherwin-Williams site, that the borough wanted to work to have municipal sewer lines put in. And I know that EPA and Sherwin-Williams are actively working on that, so I -- I don't find that statement to actually be correct, that we don't take full consideration of public comments.

MAYOR ED CAMPBELL: And Ray, I'm going to support your statement there. I think EPA -- and frankly, Sherwin-Williams, have been very responsive to the feedback that we have given in the comments. I have submitted, on behalf of the borough, ten pages on every single one of these public hearings. And I think they generally find a positive response. They're taking great care to protect the public when the trucks are driving through town.

And with respect to noise, when we -- we hear things and I forward over notices, they're out there at 6:00 in

the morning, they adjust the time that they start for our residents. So everybody has been very responsive and adaptive. I think the frustration is just that we're leaving behind a lot of contaminated soil. And I recognize it's hard to get to, but in the end, all of the people on this call have to live with this and that's where I think is a lot of frustration.

PAT SEPPI: Shereen, do you want to read Alice's comment?

SHEREEN KANDIL: Yeah. Sorry. I couldn't find my mute button quick enough. Alice writes, "I concur with your examples, Ray, but this project should be performing a full cleanup, not partial."

PAT SEPPI: All right. I don't see any other chat messages. Shereen, do you? No.

SHEREEN KANDIL: No. Not as now -- not --

PAT SEPPI: If there's anybody else who has a question and wants to put it through chat, please, you know, do that now. We're happy to respond.

Well, I -- if not, I mean, I just would hate to stop if anybody else still has a question, but right now it doesn't seem like there is one and nothing else from the phone.

So, I just want to remind you, again, May 3rd the comment period ends. Please e-mail any additional

comments you may have to Julie. And if you'll see the slide that's up there now, any information on the Sherwin-Williams Hilliards Creek site can -- Oh, that's so cute, that little animal -- can be found at -- at the URL that's on there. And that -- if you haven't read the proposed plan, you know, that's a good place to go to find it. And I think it would be worthwhile for everybody to read it or you can certainly call me. That's my information there, my e-mail address and my cell phone number, and I'm happy to talk to you, and you know, refer your calls to the person I think who would be most helpful.

So, if that's -- we don't have any other questions, and I thank everybody for being here tonight. I mean, it was very interesting. I think we had some really good questions and some really good comments. And we'll send Julie home to start working on the record of decision and we'll have all that information for you just as soon as we can.

So, again, thank you very much. And we'll talk to you soon. Hopefully, next time it will be in person and not on virtual. So, thank you, again. Good night.

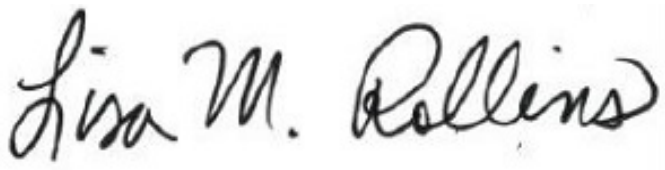
(The meeting concluded at 8:51 p.m.)

STATE OF FLORIDA)
COUNTY OF SARASOTA)

I, LISA M. ROLLINS, Registered Professional Reporter, Florida Professional Reporter, Notary Public in and for the State of Florida at Large, do hereby certify that a public meeting was held in the cause styled in the caption hereto, on Page 1 hereof; that I was authorized to and did attend said public meeting and report the proceedings had therein, fully and accurately, and the foregoing transcription consisting of pages numbered 01 through 70, inclusive constitute a correct transcript of my notes of the proceedings taken at said public meeting.

I FURTHER CERTIFY that I am neither an attorney nor counsel for the parties to this cause nor a relative or employee of any attorney or party connected with this litigation and that I have no interest in the outcome of this action.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my seal this the 26th day of April, 2021.



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Attachment D: Written Comments

Julie Nace
Remedial Project Manager
U.S. Environmental Protection Agency
nace.julie@epa.gov

April 30, 2021

RE: EPA Proposed Cleanup Plan for Sherwin William Superfund Site

Dear Ms. Nace,

Thank you for moving forward on a cleanup plan to address the contaminated areas of Sherwin-Williams/ Hilliards Creek Site in Gibbsboro, Lindenwold, and Voorhees. Sherwin Williams has created a toxic nightmare in these areas by dumping industrial waste into the ground, into nearby Hilliards Creek, and into other surrounding creeks and lakes. The company also stored thousands of hazardous materials such as lead and sulfuric acid.

We are concerned, however with EPA's decision to cap the site. If we allow lead and arsenic to stay in the ground it will impact drinking water, streams and even worse vapors from the contamination will end up in home. EPA should not be capping contaminated materials at the site, especially if it's located in a floodplain. The cap will wash out along with the toxic materials underneath it. Instead, the cleanup plan should include removing all of the contaminated soil.

If hazardous materials such as arsenic and lead are left in the ground, there will be major health and environmental implications. Arsenic is carcinogenic and lead exposure can have serious impacts on adults and children. Lead exposure in children can cause reading and learning disabilities, impaired hearing, reduced attention spans, and other behavioral problems.

New Jersey held Sherwin Williams liable for NRD in 2019, now it's important they make sure this company fully cleans up their toxic mess. EPA, however should not rely on institutional controls that we continue to see fail. We cannot risk the health of our communities and environment. These areas have been suffering for too long, we need to make sure they get a full cleanup.

If you have any questions or would like to discuss this matter further, please feel free to call me at (609) 656-7612.

Sincerely,
Taylor McFarland
Chapter Coordinator | NJ Sierra Club

COZEN O'CONNOR

Peter J. Fontaine
Direct Phone 215-665-2723
Direct Fax 866-850-7491
pfontaine@cozen.com

May 3, 2021

VIA EMAIL (nace.julie@epa.gov)

Julie Nace, Remedial Project Manger
U.S. EPA – Region 2
290 Broadway, 19th Floor
New York, N.Y. 10007

Re: Comments on Superfund Proposed Plan for Sherwin-Williams/Hilliard's Creek Operable Unit 4, Gibbsboro and Voorhees, New Jersey

Dear Ms. Nace:

We write on behalf of our client, Camden County, New Jersey, to provide these comments on the Superfund Proposed Plan for Sherwin-Williams/Hilliards Creek Operable Unit 4 (the "Proposed Plan"), which addresses contamination in the sediment within Silver Lake, Bridgewood Lake, Hilliard's Creek, and Kirkwood Lake, as well as certain limited areas of contaminated soils along the shore of Hilliard's Creek and the Kirkwood Lake forebay. We appreciate EPA's continued efforts to move forward with the remediation of this Site, particularly given the difficulties associated with the ongoing COVID-19 pandemic.

We have also reviewed the comments submitted by Mayor Edward Campbell on behalf of the Borough of Gibbsboro, which raise a number of significant questions regarding the ecological impacts of the Proposed Plan. Camden County fully endorses those comments and hopes they can be adequately addressed.

I. Interests of Camden County in the Sherwin-Williams Superfund Site

Camden County owns Kirkwood Lake, the most down-gradient portion of Operable Unit 4, which has been adversely impacted by hazardous substances released from the Sherwin-Williams Superfund Site. Camden County has an important interest in ensuring that hazardous substances from the Sherwin-Williams Superfund Site are fully remediated as expeditiously as possible to protect the people and environmental resources of the County. Camden County is vested with broad authority under the New Jersey County Environmental Health Act ("CEHA"), N.J.S.A. 26:3A-21 et seq., P.L.1977, c.443, C.26:3A-21 et seq., and the implementing regulations of the New Jersey Department of Environmental Protection ("DEP") to investigate hazardous substance releases and surface water pollution and to enforce applicable standards. The CEHA was enacted to expand the environmental law enforcement authority of county health departments, and municipal and regional health agencies certified by the DEP pursuant to CEHA. CEHA mandates that each certified County health agency investigate citizen complaints, monitor the various State

environmental statutes, gather evidence of violations as required, and provide witnesses for any resultant court action as needed. CEHA, Sec. 7. DEP has delegated to all 21 counties the authority to enforce State environmental laws and to protect the public from hazardous substances. CEHA declared it the policy of the State to provide for the administration of environmental health services by county departments of health throughout the State in a manner consistent with certain overall performance standards to be issued by the DEP. These CEHA Performance Standards are set forth in N.J.A.C. 7:1H-1.1 et seq., "County Environmental Health Standards of Administrative Procedure and Performance" (CEHA Performance Standards). The environmental health services include the authority to monitor and enforce environmental health standards, including responsibility for enforcing hazardous substance control and water pollution laws. The CEHA defines "Water pollution" to mean the presence in or upon the surface or ground waters of this State of one or more contaminants, including any form of solid or liquid waste of any composition whatsoever, in such quantities and duration as are, or tend to be, injurious to the human health or welfare, animal or plant life, or property, or would unreasonably interfere with the enjoyment of life or property within any portion of the State." CEHA Sec. 2h.

II. Summary of Comments

A. The County continues to object to the bifurcation of the remedial action into multiple operable units. The County also questions the timeframes outlined in the proposed plan and requests that EPA expedite the remediation of the widely utilized public water bodies to the maximum extent practicable.

B. The County supports the selection of a full removal alternative to address contaminated sediment in the affected waterbodies.

C. The County understands and is supportive of the ecological preservation goals outlined in the selected soil removal alternative, which leaves some contamination at depth under a soil and geotextile cap. However, given that this alternative will leave contamination in place and will require long-term operations and maintenance and deed restrictions, the County reserves the right to comment and object to the specifics of the plan as developed through the remedial design process.

D. The County emphasizes the importance continued outreach and public input in the development of final Record of Decision for the Waterbodies OU. Ensuring that the affected community is kept involved in the process of developing the remedies and that their concerns are adequately addressed is vital for maintaining a productive relationship with the various municipalities and residents involved.

III. Comments

A. The Timeframe for Remediation Should be Expedited.

The County encourages the EPA to adopt an expedited timeframe to address the contamination in the Waterbodies OU. Under the terms of the Proposed Plan and as described during the public meeting held on April 12, 2021, the proposed remedial design will not begin for at least another two to three years, pending additional study. Moreover, once shovels are finally in the ground, it will be at least an additional three years before remedial efforts are complete.

While the County understands the need to pursue a science-based approach to remedial efforts, the decision to separate the Site into numerous operable units unnecessarily has delayed

remedial efforts in the most contaminated area of the entire Site, which is the most publically-accessible and presents the greatest risk to human health. After over twenty years of investigations, it is important for EPA to expedite remedial action to prioritize protection of public health.

B. The Sediment Removal Alternative Adequately Protects Public Health and the Environment

The County supports the selected preferred alternative for contaminated sediment. Full removal of all impacted sediments exceeding the PRGs in each of the four water bodies in the operable unit foregoes any capping or ongoing institutional controls. This alternative ensures that primary recreational activities, including swimming and fishing, can resume without putting the health and wellbeing of Camden County workers and residents at risk.

C. The County is Tentatively Supportive of the Preferred Alternative for Limited Soil Removal

The County has also evaluated the preferred soil remedy, which involves leaving contamination at a depth of 2 feet and below under a cap comprised of clean soil and a geotextile layer. This alternative, which leaves behind impacted soil, is intended to protect the current wetland habitat along the shore of Hilliard's Creek and the root systems of older trees. These features, which provide significant habitat and resiliency functions, will serve as a necessary component of the post-remedial recovery of the area.

The County does not object to the preferred alternative in its current state, but reserves the right to object in the future as the remedial plan is developed. This preferred alternative removes the most mobile soil contamination, while maximizing preservation of wetland flora and mature trees. This preferred alternative will help ensure that the current County and municipal properties in and around the Hilliard's Creek Wildlife Refuge continue to provide recreational and ecological benefits to the surrounding community.

However, given that EPA's preferred alternative will leave in place contaminated soils and will require long-term deed restrictions on County-owned properties near Hilliard's Creek, the County has some concerns regarding the specific requirements of the ultimate remedial design. The County supports Gibbsboro's comments urging EPA to require measures to limit or mitigate cap disturbances caused by natural processes—like falling trees—and rigorous ongoing monitoring of cap effectiveness. The County also urges Sherwin-Williams to remove soil contamination deeper than 2 feet and/or present outside of the area of the proposed cap, if feasible, to achieve a more permanent remedy. Finally, the County joins Gibbsboro in urging that any deed restrictions on residential, County, or municipal property be minimized to the maximum extent possible consistent with the goal of protecting public health.

During the development of the Record of Decision and the remedial plan, the County will continue to engage with both EPA and Sherwin-Williams to ensure that any concerns are addressed.

D. EPA Must Consider All Public Comments Received.

The County greatly appreciates EPA's ongoing efforts to ensure that the affected community remains informed and involved in developing an appropriate response to each operable unit of the Sherwin Williams/Hilliard's Creek Site. The Agency has been responsive and has maintained a productive working relationship with the County, municipalities, and residents.

Therefore, during the public meeting, it was quite disheartening to hear members of the EPA team categorically dismiss the notion that comments from the public could alter EPA's preferred alternatives for the operable unit. The remedial efforts EPA proposes will directly impact upon the lives, livelihoods, and health of Camden County residents. Maintaining public faith and confidence requires EPA genuinely to consider concerns expressed before reaching any remedial decision that will have a significant and lasting impact on the community. We strongly encourage EPA to keep an open mind and to fully and fairly consider all public comments before issuing the final Record of Decision.

Conclusion

For the past 40 years, the residents of Camden County and of Gibbsboro, Voorhees, and Lindenwold have patiently waited for Sherwin-Williams to finally clean-up the contamination left behind when the John Lucas & Co. Paint Works closed its doors. We are heartened to see that remedial efforts finally are underway for the waterbodies and shorelines of Silver Lake, Bridgewood Lake, Hilliard's Creek, and Kirkwood Lake. Camden County supports the proposal to fully dredge the waterbodies and remove all impacted sediments, as this will ensure that residents can resume use of these vital natural resources without risk to their health and physical wellbeing.

While the County tentatively supports the proposed capping remedy for soils, the details of the institutional controls and residual contamination remain uncertain and should be clarified in the Record of Decision and remedial plan. To the extent the selected remedy leaves significant contamination on County property, Camden County reserves the right to object in the future. The County looks forward to continuing to work with Sherwin-Williams and the EPA to develop an effective remedy.

Sincerely,

COZEN O'CONNOR

By: Peter J. Fontaine

cc: Jeffrey L. Nash, Freeholder, Board of County Commissioners, Camden County
The Honorable Donald Norcross, U.S. Congressman (D-01 NJ)
The Honorable Edward Campbell, Mayor, Borough of Gibbsboro
The Honorable Michael Mignogna, Mayor, Voorhees Township
The Honorable Richard E. Roach Jr., Borough of Lindenwold
Scott Schreiber, Executive Director, CCMUA
Christopher Orlando, Camden County Counsel
Paschal Nwako, PhD., MPH, Camden County Health Officer
Evan Preminger, Esquire, Cozen O'Connor

From: Lauren Jenkins <laurena.jenkins@gmail.com>
Sent: Monday, April 12, 2021 8:58 PM
To: Nace, Julie
Subject: Sherwin Williams / Hilliard's Creek Superfund Site

Hello Ms. Nace,

I have become aware of and reviewed the recent proposal for a clean up of the Sherwin Williams / Hilliard's Creek Superfund site. I also participated in the meeting tonight. I am writing to make you aware that I am completely and invariably opposed to any alternative to a complete removal of all contaminated soil and sediment.

For years, the residents of this area have been living with the pollution created by the careless actions of Sherwin Williams. This is not only causing our properties to be devalued and limiting our access to enjoy our beautiful lakes, but more importantly, it is posing a threat to the health and well-being of us and our children.

My husband was a vibrant healthy young man when we moved here. He loved the lake and our yard and spent much of his free time fishing and working in the yard. He died of lung cancer at the age of 45, leaving me as a widow and only parent to our 3.5 year twin boys. I have accepted that we will never know what role the contamination played in his illness. What I cannot accept, is an idea that this threat could be ongoing.

When we moved here, we were advised that the superfund was far along in the process of remediation and that our children would grow up in a safe and clean environment. We were assured that the EPA was overseeing the clean up and would not allow for anything less than a total remediation. I am deeply disappointed that you would even entertain the idea of allowing Sherwin Williams to get away with capping contaminated soil and incompletely repairing that damage that they have done. While it will be a loss to disrupt the wet lands and woodlands needed to complete a total renovation, we actually lost that part of nature years ago when it was contaminated with carcinogens. The residents here have waited patiently for this remediation, and no amount of money could restore what we have lost. The very least that we deserve is a total remediation for the sake of our children and future generations. I implore you to protect our environment by demanding a complete remediation by Sherwin Williams.

Sincerely,

Lauren A. Jenkins

Sent from my iPhone

WADE, LONG, WOOD & LONG, LLC

Howard C. Long, Jr. †
Daniel H. Long†±◊
Christopher F. Long†◊

John D. Wade†
OF COUNSEL

Leonard J. Wood, Jr.†
OF COUNSEL

John A. Moustakas†◊

† Admitted to NJ Bar
± Admitted to Washington DC Bar
◊ Admitted to PA Bar

May 3, 2021

Via E-Mail Only (nace.julie@epa.gov)
Julie Nace, Remedial Project Manger
U.S. EPA – Region 2
290 Broadway, 19th Floor
New York, N.Y. 10007

Re: Comments on Superfund Proposed Plan
Sherwin-Williams/Hilliard's Creek
Operable Unit 4, Voorhees, New Jersey

Dear Ms. Nace:

I serve as the Solicitor of the Township of Voorhees in the County of Camden and State of New Jersey. To the extent applicable, the Mayor and Township Committee of the Township of Voorhees hereby incorporates by reference and submits of its own accord, the detailed comments submitted on behalf of the Borough of Gibbsboro, in a letter dated April 28, 2021 as well as the County of Camden, in a letter dated May 3, 2021. (See, attached)

The Township of Voorhees respectfully requests that the attached documents and this cover letter be submitted as part of the record for public comments on behalf of the Township of Voorhees.

Very truly yours,
WADE, LONG, WOOD & LONG, LLC

/S/ Howard C. Long, Jr.

Howard C. Long, Solicitor

HCLjr

cc: Mayor and Township Committee
Distribution List

April 28, 2021

Julie Nace, Remedial Project Manager
United States EPA
Region 2
290 Broadway – 19th Floor
New York, New York 10007

nace.julie@epa.gov

Borough of Gibbsboro
49 Kirkwood Road · Gibbsboro, NJ 08026-1499
Tel: (856) 783-6655
Fax: (856) 782-8694
www.gibbsborotownhall.com

Via email and US Mail

RE: Comments regarding US EPA's Superfund Proposed Plan for the Sherwin-Williams/Hilliards Creek Superfund Site Operable Unit 4 (Waterbodies)

Dear Julie,

This memorandum provides comments on behalf of the Gibbsboro Governing Body, Gibbsboro Combined Planning/Zoning Board, and the Gibbsboro Environmental Commission regarding the above referenced plan released April 1, 2021.

The April 12 public meeting, during which EPA provided insight into its plan, was informative. Thank you for taking questions and answering my follow up questions. Residents and property owners in Gibbsboro appreciate the efforts to date by US EPA to engage with and consider the feedback provided by the community and in particular property owners that will continue to deal with the fallout of the area's industrial heritage.

We continue to fully support the US EPA's approach to the order in which it has dealt with the three Superfund Sites within Gibbsboro. Residential properties in Gibbsboro and Voorhees Township have been the top priority and are largely complete. The contamination at the Route 561 Dump Site has been removed or capped and that which has moved along the White Sands Branch is presently being removed. Detailed sampling and design are progressing at the US Avenue Burn Site and FMP. Sherwin-Williams continues to work with us to enable our future redevelopment of these properties.

We fully support US EPA's plan to deal with the sediments within the Hilliards Creek and the lakes that are involved in this site: Kirkwood Lake, Bridgewood Lake, and Silver Lake.

Additional comments regarding sediment design and implementation:

1 **EUTROPHICATION** - Significant eutrophication has occurred within all of these lakes covered by this plan due to the fact that they could not be properly maintained during the past two decades as a result of the contamination contained

within them. While EPAs main concern is addressing contamination that poses a risk to health, we ask that US EPA, NJ DEP and Sherwin-Williams take steps to restore each of these lakes to a more pristine state. While only a portion of Silver Lake is scheduled for sediment removal, there is significant sediment at the stormwater inlet near Lakeview Drive and within the portion of the lake that lies on the eastern side of Lakeview Drive. We ask that consideration be given to removing that sediment as a goodwill gesture and in the spirit of restoring this lake to its previous state. There is also significant sediment in the eastern-most half of Bridgewood Lake and much of Kirkwood Lake that should be removed.

2 **INVASIVE SPECIES WITHIN SILVER LAKE** - There is a significant population of Asian Swamp Eels that has been confirmed by the New Jersey Department of Fish and Wildlife. We request that the design consider lowering Silver Lake in coordination with the New Jersey DEP, Camden County, and Gibbsboro to allow for efforts to eradicate this invasive fish from the lake before it invades downstream waterbodies including Kirkwood Lake and the Cooper and Delaware Rivers.

References:

https://www.youtube.com/watch?v=fvJyBT-z2Ec

https://www.nj.com/south/2008/09/sexchanging_swamp_eels_invade.html

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjxj6aj6JvwAhUNOs0KHb7AAMsQFjADegQIBxAD&url=https%3A%2F%2Fwww.state.nj.us%2Fdep%2Ffgw%2Fpdf%2Ffwfisheries%2Finvasive_swampeel09.pdf&usg=AOvVaw1ESlNHHnZCZBU_YR9P-pJ3

3 **RESTORE FISH POPULATIONS** – Natural fish populations should be restored to the lakes and streams following remediation. Many years ago Bridgewood Lake was part of the New Jersey Fisheries' trout stocking program. Those fish found their way upstream into the White Sands Branch and Honey Run where as a youth I and my friends caught many of them. In particular Honey Run, located between Woodland and Bridgewood Lakes, supported a robust holdover trout population. Some effort should be put into determining if there is a remaining trout population in that stream and, if so, it should be maintained or restored. Similarly, the Hilliards Creek should be investigated for the same reason, though that would seem less likely trout have survived due to low oxygen levels, water quality and temperature in the summer months. There are large gamefish in all three lakes, especially largemouth bass. State record fish have been caught in Silver Lake. These populations should be preserved if possible or a restocking program should be undertaken.

With respect to US EPA's plan for addressing the soils within the floodplain, wetlands, and wetlands buffer of Hilliards Creek, we support the goal of preserving the pristine

wetlands to the greatest extent possible, but not at the expense of public safety or the future ability of the public to enjoy these lands which have been purchased by the Borough of Gibbsboro, with assistance from the state of New Jersey:

1. **USE OF INSTITUTIONAL CONTROLS SUCH AS DEED NOTICES AND CAPS** - While we accept the need for some deed notices, we ask that they be minimized as they constitute a management burden for a small municipality. Our primary concern continues to be the residual contamination that is left behind – presumably addressed by caps and identified by deed notices. As the largest single land owner for this phase, post-cleanup residual contamination places a burden on the Borough. It is unclear how contamination can be contained in areas where large trees will be preserved. Presumably their roots extend into the contamination that will remain "capped". How can the public and Borough be assured that as these mature trees die or are displaced by storms, they will not uproot deeper "capped" contamination and re-contaminate the watershed? Is five years too long a duration before follow-up inspections are conducted for caps in wetland areas?

2. **UN-REMEDIATED CONTAMINATION WITHIN PUBLIC RIGHTS-OF-WAY** - The Borough, along with South Jersey Gas, Verizon, Atlantic City Electric, the Camden County MUA, and Comcast, operate utilities that are located within public rights-of-way within West Clementon, North, West, and Hilliards Roads. Existing and planned utility corridors should be cleaned or a provision should be provided to address future excavation of such areas in support of future utility work.

3. **FUTURE USE OF THE HILLIARDS CREEK WILDLIFE PRESERVE** - The Borough of Gibbsboro and Sherwin-Williams have agreed that the municipal bikeway and trail network will be extended through the Hilliards Creek Wildlife Preserve to enable the incorporation of much of the remainder of the community into the network. The extension will provide safe and sustainable walking and biking access to local resources including the Gibbsboro School, Borough Hall, Fire Hall, and various parks. The detailed design must ensure that this goal can be achieved and will require traversing some wetlands, buffer and stream corridors. We ask US EPA and NJ DEP and all other agencies to coordinate and support the issuance of any and all permits required to enable the construction of this network in concert with the post remediation restoration.

4 **CONSIDER INVASIVE SPECIES WITHIN WETLANDS AREAS** - There are many invasive species that have taken hold in the forests and waterbodies of Gibbsboro. During the design of the remedy, inspections should be conducted to ensure that "pristine" wetlands are not under attack by these pests. If infestations are found and can be mitigated or removed, appropriate steps should be considered during design.

Operational Comments for Use During the Implementation of the Waterbodies within Gibbsboro Borough, Camden County, New Jersey

We offer a number of comments regarding the implementation of the selected remedy to ensure effective communication with public officials and safety officers, employees, property owners, and residents.

1. Continue the practice of pre-briefing local members of the governing body and public safety officials concerning plans hazards, triage areas, hours of operation, and contact numbers for use in the event of an emergency.

2. Continue the practice of supplying regular briefings concerning plans and progress so the municipality can keep citizens informed.

3. Continue the practice of providing information for the local newsletter and distribution via NIXLE, a text communication vehicle.

4. Establish a program to monitor air quality during the time when bioremediation is in effect to assure that residents and employees remain in a safe workplace.

5. Regarding the Soil/Sediment Removal Process:
    a. Specific residences and businesses should be notified of a tentative schedule involving the cleanup of nearby property at least 30 days in advance. Final confirmation should be supplied seven days in advance. The local police and governing bodies should receive the same notices.
    b. Where necessary, contractors should contract with the local Borough Clerk to arrange for local police to provide security for activities within or near to roadways and to provide safe access to roads for construction traffic.
    c. The implementation plan needs to address how any dust will be controlled and, depending on the plan, how contaminated particles in dust will be collected and processed.
    d. In the event residents or businesses are required to vacate their properties during the cleanup process, their expenses should be covered by Sherwin-Williams.

6. Regarding the offsite stockpiling of contaminated soils:
    a. Any areas that are to be used to stockpile contaminated soils need to be secured from public access.
    b. Proposed storage areas should be disclosed to the public and approved by the governing body and public safety officials.
    c. Transportation routes to local stockpiling sites should be disclosed to the public and approved by the local governing body.

d. The transportation of contaminated soils must be in sealed drums or in vehicles that are loaded such that no material or dust will escape.
e. Offsite storage of contaminated soils must be in sealed drums or within a volume that is not easily penetrated.
f. No material should be stored off site more than seven days.
g. Offsite storage should be screened such that it cannot be seen from any residence, business, public building, public recreation area, or public street.

7. Regarding the stockpiling of contaminated soils on site:
   a. Any properties on which contaminated soils are temporarily stored need to be secured from public access.
   b. Proposed areas should be disclosed to the public and approved by the local municipality.
   c. The on-site storage of contaminated soils must be in sealed drums or within a volume that is not easily penetrated.
   d. No material should be stored on site more than 24 hours.

8. Regarding the decontamination of vehicles used to transport contaminated soils, a process needs to be established to remove contaminated particles from trucks before allowing transit on public streets. The process needs to address the collection and security of contaminated particles removed during the decontamination process. These processes need to be disclosed to the public and the local governing body.

9. To the greatest extent possible, operations and stockpiles should be screened from public view.

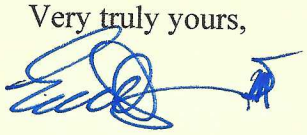
10. All work within Gibbsboro shall comply with local ordinances regarding hours of operation, commercial operations and noise.

Summary

The Hilliards Creek Wildlife Preserve and the upstream lakes are significant resources within Gibbsboro, from an historical, recreational, and valuation perspective. Public access to the Preserve has been restricted for more than a decade. We look forward to the implementation of the proposed plan and the construction of agreed-upon improvements by Sherwin-Williams, which can be accomplished with the cooperation of all the parties involved in the implementation and regulation of this plan.

Please do not hesitate to contact me should additional discussion be beneficial in aiding US EPA in finalizing its proposed plan for the waterbodies. I may be reached at mayor@gibbsborotownhall.com or (856) 783-6655 X105.

Very truly yours,



Edward G. Campbell, III
Mayor
Borough of Gibbsboro

cc: Rich Puvogel, Manager US EPA
Steve Maybury, Bureau Chief NJ DEP
Lynn Vogel, Case Manager NJ DEP
Gibbsboro Planning Board/Professionals
Gibbsboro Borough Council/Professionals
Larry Spellman, Voorhees Township Administrator
Michael Mignogna, Mayor – Voorhees Township
Congressman Donald Norcross
State Senator James Beach
Assemblywoman Pam Lampitt
Assemblyman Louis Greenwald
Jeff Nash, Camden County Freeholder
Maggie McCann Johns, Director - Camden County Parks

Asian Swamp Eel

Christopher Smith, Principal Fisheries Biologist

Another aquatic invasive species was confirmed in 2008: the Asian swamp eel. The species was confirmed by New Jersey Division of Fish and Wildlife's fisheries biologists and verified by the Academy of Natural Sciences. Fish and Wildlife's Bureau of Freshwater Fisheries is conducting an ongoing evaluation to determine the extent of the Asian swamp eel's distribution and abundance. Fortunately, its presence appears to be limited to one privately-owned location, Silver Lake, a 10-acre waterbody located in Gibbsboro.

Surprisingly, the Asian swamp eel is not a true eel. They are scaleless and have an elongated body with a tapering tail and blunt snout. Their teeth appear like bristles and they have one V-shaped gill located beneath the head. Although generally similar in appearance to an American eel—a true New Jersey native—the swamp eel has no fins. In contrast, American eel have pectoral fins, a long-rayed dorsal fin, anal and caudal fins. (At first glance the American eel also appears scaleless since their scales are imbedded.) Swamp eel also may be mistaken for lamprey, however lamprey do not have jaws and they possess an ovoid mouth. Lamprey, like American eel, also have distinct dorsal and caudal fins; the lamprey has seven gill openings on each side.

Unlike the American eel, the Asian swamp eel life cycle takes place exclusively in freshwater. All young hatch as female. As adults, some females develop into males, however, males can change back to females if female densities are low. Reproduction can occur year round.

These invasive eels are nocturnal and rarely observed by people. Preferred habitat includes shallow wetlands, stagnant waters, marshes, streams, rivers, ditches, canals, lakes, reservoirs and ponds. It was first believed that swamp eels could not tolerate cold temperatures; it is now known they can survive in ice-covered lakes and can tolerate a wide range of oxygen levels. Swamp eels can absorb up to 25 percent of their oxygen from the air cutaneously (through the skin). They prefer freshwater habitats, but can tolerate brackish and saline conditions.

It is likely the Asian swamp eel was introduced to North America by aquarium release, stocking as a food source or escaping from fish farms during flooding events. The origin of the fish in Silver Lake is unknown.

Asian swamp eels eat a wide range of prey including fish, shrimp, crayfish, frogs, turtle eggs and aquatic invertebrates. Although the ecological impact in North American waters is relatively unknown, some effects are documented in other regions of the world where the eel has become established. There is concern that swamp eel competition with native aquatic species for food may displace the natives, as the swamp eel is known for its voracious appetite.

The presence of the invasive Asian swamp eel serves as a warning that there can be ecological damage inflicted from the careless introduction of a non-native species. A permit from New Jersey Division of Fish and Wildlife is required prior to the release of any species, native or not. The permit serves to prevent introductions such as the Asian swamp eel.

Julie Nace, Remedial Project Manager May 3, 2021
U.S. EPA
290 Broadway 19th Floor
New York, New York 10007-1866

Dear EPA:

I am a resident of Voorhees NJ. After careful review I am submitting the following as my comments on the Proposed Plan for Sherwin-Williams/Hilliards Creek Operable Unit 4 Gibbsboro, New Jersey.

The Sherwin Williams site overall is a massive environmental threat that is finally getting the attention and direction needed to remediate decades of spreading contamination. The waterbodies OU 4 is a significant piece of the solution to this horrible environmental catastrophe.

I agree with the preferred alternative for the sediments. Full removal of the contaminated sediments is important to restore the water systems and to prevent future contamination of downstream water systems.

I disagree with the preferred alternative for the soils. Only total removal of soils with elevated levels of contaminants will permanently prevent the spread of hazardous materials. The proposal to excavate limited areas of the floodplain of Hilliards Creek and limiting the excavation to a two-foot depth is short sighted. This is a two-part objection. One is limiting the areal extent of the excavation. The second is limiting the excavation to just two feet.

There is known contamination that will not be addressed by the proposed soil remedy. The soil remedy should make more effort to capture the surface contamination.

As far as limiting the excavation to two feet, it does not cost much more excavate to whatever depth the contamination exists. Doing so will remove more mass of contaminants and exclude the need for a permanent cap and deed restrictions. The sampling data shows there are contaminants at depths of 4 to 5 feet in some places. Additional sampling during design will further define the depth of the contamination. Just get rid of the contamination.

My concern over leaving contaminated soils behind in the wetland and/or installing capping include:

1) Spread of contamination from burrowing animals.
2) Tree blow downs exposing roots and contaminated soil.
3) Flooding causing the stream channel to move within the floodplain exposing the contamination. Global warming is increasing the frequency and intensity of storms that will erode the contamination.

4) Erosion and exposure of contamination from ATV use in the area. Gibbsboro has a long history of rogue ATV riders cutting up trails in the community. The remediation of the stream will leave the area more vulnerable to ATV abuse than before restoration.

Only Soil alternative 3 provides a permanent solution to the contamination located in this part of the site.

Here are some comments on the proposal to dredge the lakes and stream:

Dredging efforts need to protect the fish in the lakes as well as the freshwater clams, mussels, crayfish, and other benthic populations. Repopulation of the lakes will be needed upon completion of the work.

The dredging operation should have contingencies for dealing with sunken debris such as trees, car parts, old boats and possibly drums of unknown materials.

Some general comments on the Proposed Plan:

The Waterbodies Site Location Map of OU 4 uses an extremely outdated base map that misses over 200 homes that have been built near to the site in Gibbsboro and Voorhees. Missing on that map are all the homes of Stevens Drive, Glenview Way East and the Carriagebrooke Farms Development. This map should not have been used in the Proposed Plan.

When the floodplain/wetlands excavations are completed, the revegetation should have a multi-year guarantee. One year replacement of plants may not be enough to ensure wetland restoration. Also, active management will be needed to ensure phragmites do not reestablish.

I ask that the public be given opportunities to hear the design plans before they become final. I heard at the public meeting that property owners will be given briefings of the project/design. I ask that the public be given similar access to hear about the design of this work.

Thank you for the opportunity to provide my comments on this proposed plan.

Sincerely,
Jeffrey Pike
5 Farmhouse Lane
Voorhees, NJ 08043