Draft Engineering Evaluation/Cost Analysis (EE/CA) Report for

Kaukauna Locks and Dam Complex – Parcel J

February 2025

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ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

APE	Area of Potential Effect
bgs	below ground surface
BTV	Background Threshold Value
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
COC	Contaminate of Concern
CY	Cubic Yard
DoD	Department of Defense
DRO	Diesel Range Organics
EE/CA	Engineering Evaluation/ Cost Analysis
EO	Executive Order
ER	Endangered Resources
ESA	Environmental Site Assessment
ft	foot (feet)
HPZ	High Potential Zones
HQ	Hazard Quotients
IPaC	Information for Planning and Consultation
km	kilometer(s)
LUST	Leaky Underground Storage Tank
m	meter(s)
mi	mile(s)
mg/L	milligram(s) per liter
mg/kg	milligram(s) per kilogram
MOA	Memorandum of Agreement
NCP	Nation Oil and Hazardous Substances Pollution Contingency Plan
NHI	National Heritage Inventory
NLEB	Northern Long-eared Bat
NTCRA	Non-Time-Critical Removal Action
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
PAL	Preventative Action Limit
PCB	Polychlorinated Biphenyls
PCS	Pre-CERCLIS Screening
PRG	Preliminary Remediation Goal
PVOC	Polar Volatile Organic Compounds
RAO	Removal Action Objective
RCRA	Resource Conservation and Recovery Act
RCL	Residual Contaminant Levels
REC	Recognized Environmental Condition
RML	Removal Management Levels
RPBB	Rusty Patched Bumble Bee
RSL	Regional Screening Level

SCS	Soil Cleanup Standards
SHPO	State Historic Preservation Officer
SPLP	Synthetic Precipitation Leaching Procedure
SSL	Soil Screening Levels
TCLP	Toxicity Characteristic Leaching Procedure
TPH-DRO	Total Petroleum Hydrocarbons - Diesel Range Organics
µg/L	micrograms per liter
UCL	Upper Confidence Limit
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound
WI	Wisconsin
WDNR	Wisconsin Department of Natural Resources
XRF	X-ray Fluorescence

Executive Summary

This Engineering Evaluation/ Cost Analysis (EE/CA) has been prepared to address soil with elevated lead and polycyclic aromatic hydrocarbons (PAH) levels as part of a non-time-critical removal action (NTCRA) at the western half of the Kaukauna Parcel J property (referred herein as "Subject Property") located on the Lower Fox River in Kaukauna, Outagamie County, Wisconsin (WI). The EE/CA is being performed by the U.S. Army Corps of Engineers (USACE), Chicago District, in accordance with the provisions of National Oil and Hazardous Substances Pollution Contingency Plan (NCP), Section (§) 300.415(b)(4)(i).

This EE/CA was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended under the Superfund Amendments and Reauthorization Act (Title 42 United States Code [USC] § 9601); the NCP (Title 40 Code of Federal Regulations [CFR] Part 300).

The purpose of this EE/CA is to select a removal action alternative that minimizes or eliminates any release or threat of release of a hazardous substance into the environment or prevent, minimize, or mitigate impact on public health and welfare as outlined in 40 CFR 300.415(b)(2)(i)-(viii). The EE/CA develops and evaluates removal action alternatives based on the current and anticipated future land use and presents the rationale for the recommended removal action alternative.

Site Background

Kaukauna Parcel J is a federally owned parcel located on the Lower Fox River in the City of Kaukauna, Outagamie County, WI. The parcel is bisected into two portions by the Kaukauna Power Canal. The eastern portion of Parcel J is approximately 1.8 acres size and is located between the Fox River right dam abutment and the Kaukauna Power Canal (Figures are provided in Section 2). The western portion of Parcel J is a narrow strip of land along the southern shore of the Fox River west of the Kaukauna Power Canal. The western portion of Parcel J is approximately 700 feet (ft) long and 25 to 50 ft wide (0.55 acres), this is the Subject Property of this EE/CA. The area surrounding the Subject Property was a former industrial site that was converted to a mixed land-use, including residential apartments.

The Subject Property is part of the Kaukauna Lock and Dam Complex. Construction began on the complex in 1851 to make the Fox River around Kaukauna more readily navigable. While originally owned by the State of WI, USACE was responsible for navigational control of the Fox River waterway between the cities of Menasha and De Pere, WI, beginning in 1872. By the 1940s, the Fox River, which originally played a major role in regional transportation and commerce, saw a decline in navigation with the development of railroads and highways. The USACE closed the Lower Fox River to commercial traffic in 1983, discontinued operation and maintenance of the locks, and placed its property holdings in caretaker status. The USACE continued to own and operate nine federal dams and retain control over four privately-owned dams on the Lower Fox River as part of its flood control responsibilities.

Beginning in the 1980's an effort began to transfer ownership of the locks from the USACE to the State of WI with the goal of renovating and reopening the locks for commercial and recreational boating. In preparation for this transfer, the WI Governor, the Secretary of the WI Department of Natural Resources (WDNR), and the Assistant Secretary of the Army for Civil Works entered into a memorandum of agreement (MOA) on September 11, 2000 (**Appendix D**). In the MOA (Paragraph B of Article I), the federal government agreed to "complete any necessary remediation action required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and to provide the applicable warranties and covenants required by Section 120(h) of CERCLA". The USACE began transferring the ownership of 17 locks, 94 acres of land bordering the Lower Fox River, three harbors, and an assortment of related buildings along the Lower Fox River to the State of WI in September 2004. Parcel J was investigated by USACE in 2001, 2003, 2004 and 2005 as part of the larger transfer of federal properties. Due to elevated lead concentrations in soil within the western portion of Parcel J (west of the Kaukauna Power Canal) the parcel was not transferred with other Fox River properties. The eastern portion of Parcel J was retained by USACE for operation and maintenance of the adjacent Federal dam.

Nature and Extent of Contamination

Based on investigations conducted by USACE and others since 2003 (discussed in Sections 2.5.1 and 2.5.2), the main concern on the Subject Property is lead contamination in the soil. Lead has been detected in surficial soil above the US Environmental Protection Agency (USEPA) Residential Regional Screening Level (RSL) (200 mg/kg) and the USEPA Industrial RSL (800 mg/kg) (USEPA, 2024a). Within the top ft of soil, lead levels range from 10.9 mg/kg to 1,660 mg/kg. The contamination appears to be limited to the surficial fill layer of soil – the underlying native clay layer has little to no lead contamination. The fill layer varies in depth across the site. The eastern and western end of the Subject Property have up to 4 ft of contaminated fill, whereas the center of the Subject Property has one ft or less of fill above the native clay layer.

Other contaminants have been identified within the contaminated fill layer at the Subject Property. Polycyclic Aromatic Hydrocarbons (PAHs) were detected in the soil at concentrations that exceed USEPA Residential RSLs and urban background concentrations. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-c,d)pyrene had RSL exceedances at depths of 0-3 ft below ground surface (bgs). Similar to the lead contamination, these exceedances were found only in the fill layer, and did not impact the underlying native clay layer. Additionally, minor RSL exceedances for arsenic and cadmium were detected at 0-3 ft bgs at various locations in the Subject Property. Soil was also analyzed for Polychlorinated Biphenyls (PCBs) and Toxic Characteristic Leaching Procedure (TCLP) Resource Conservation and Recovery Act (RCRA) metals, though concentrations of these contaminants were either non-detect or below regulatory levels.

Finally, groundwater investigations conducted on the Subject Property and adjacent parcels indicates that the contamination in the soil has little to no impact on the groundwater at the site. The water table was encountered from 7 ft bgs to greater than 10 ft bgs and groundwater appears to be flowing to the southeast – away from the Fox River and the Subject Property. The native clay layer appears to act as an aquitard – limiting hydraulic connection between the contaminated

fill and groundwater. Lead was not detected above hazardous levels in any groundwater investigations conducted on or near the Subject Property.

The Subject Property is proposed to be transferred to the State of WI following the removal action. The anticipated future land use of the site is open green space that will be used by residents of the adjacent apartment complexes and the community for recreation. To support this future land use and transfer of the property, this EE/CA incorporates a goal to reduce the risk of residential exposure to contaminants in soil. This is the final remedy planned for the site.

Removal Action Objectives

The goal of the NTCRA is to achieve final cleanup of contaminated materials to acceptable levels of risk to humans and the environment. As such, the following preliminary removal action objective (RAO) was developed:

- Reduce human health risk by preventing direct contact to contaminants of concern (COCs) in soil that exceed risk-based criteria for residential settings.

The RAO for this NTCRA may be altered after this EE/CA report is submitted if additional information becomes available from stakeholders or other interested parties that requires reevaluation of the RAO. Any alterations and refinements to the preliminary RAO will be reflected in the final RAO established in the Action Memorandum.

NTCRA Scope and Planned Activities

The scope of the NTCRA is to achieve cleanup of the contaminated soils at the Subject Property to reduce the risk of exposure to adjacent residents while attaining ARARs to the extent practicable. The following activities are planned to be performed during the NTCRA to meet the RAO:

- Develop and implement site-specific work plans, including a health and safety plan.
- Install dust monitoring stations and control measures for erosion, sediment, and dust.
- Excavate and remove soils to prescribed depths and/or contaminant concentrations.
- Dispose of excavated soil at an off-site licensed landfill.
- Conduct confirmatory sampling to determine if all soils with unacceptable contamination levels were removed.
- Backfill excavated area with clean fill and restore vegetative cover.
- Remove and dispose of all trees on Subject Property as part of the site excavation.
- If needed, dewater the riverbank to allow excavation of contaminated soil along northern edge of the Subject Property. Replace existing riprap with appropriate bank stabilization measures.

Removal Action Alternatives

Current USEPA guidance suggests that there are two remedial actions that are considered to be protective long-term remedial actions at residential properties: (1) excavation of contaminated soil followed by the placement of a clean soil cover barrier and (2) placement of a clean soil cover barrier without any excavation of contaminated soils (USEPA, 2003). Full excavation of contaminated materials followed by the placement of a clean soil cover is the preferred remedial action and is recommended at sites with relatively shallow contamination. USEPA recommends that full excavation of contaminated materials and placement of clean soil cover should be performed when conditions at the remedial action site do not preclude it. In accordance with this guidance, four alternatives have been identified:

- **Alternative 1 – No Action:** Consistent with NCP and CERCLA guidance, a "no action" alternative is considered as a baseline for comparison. Under this alternative, no action would be taken at the site under current or future land use scenarios and contaminated soil would be left in place.

- **Alternative 2 – Partial Removal and Off-site Disposal with Cap:** Excavation and off-site disposal at a licensed landfill of one ft of soil across the entire Subject Property parcel and placement of a direct contact cap consisting of geofabric and one ft of clean soil over any remaining contaminated soil. This alternative would address risk to residents and other users by removing surface soils that exceed levels that pose an unacceptable risk via direct contact and covering deeper contaminated soils that are left in place. The direct contact cap would require continuing obligations in the form of annual inspections and regular maintenance as needed.

- **Alternative 3 – Removal and Off-site Disposal (200 mg/kg cleanup standard):** Excavation and off-site disposal at a licensed landfill of all soil with contaminant concentrations greater than risk based direct contact criteria across the entire Subject Property. This alternative would address risk to residents and other users by removing all contaminated soils that pose an unacceptable risk via direct contact. No continuing obligations would be required for this alternative. Some soils with lead concentrations greater than the WDNR background threshold value (BTV) for lead would remain on the Subject Property. If excavated in the future, these soils would need to be managed in accordance with state solid waste rules.

- **Alternative 4 – Removal and Off-site Disposal (52 mg/kg cleanup standard):** Excavation and off-site disposal at a licensed landfill of all soil with contaminant concentrations greater than risk based direct contact criteria and the WDNR BTV for lead across the entire Subject Property. This alternative would address risk to residents and other users by removing all contaminated soils that pose an unacceptable risk via direct contact and remove all soils that exceed the WDNR BTV for lead. No continuing obligations would be required for this alternative. Excess soil generated from any future excavations on the Subject Property would be suitable for reuse. This alternative would require deeper excavation near the adjacent apartment building and soil cap, which would add risk of damaging the foundation of the apartment building and the adjacent soil cap.

Recommended Removal Action Alternative

The recommended removal action alternative for the Subject Property is Alternative 3. This alternative would excavate soil that represents a direct contact risk for residential exposure and dispose of it off-site at a licensed landfill. This alternative would not require any continuing obligations such as long-term monitoring and maintenance to prevent unacceptable risks. The estimated cost to complete Alternative 3 is $1,800,000.

Alternative 3 is the recommended removal action alternative based on the results of the comparative analysis completed in Section 6, which determined that it is a technically feasible alternative that is protective of human health and the environment meets the RAO and is less costly and more implementable than Alternative 4.

1 Introduction

This Engineering Evaluation/ Cost Analysis (EE/CA) has been prepared to address soil with elevated lead and polycyclic aromatic hydrocarbons (PAH) levels as part of a non-time-critical removal action (NTCRA) at the western half of the Kaukauna Parcel J property (referred herein as "Subject Property") located on the Lower Fox River in Kaukauna, Outagamie County, WI. The EE/CA is being performed by the U.S. Army Corps of Engineers (USACE), Chicago District, in accordance with the provisions of National Oil and Hazardous Substances Pollution Contingency Plan (NCP), Section (§) 300.415(b)(4)(i).

This EE/CA was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended under the Superfund Amendments and Reauthorization Act (Title 42 United States Code [USC] § 9601); the NCP (Title 40 Code of Federal Regulations [CFR] Part 300), and the following federal guidance:

- "Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA" (U.S. Environmental Protection Agency [USEPA], 1993).
- "A Guide to Development and Documenting Cost Estimates During the Feasibility Study" (USEPA, 2000).

Investigations were conducted at the Subject Property in 2001, 2003, 2004, 2005, and 2020. This EE/CA uses site background information and site sampling data to identify contaminants of concern (COCs) in soil that pose potential human health risks and establishes the boundaries for removal areas. The EE/CA develops and evaluates removal action alternatives based on the current and anticipated future land use and presents the rationale for the recommended removal action alternative.

1.1 Purpose

The purpose of this EE/CA is to select a removal action alternative that minimizes or eliminates any release or threat of release of a hazardous substance into the environment or prevent, minimize, or mitigate impact on public health and welfare as outlined in 40 CFR 300.415(b)(2)(i)-(viii).

In accordance with EPA (1993) guidance, the EE/CA was prepared to meet the environmental review requirements for removal actions; to satisfy administrative record requirements for documentation of the selected removal alternative; and to identify the objectives of the selected removal alternative and analyze the effectiveness, implementability, and cost of various alternatives that may satisfy these objectives.

The final removal action to be implemented at the site will be determined based on the proposed alternative in the final EE/CA and in consideration of resource agency and public comment. USACE will document its decision in an Action Memorandum.

1.2 Regulatory Framework

The U.S. Department of Defense (DoD) has the authority to undertake CERCLA response actions, including removal actions, under Title 42 USC. § 9604, Title 10 USC § 2705, and Federal Executive Order (EO) 12580, as amended.

Removal action authority under CERCLA is delegated to USACE by Presidential Executive Order 12580, §2(d), which gives the Secretary of Defense the primary authority to perform Removal Actions to respond to threats to public health or welfare of the United States or the environment. The lead agency, in this case the USACE, undertakes an evaluation under the authority of 40 CFR 300.410 to determine whether a removal action is necessary due to release or threat of release of hazardous substances. When USACE determines that there is "a threat to public health or welfare of the United States or the environment" based upon factors in 40 CFR 300.415(b)(2), then USACE "may take appropriate removal action to abate, prevent, minimize, stabilize, mitigate, or eliminate the release or threat of release [40 CFR 300.415(b)(1)]."

1.3 Report Organization

After Section 1.0, this EE/CA is organized as follows:

- **Section 2.0 – Site Characterization,** describes the site background and summarizes previous investigations; the risk assessments, if applicable; and the source, nature, and extent of contamination.
- **Section 3.0 – Identification of Removal Action Objectives,** presents the proposed RAOs that, if met, will result in protection of human health and environment and the proposed scope, timing, and schedule for the NTCRA.
- **Section 4.0 – Identification and Analysis of Applicable or Relevant and Appropriate Requirements,** defines that ARARs that will guide the NTCRA and establishes site clean-up criteria.
- **Section 5.0 – Identification and Analysis of Removal Alternatives,** describes the development and selection of removal alternatives, summarizes the evaluation criteria, and presents the detailed analysis of the individual removal alternatives against the evaluation criteria.
- **Section 6.0 – Comparative Analysis of Removal Alternatives,** summarizes the comparative analysis of alternatives against each other.
- **Section 7.0 – Recommended Removal Alternative,** presents the recommended removal alternative to address lead and PAHs in soil at Parcel J.
- **Section 8.0 – References,** lists the documents and guidance used to develop this EE/CA

Tables and Figures are presented following Section 9.0. Appendix A presents the evaluation of ARARs. Appendix B provides the detailed cost analysis. Appendix C includes supporting information for environmental footprint analysis. Appendix D includes the 2001 Memorandum of Agreement.

2 Site Characterization

This section provides an overview of the site, previous investigations, prior risk assessments (as applicable), and the source, nature, and extent of the contamination.

2.1 Site Description and Background

2.1.1 Location and Demographics

Kaukauna Parcel J is a federally owned parcel located on the Lower Fox River in the City of Kaukauna, Outagamie County, WI, approximately 40 kilometers (km), or 25 miles (mi) southwest of Green Bay, WI **(Figure 1**). The Lower Fox River flows approximately 63 km (39 mi) from Lake Winnebago in a northeasterly direction, discharging into Green Bay, Lake Michigan in northeast WI. The Lower Fox River lock system features 17 lift locks and two guard locks (**Figure 2**). Five lift locks and one guard lock are located in Kaukauna (Kaukauna Guard Lock, Lock 1, Lock 2, Lock 3, Lock 4, and Lock 5). The Subject Property, located between Kaukauna Locks 4 and 5 (**Figure 3**), is currently owned by the USACE, and is approximately 2.4 acres in size. The parcel is bisected into two portions by the Kaukauna Power Canal (**Figure 4**). The eastern portion of Parcel J is approximately 1.8 acres size and is located between the Fox River right dam abutment and the Kaukauna Power Canal. The western portion of Parcel J is a narrow strip of land along the southern shore of the Fox River west of the Kaukauna Power Canal. The western portion of Parcel J is approximately 700 feet (ft) long and 25 to 50 ft wide (0.55 acres), this is the Subject Property of this EE/CA.

The area surrounding the Subject Property was a former industrial site that was converted to a mixed land-use, including residential apartments. Currently, approximately 480 people live within 50 ft of the site in the adjacent apartment complexes. The City of Kaukauna has a population of 17,089 as of 2020. The racial composition of Kaukauna is approximately 88.8% Non-Hispanic or Latino White, 3.8% Hispanic or Latino, 1.3% Asian, 1.1% Black or African American, <1% Native American, 5.4% two or more races, and 1.4% other (U.S. Census Bureau, 2020). The median household income for Kaukauna is $74,575 and 8.5% of people in Kaukauna live in poverty, compared to 10.7% for the state of WI (U.S. Census Bureau, 2022a). The employment rate in Kaukauna is 70.1%; greater than the state of WI's 63.4% employment rate (U.S. Census Bureau, 2022b).

2.1.2 Site History

The Subject Property is part of the Kaukauna Lock and Dam Complex. Construction began on the complex in 1851 to make the Fox River around Kaukauna more readily navigable. By 1853 construction was not complete; however, the State of WI had run out of funds to complete construction. Construction was transferred to the Fox River Improvement Company and the lock and dam complex was completed in 1854. USACE was responsible for navigational control of the Fox River waterway between the cities of Menasha and De Pere, WI, beginning in 1872. By the 1940s, the Fox River, which originally played a major role in regional transportation and commerce, saw a decline in navigation with the development of railroads and highways. The USACE closed the Lower Fox River to commercial traffic in 1983, discontinued operation and

maintenance of the locks, and placed its property holdings in caretaker status. The USACE continued to own and operate nine federal dams and retain control over four privately-owned dams on the Lower Fox River as part of its flood control responsibilities.

Beginning in the 1980's an effort began to transfer ownership of the locks from the USACE to the State of WI with the goal of renovating and reopening the locks for commercial and recreational boating. In preparation for this transfer, the WI Governor, the Secretary of the WI Department of Natural Resources (WDNR), and the Assistant Secretary of the Army for Civil Works entered into a memorandum of agreement (MOA) on September 11, 2000 (**Appendix D**). In the MOA (Paragraph B of Article I), the federal government agreed to "complete any necessary remediation action required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and to provide the applicable warranties and covenants required by Section 120(h) of CERCLA". The USACE began transferring the ownership of 17 locks, 94 acres of land bordering the Lower Fox River, three harbors, and an assortment of related buildings along the Lower Fox River to the State of WI in September 2004. Parcel J was investigated by USACE in 2001, 2003, 2004 and 2005 as part of the larger transfer of federal properties. Due to elevated lead concentrations within the western portion of Parcel J (west of the Kaukauna Power Canal) the parcel was not transferred with other Fox River properties. The eastern portion of Parcel J was also retained by USACE for operation and maintenance of the adjacent Federal dam.

There is a history of industrial and commercial activities around the Subject Property. Due to the industrial use of the surrounding areas and proximity to the Subject Property, there is a potential of impact to the property (Barr, 2000). The area south of the Subject Property was historically used as a rail service/ maintenance yard. Buildings included carpentry, machine, blacksmith, tin, and repair shops, supply warehouses, engine and coal rooms, and a roundhouse for locomotive maintenance by the Chicago and Northwestern Railway from the late 1800s through the 1980s, until being redeveloped as residential apartment complexes (Partner, 2018). Additionally, there is evidence of possible filling activities from 1964-1971 at the Subject Property. The material and extent of the fill is unknown. **Table 1** is a primary resources summary of the Subject Property and the surrounding area (Barr, 2000).

2.2 Regulatory Status

A Pre-Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Screening (PCS) and Preliminary Assessment (PA) was conducted for Parcel J in 2019 by the WDNR to assess the need for remedial action onsite. The documents outline the historical uses of the property and summarize previous soil investigations. The PCS/PA notes the potential for existing contamination at Parcel J to harm nearby residents. Due to the proximity of the apartment residents to the Subject Property, there is a potential direct contact pathway to any receptors who have contact with the soils on site. The PCS/PA also indicates a potential exposure pathway to surface water due to the proximity to the Fox River. Though the groundwater exposure pathway is considered a concern due to a shallow water table and the bedrock aquifer system, none of the adjacent properties have private wells. The subsurface vapor intrusion and air pathways are not a concern due to the non-volatile nature of contaminants of concern (WDNR, 2019a,b). The WDNR issued a letter in August 2020

indicating that USACE was responsible for the investigation and remediation of contaminated soil on Parcel J (WDNR, 2020).

2.3 Physical Characteristics

2.3.1 Climate and Meteorology

The Subject Property is located in a humid continental climate with some moderation due to the area's proximity to Lake Michigan. Like other areas with this type of climate, there are four distinct seasons, often with severe or extreme variation between them in terms of temperature and precipitation. The area experiences hot, humid summers and cold, snowy winters. The wettest month in the area is August, where most of the precipitation is in the form of rainfall. The driest month in the area is February, when the majority of precipitation falls as low moisture-content snow due to cold, dry air.

Review of existing U.S. climate data obtained from the National Weather Service (https://www.weather.gov/) suggests the following climate-related information for the Subject Property between 1991 and 2020:

- For the period of record, the average maximum temperature is 54.7°F and the average minimum temperature is 36.7°F. Record high temperature of 104°F occurred in July 1936; record low temperature of -36°F occurred in January 1888. The warmest month is typically July; the coldest month is January.
- Average annual precipitation is approximately 32 inches.
- Average snowfall is approximately 56 inches.

2.3.2 Soil Characteristics

According to the U.S. Department of Agricultural (USDA) Natural Resources Conservation Service Web Soil Survey online database, the soil in this area is classified as udorthents. This soil type consists of somewhat excessively drained soil with anywhere from very low to high capacity of the most limiting layer to transmit water. The depth to the water table is approximately 60 to 80 inches. Investigations conducted at the Subject Property in 2001 characterized native soils as being reddish brown, moderately hard and moderately plastic silty clay with minor percentages of sand and gravel. The 2001 investigation suggests that fill material was encountered in soils borings advanced on the Subject Property. In these areas, the fill material was comprised of dark brown or black sandy clay, with wood fragments, gravel, and concrete fragments mixed in. This fill material was intermixed with portions of the native clay soil. The 2001 investigation borings were terminated at refusal due to bedrock, which was typically encountered between nine and ten feet below the surface (Altech, 2001).

2.3.3 Topography, Geology and Groundwater Characteristics

The stratigraphy of Outagamie County is divided into four systems: Quaternary, Ordovician, Cambrian, and Precambrian. Each system is further subdivided into geologic units. The Quaternary system is at the ground surface and is composed of recent river and swamp deposits

and Pleistocene deposits. The permeability of the former was not determined, but the latter is permeable and is used as a source of groundwater supply in the northwestern portion of the county. The Ordovician system is composed of Maquoketa shale (≥ 7 ft below ground surface (bgs)), Galena dolomite and Platteville formation (≥ 216 ft bgs), St. Peter sandstone (≥ 424 ft bgs), and Prairie du Chien group (≥490 ft bgs). All the geologic units in the Ordovician system, except for the St. Peter sandstone, yield very little water. St. Peter sandstone is characterized by good yields but is limited by the presence of shale and the relatively small thickness of formation. The Cambrian system contains only the Upper Cambrian series (≥490 ft bgs), which yields large amounts of water and is where most of the groundwater supply in the county is sourced. The Pre-Cambrian system is not classified by a specific geologic unit. It is found at 800 ft bgs and is essentially impermeable (LeRoux, 1957).

The groundwater in Outagamie occurs in both confined and unconfined aquifers. Areas with confined aquifers are small and unrelated to one another, occurring due to the Pleistocene beds. The confining material is slightly permeable, however, so eventually water will travel through it. The groundwater flow in the eastern portion, where Kaukauna is located, is controlled by the bedrock structure (LeRoux, 1957). The bedrock in the county typically consists of dolomite, limestone, and shale of the Galena formation. At the Subject Property, the Ordovician Sinnipee Group is dolostone with some shale, a low permeability unit which overlies the Cambrian-Ordovician sandstone aquifer and acts as regional confining layer. The source of the groundwater in this area is a confined aquifer. The confined aquifer is not in hydrologic communication with surface water bodies such as Fox River because the recharge zone for the sandstone aquifer is located to the west, and the upper Ordovician bedrock units act as a confining unit. (Luczaj, 2017). Drinking water for the adjacent apartment complexes is obtained from the City of Kaukauna municipal water system which is supplied by five groundwater wells throughout the city. Depths of the wells range from 500 to 850 ft bgs (Stantec, 2020). There are no private wells within a 1-mile radius of the Subject Property; all monitoring wells within the same radius have been closed.

Surface topography may be indicative of the direction of surficial groundwater flow. The available topographic maps indicate the general topographic gradient of the site is to the southeast. A 2006 Phase II Subsurface Investigation conducted at an adjacent parcel and correspondence with the WDNR suggest that groundwater in the vicinity of the Subject Property is approximately 5 ft bgs and flows toward the southeast (Altech, 2006 & Partner, 2018).

2.3.4 Water Quality

The Lower Fox River basin is located in northeastern WI and encompasses the following counties: Brown, Calumet, Outagamie and Winnebago. The 638 square mile (1,654 square kilometer) drainage basin is bordered by the Twin Door Kewaunee basin to the north and east, the Manitowoc River basin to the south and east, the Upper Fox River basin to the south, the Wolf River basin to the west and the Upper Green Bay basin to the north. The Lower Fox River empties a drainage basin of 6,349 square miles (including drainage from the Wolf River and Upper Fox River basins), flowing northeast from the outlet of Lake Winnebago to the bay of Green Bay.

The Fox River Valley is one of WI's most urbanized and industrialized areas. Most of these urban areas are close to the river; localized urban and industrial runoff has contributed to water quality problems. Urban nonpoint sources include runoff from existing urban areas including established commercial, industrial, freeways and residential land uses. The basin also contains many rich farmlands which may also contribute to water quality problems in the area. Nonpoint contaminant sources include runoff from barnyards, areas widespread with livestock manure, eroding agricultural lands and streambank erosion, cattle accessing the streams and other poor land-use practices.

2.3.5 Fish and Wildlife Resources

Federal T&E Species:
A query of the USFWS IPaC (IpaC Consultation Code: 2024-0108708) identified several threatened or endangered species that may be present. These species include: the endangered northern long-eared bat (NLEB) (*Myotis septentrionalis)*, endangered rusty patched bumble bee (RPBB) (*Bombus affinus*), candidate monarch butterfly (*Danaus plexippus*), and non-essential experimental population whooping crane (*Grus americana*), see **Table 2**.

USFWS identifies high potential zones (HPZ) for the RPBB using a habitat connectivity model that is based on RPBB occurrence records, typical bumble bee foraging distances, and potential RPBB dispersal movement through different categories of land use. Not all areas within an HPZ provide suitable habitat for the RPBB. Areas that meet the following descriptions are not likely to provide suitable habitat for the RPBB for nesting, overwintering, or foraging. These areas include:

- permanently flooded areas/open water;
- paved areas;
- areas planted to annual row crops, such as corn and soybeans;
- forest where invasive shrubs are dominant and spring ephemeral flowers are absent; and,
- areas mowed too frequently to allow development of diverse wildflower resources (e.g., road shoulders)

The whooping crane is designated a non-essential experimental population in Wisconsin and consultation under Section 7(a)(2) of the Endangered Species Act is only required if project activities will occur within a National Wildlife Refuge or National Park. The proposed project occurs on lands outside of a National Wildlife Refuge or National Park, therefore, consultation on this species is not required. The monarch butterfly is a candidate species for which consultation is not required.

Based on the information listed above and site assessments, federally endangered and threatened species or their critical habitats, with the exception of the NLEB and RPBB, are not expected to occur within the study area. The USFWS indicates that portions of the study area are in the high potential to occur zone for the RPBB, but the project area is mowed too frequently to allow development of diverse wildflower resources. For the NLEB there are no known hibernacula within the vicinity of the project area and the species is not expected to be in the area during hibernation. These bat species could potentially be in the vicinity of the project area during the summer as there is potential habitat in the project area. No cutting of any trees suitable for bat

roosting (i.e., greater than 5 inches diameter at breast height (DBH), living or dead, with loose hanging bark, or with cracks, crevices, or cavities) would occur from April 1 through September 30.

Therefore, USACE determined the proposed action would be not likely to adversely affect the NLEB. The determination keys built into IPaC were used for determinations for the monarch butterfly, whooping crane, and RPBB. The results of the determination key indicate that a "no effect" determination for these species is warranted. The NLEB determination key in IPaC was also queried and indicated that a "not likely to adversely affect" determination was warranted for the NLEB. The consistency letter for the "no effect" determination and the concurrence letter for the "not likely to adversely affect" determination are included in **Appendix C**.

State T&E Species

A search of the State of WI National Heritage Inventory (NHI) Portal was conducted for the project area and a list of potential species was recorded for the project area (Brown County, township 21N, range 18E). The following species were identified:

- Southern dry-mesic forest
- Handsome sedge
- Migratory bird concentration site
- Peregrine falcon
- Snow trillium
- Rusty patched bumble bee federal high potential zone (HPZ)
- Bald eagle

A search of the NHI Portal was conducted within a 1-mile buffer (for terrestrial and wetland species) and a 2-mile buffer (for aquatic species) of the project area and was recorded in an Endangered Resources Preliminary Assessment. Based on these search results, one or more of the following situations apply:

- The species recorded are state or federal threatened or endangered animals or the project is within a range or zone.
- The species recorded are state threatened or endangered plants on public land.
- The species recorded are federal threatened or endangered plants on federal land or involve federal funds or a federal permit.

The removal will comply, to the maximum extent practicable, in accordance with Section 6 of the Endangered Species Act with any recommendations that are provided by an Endangered Resources (ER) Review under WI's Endangered Species Law (s. 29.604 WI Stats.). The ER Review will list the endangered resources that have been recorded within the vicinity of the project area and follow-up recommendations.

2.3.6 Sensitive Ecosystems

There are no wetlands or other sensitive ecosystems on the subject property. See **Figure 5** for the results of a wetland search conducted using the U.S. Fish and Wildlife Service (USFWS) online wetland mapper in the vicinity of the project area (**Figure 5**).

2.3.7 Cultural Resources

USACE has conducted a records search and literature review of the WI Historic Preservation Database. There are no properties listed on the National Register of Historic Places or known archaeological sites within the project area of potential effect (APE). The proposed project area is comprised entirely of disturbed contaminated soil, precluding the existence of any potential undisturbed archaeological sites. Therefore, a finding of no effect on historic properties is warranted. USACE submitted a finding of no historic properties affected to the Wisconsin State Historic Preservation Office (SHPO). The SHPO concurred with our finding of no effect on February 10, 2025. (**Appendix C**).

2.4 Current and Future Land Use

Since 2023, access to the Subject Property is controlled by a six ft tall chain link fence with hazard warning signs (**Figures 6 and 7**). Only USACE employees can access the site via a locked swing gate onto the property. USACE operations workers access the site approximately every six weeks to mow the lawn and check the integrity of the fence.

Prior to the installation of the fence, however, it was clear that the Subject Property was regularly accessed by the public. Directly adjacent to the Subject Property are several residential buildings (**Figure 4**): Fox Shores Apartments (56 units), River Park Place Apartments (24 units), Riverview Apartments (32 units), Round House Manor (45 units), and Calmes Apartments. It appears that the Subject Property was used by many of these residents as a backyard; picnic tables and children's toys were observed on the Subject Property (**Figure 8**). Other recreational users accessed the Subject Property to walk pets, access the Fox River, and more.

When the removal action is complete, the fence will be removed, and the Subject Property will likely be used as green space by adjacent residents and other recreational users. Upon completion of the removal action, ownership of the parcel is proposed to be transferred from USACE to the State of WI in accordance with the MOA between the Department of the Army and the State of WI.

2.5 Previous Investigations

2.5.1 Investigations and Remedial Actions: Subject Property

2.5.1.1 2003-2005 Investigations

Previous soil sampling investigations of the western portion of Parcel J indicate that lead concentrations within shallow soils (0 to 4 ft bgs) sporadically exceed the State of WI direct

contact non-industrial residual contaminant level (RCL), which was 400 milligrams per kilogram (mg/kg) at the time of sampling, with detections ranging between 15 to 11,000 mg/kg. Shallow soils generally consist of historic fill made up of sand and gravel with silty clay. The fill is underlain by native glacial till (red-brown silty clay) to a depth of 10 to 15 ft bgs, at which contact with bedrock is assumed. Groundwater is present at depths of 7 ft bgs to more than 10 ft bgs, although wells probed to a depth of 15 ft bgs produced only limited quantities of water for sample collection due to the low hydraulic conductivity of the overburden soils. Shallow groundwater flow is to the south, moving away from the Fox River. Previous sampling investigations conducted on the western portion of Parcel J are summarized below:

- 2003: sampling conducted to address the potential impact of past adjacent industrial use (Altech, 2006). Soil was sampled and analyzed for metals and volatile organic compounds (VOCs) from three locations at depth intervals of 0 to 2 ft bgs. Lead was identified as the COC for the Subject Property with soil concentrations of lead ranging from 61 to 320 mg/kg.
- 2004: seventeen locations were sampled to a maximum depth of 4 ft bgs (Altech, 2006). Soil borings were screened at 0.5 to 1.0 ft intervals with an x-ray fluorescence (XRF) tester to profile lead concentrations. XRF lead concentrations ranged from < 30 mg/kg to 4,000 mg/kg, with the highest concentrations occurring within the 0 to 2 ft bgs interval. Laboratory determined lead concentrations ranged from 18 to 11,000 mg/kg at depths of 0.5 to 4 ft bgs.
- 2005: ten soil borings were collected to depths of 8.5 to 10 ft bgs (Altech, 2006). Soil was sampled and analyzed for lead at depth intervals of 0 to 2 ft bgs, 4 to 6 ft bgs, and 7 to 9 ft bgs. Soil lead concentrations in the 0 to 2 ft bgs interval ranged from 15 to 2,100 mg/kg, compared to a range of 3.3 to 79 mg/kg across the deeper intervals. Samples for toxic characteristic leaching procedure (TCLP) and synthetic precipitation leaching procedure (SPLP) testing were collected from the two locations with the highest lead concentrations (440 mg/kg and 2,100 mg/kg). TCLP results ranged from 0.85 to 1.1 milligrams per liter (mg/L), below the hazardous waste threshold of 5.0 mg/L. The SPLP results ranged from 27 to 330 micrograms per liter (µg/L), which is above the WDNR groundwater preventive action limit and enforcement standard for lead of 1.5 µg/L and 15 µg/L, respectively. Three temporary groundwater wells were installed to depths of 15 ft, however, only one well produced enough groundwater to be sampled, again indicating very slow recharge rates from the predominantly clay soils. Lead was not detectable in the groundwater sample at a reporting limit of 1 µg/L, less than the preventative action limit of 1.5 µg/L.

These sampling events suggest that elevated lead levels are limited to the upper 4 feet of soil, within the shallow fill/sand-based soil layers, with reduced lead concentrations within the deeper, native clay-based soil layers. Across the three sampling events, 50 soil samples were collected at 30 locations, with lead concentrations greater than the residential direct contact screening criteria in 10 of 50 samples collected and at 10 of 30 sample locations. Most of the elevated results within the western portion of Parcel J are located near the Power Canal. Depth to groundwater ranged from 7 to greater than 10 feet. Results of the 2005 sampling event suggest that there is not a significant impact to groundwater, and that the clayey soils prevent the seepage of contaminants into groundwater.

2.5.1.2 USACE 2021 Soil Investigation

Fifteen test pits were excavated along the parcel at the approximate locations shown in **Figure 9** (USACE, 2021). Test pits were excavated until native material or refusal was encountered, which was generally at depths of 1-4 ft bgs and soil samples were collected across one ft intervals. All soil samples were analyzed for Resource Conservation and Recovery Act (RCRA) metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and PAHs (16 priority pollutants). Three samples were analyzed for PCBs as aroclors. Samples with lead results greater than 400 mg/kg were also subjected to TCLP testing for metals. See **Appendix C** for a final reporting of field sampling efforts. **Figure 10** displays the soil lead and benzo(a)pyrene concentrations for each test pit location. **Table 3** through **Table 6** present the soil analytical results for metals, PAHs, PCBs, and TCLP metals. The PCBs were not detectable in the sampled soils. TCLP testing results for metals indicate that all results were less than regulatory thresholds for RCRA toxicity.

The western portion of Parcel J is undeveloped and USACE has no active use of the area. However, this portion of the parcel is adjacent to several residential apartment complexes. As such, apartment residents may come into contact with site soil. To evaluate the potential risk to apartment residents from direct contact with parcel soils, the USEPA Regional Screening Level (RSL) for lead in residential soil of 200 mg/kg was used as a screening criterion (USEPA 2024).

PAH data were reviewed based on USEPA residential direct contact RSLs and USEPA residential direct contact Regional Removal Management Levels (RMLs) (USEPA 2024).

RCRA metals data were reviewed based on USEPA residential direct contact RSLs, background threshold values (BTVs), and USEPA residential direct contact RMLs.

Table 3 presents the soil analytical results for RCRA metals. Lead concentrations were greater than the USEPA residential screening level of 200 mg/kg at locations JTP-1 (1-4 ft bgs), JTP-2 (0-1 ft bgs), JTP-3 (0-2 ft bgs), JTP-9 (0-1 ft bgs), JTP-11 (0-1 ft bgs), JTP-13 (0-2 ft bgs), and JTP-14 (0-2 ft bgs), ranging up to 1,660 mg/kg. Lead concentrations within the top ft of soil ranged from 11 mg/kg to 1,660 mg/kg, with an average concentration of 365 mg/kg and a median concentration of 188 mg/kg. Lead concentrations within the top ft of soil greater than 200 mg/kg were limited to locations JTP-2 (1,660 mg/kg), JTP-3 (861 mg/kg), JTP-9 (721 mg/kg), JTP-11 (322 mg/kg), JTP-13 (351 mg/kg), and JTP-14 (767 mg/kg) representing 8 out of 15 locations. Generally, lead concentrations were highest in the surficial fill layer to depths of 1-3 ft bgs and decreased to background levels within the underlying native reddish-brown clay till. Within the underlying reddish-brown soils, lead concentrations ranged from 3 mg/kg to 208 mg/kg, with an average concentration of 32 mg/kg and a median concentration of 12 mg/kg.

Soil concentrations of arsenic, barium, cadmium, chromium, mercury, selenium, and silver were generally below USEPA residential direct contact RSLs or WDNR BTVs, with the exception of low-level exceedances of arsenic and cadmium collocated with elevated lead concentrations. Arsenic has a RSL of 0.677 mg/kg, but arsenic is naturally occurring element found in soil and bedrock throughout WI, so the background threshold value of 8 mg/kg is used as an alternative

to the screening level. Arsenic concentrations were greater than the background threshold value at locations JTP-1 (1-3 ft bgs), JTP-2 (0-1 ft bgs), JTP-3 (0-2 ft bgs), JTP-9 (0-1 ft bgs), JTP-11 (0-1 ft bgs), JTP-14 (0-2 ft bgs), and JTP-15 (1-3 ft bgs), ranging up to 31 mg/kg. Arsenic concentrations within the top ft of soil greater than 8 mg/kg were limited to sample locations JTP-2 (31 mg/kg), JTP-3 (27 mg/kg), JTP-9 (9 mg/kg), JTP-11 (13 mg/kg), and JTP-14 (15 mg/kg), representing 5 out of 15 samples. Arsenic concentrations within the top ft of soil ranged from 3 to 31 mg/kg, with an average concentration of 10 mg/kg and a median concentration of 6 mg/kg. Similar to lead, arsenic concentrations were lower within the underlying reddish-brown soils, ranging from 2 mg/kg to 8 mg/kg, with an average and median concentration of 4 mg/kg. Cadmium concentrations ranged from < 0.18 mg/kg to 8.0 mg/kg and were mostly less than the analytical detection limit. Only sample JTP-14 (1-2 ft bgs) slightly exceeded 7.1 mg/kg, the concentration threshold representing a Hazard Quotient (HQ) of 1.0, however the field duplicate result was less than 7.1 mg/kg. Mercury concentrations were only greater than the residential direct contact RSL of 1.1 mg/kg at location JTP-15, at a depth interval of 1-3 feet below ground surface. These concentrations were 2.8 mg/kg and 4.8 mg/kg, which would represent HQs of less than 1.

Table 4 presents the soil analytical results for PAHs. Most results were consistent with typical urban background concentrations, with the exception of locations JTP-2 (0-1 ft bgs), JTP-4 (0-1 ft bgs), and JTP-6 (0-3 ft bgs). At these locations, concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene exceeded USEPA residential RSLs. The concentration of benzo(a)pyrene at location JTP-4 (0-1 ft bgs) of 11,800 micrograms per kilogram (µg/kg) exceeded the USEPA residential RML of 11,000 µg/kg, although this result was not replicated with the field duplicate sample, which was 5,000 µ/kg. Within the top ft of soil, benzo(a)pyrene concentrations greater than the undisturbed Benzo(a)pyrene concentrations within the top ft of soil ranged from 30 µg/kg to 11,800 µg/kg, with an average concentration of 1,486 µg/kg and a median concentration of 468 µg/kg. Benzo(a)pyrene concentrations exceeded a threshold of 1,100 µg/kg, representing a target cancer risk of 1×10^{-5}, at four locations, JTP-2 (0-1 ft bgs), JTP-4 (0-2 ft bgs), JTP-5 (0-1 ft bgs), and JTP-6 (0-3 ft bgs). Dibenz(a,h)anthrathene exceeded this concentration at one location, JTP-4 (0-1 ft bgs). Similar to lead, in most instances PAH concentrations decrease substantially within the underlying native reddish brown clayey till, to non-detectable levels. An exception was location JTP-6, where PAH concentrations within the reddish-brown clay at the interface with the fill layer were similar to concentrations within the surficial fill.

2.5.1.3 Previous Actions

Residents of the adjacent apartment properties frequently used the Subject Property for recreation and to access the Fox River. During the 2020 investigation, picnic tables and toys were observed on the Subject Property. Initially, a temporary four ft fence had been installed with “No Trespass” signs posted. However, there were multiple instances of the fence being cut or trampled to gain access to the Subject Property. In 2023, a six ft chain link fence was installed around the Subject Property (see **Figure 6**). Signage stating there was hazardous soil on site was also posted (see **Figure 7**). The goal of the new fence is to control access to the Subject Property and prevent direct contact with the contaminated soil by residents.

2.5.2 Investigations and Actions: Adjacent Parcels

2.5.2.1 Parcel J - East

The eastern portion of Parcel J lies east of the Kaukauna Power Canal. Central Park, Kaukauna Public Library, and a construction office exist to the southeast. An access easement sidewalk extends from the parking lots of the neighboring buildings to the edge of Parcel J. Residents use Central Park recreationally, and as a viewing point for the dam. The eastern portion of Parcel J was investigated in 2001, after the 2000 Phase I ESA indicated potential recognized environmental conditions (RECs), including historic surface disturbances and historic industrial use by the Kaukauna Water Power Company (Barr, 2000). Three temporary groundwater wells (only two produced groundwater) were installed and sampled for volatile organic compounds (VOCs) (Altech, 2001). VOCs were not detected in groundwater, except toluene (5.9 µg/L to 27 µg/L) and ethylbenzene (1.5 µg/L to 5.4 µg/L), which were detected at concentrations below published State of WI Soil Cleanup Standards (SCS), WI Administrative Code, Chapter NR720 and/or the USEPA Generic Soil Screening Levels (SSL). Drilling encountered refusal at 9.5 to 10 ft bgs. Groundwater was encountered at depths of 9 to 10 ft. Groundwater wells were extremely slow to recharge, indicating the clayey soils to be of low permeability.

2.5.2.2 Fox Shores

The Fox Shores apartment complex, immediately south of the western portion of Parcel J, has been subject to various remedial investigations between 2018 and 2020. Sampling activities include 27 soil borings between 1.5 and 10 ft bgs and 5 groundwater wells (Stantec, 2020). Soil samples generally consisted of silty clay, with some sand, gravel, and fill layers within the upper 4 feet. Samples were collected primarily from the 0 to 2, and 2 to 4 ft bgs intervals for laboratory analysis of PAHs, VOCs, and RCRA metals. Groundwater was sampled in the fall and the spring for PAHs, VOCs and RCRA metals. Groundwater was generally encountered at 4 to 6 feet bgs, and the wells were able to be purged dry due to low hydraulic conductivity of the mainly clay soils. Groundwater investigations suggest the following:

- Groundwater flow is toward the south, moving away from the Fox River and Parcel J.
- Arsenic was detected above the WDNR preventive action limit of 1 µg/L in 3 of the 5 wells. Concentrations ranged from 1.3 to 17 µg/L in those wells with one result above the WDNR enforcement standard of 10 µg/L. Arsenic is a naturally occurring constituent in soil and groundwater and is sometimes found at high levels (>10 µg/L) in groundwater in Outagamie County (WDNR, 2017).
- Concentrations of benzo(a)pyrene (0.36 µg/L), benzo(b)fluoranthene (0.29 µg/L), and chrysene (1.5 µg/L) were detected above the WDNR groundwater enforcement standard of 0.2 µg/L across three separate wells, however, were believed to be associated with suspended solids within the sample.
- VOCs were not detected at levels above WDNR groundwater screening criteria.

Based on the results, it was concluded that groundwater impacts were minimal, with site soil contaminants not significantly impacting groundwater quality. The soil sampling results

indicated the widespread presence of historic urban fill, consisting of clay with sand/gravel present at depths of up to 3 ft bgs, underlain by native silty clay soil. Within the shallow soil samples (0 to 4 ft bgs), arsenic, lead, and various PAHs were occasionally detected above residential direct contact screening criteria. Arsenic was detected above the background threshold value of 8 mg/kg in 12 of 27 samples, with a maximum concentration of 240 mg/kg and lead was detected above the then current soil direct contact RCL (400 mg/kg) in 7 out of 27 samples with a maximum concentration of 97,000 mg/kg. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)flouranthene, dibenzo(a,h)anthrathene and indeno(1,2,3-cd)pyrene were detected above residential direct contact criteria, with benzo(a)pyrene most often exceeding criteria. 21 out of 31 benzo(a)pyrene results were reported above the screening levels (0.115 mg/kg). When compared to typical urban background soil concentrations, 5 out of 31 results exceeded 95% Upper Confidence Limits for PAHs in Milwaukee undisturbed soils (Siemering & Thiboldeaux, 2021). These conditions were associated with apparent petroleum impacted soils sporadically located between the apartment buildings north of Bicentennial Court and along landscaped areas adjacent to Bicentennial Court and Fox Shores Drive. VOCs were not detected in soils above screening criteria.

Based on the soil sampling results, a remedial action was required. In 2021, landscaped areas (areas of the site not already covered by buildings, gravel, or concrete/ asphalt) were excavated to approximately 1 ft bgs and capped. Approximately 1,230 cubic yards of contaminated soil were excavated and redeposited on-site as landscaped berms. The excavated and soil fill areas were capped with an engineered geotextile fabric followed by 12 inches of clean soil and reseeded. The non-landscaped areas are also considered to be capped, either by building foundations, 6-8 inches of gravel, or impermeable surfaces (concrete or asphalt). In 2022, the WDNR issued a case closure letter with continuing obligations for the site, which include annual inspections and maintenance of the cap (WDNR, 2022).

2.5.2.3 Ghost Town Fitness

The property immediately southeast of the Fox Shores apartment complex, Ghost Town Fitness Center was subject to soil and groundwater sampling and analysis in 2006. This area historically consisted of the machine shop, blacksmith, and locomotive roundhouse, and currently consists of a fitness center and gravel parking lot. A soil boring and groundwater well were installed to evaluate potential environmental impacts associated with the historic use as a rail service/maintenance yard (Terracon, 2006). The soil boring consisted mainly of layers of gravel, topsoil, and clay, with refusal occurring at 13.5 ft bgs. Groundwater was encountered at 4 ft bgs. Soil and groundwater samples were analyzed for diesel range organics, VOCs, and RCRA metals. Investigations suggested the following:

- Soil concentrations did not exceed screening criteria for DROs, VOCs, or metals.
- There were minor exceedances of the WDNR groundwater preventive action limit for arsenic (3 µg/L compared to 1 µg/L) and selenium (14.7 µg/L compared to 10 µg/L).

The site was granted no further action determination and closed in 2006, with an exemption for the PALs for arsenic and selenium (WDNR 2006).

2.5.2.4 Kaukauna City Waste Oil Collection Site

The property south of the Riverview Apartment buildings is the Kaukauna City Waste Oil Collection Site, where waste oil is collected and stored for city residents. The City of Kaukauna - Public Works reported a release of petroleum-based fuels in December of 1993 due to a leaking underground storage tank (LUST). The site was subject to soil and groundwater sampling and analysis in 1998. Sixteen soil borings were collected to depths of 3 to 8 ft bgs, with six borings being converted to temporary monitoring wells. Groundwater was encountered at 3 to 5 ft bgs. Bedrock was encountered at depths as shallow as 8.5 ft bgs. Soil samples taken in the paved area of the site contain majority fill, typically a mix of sand, silt, and gravel. Pre-remedial investigations suggested the following:

- Groundwater flow is east-southeast, away from the Fox River and Parcel J.
- Four underground storage tanks (USTs) exist at the site; one is used for waste oil collection, and the other three are used for diesel and gasoline storage.
- PVOCs were detected at levels above WDNR RCLs in seven of the soil borings: benzene (71 µg/kg to 13000 µg/kg) was detected in all seven samples, ethylbenzene (15000 µg/kg to 54000 µg/kg) was detected in three, toluene (3500 µg/kg) in one, and xylene (11190 µg/kg to 166800 µg/kg) in four.
- In two soil borings, gasoline range organics (1100 mg/kg to 2200 mg/kg), and diesel range organics (920 mg/kg to 3500 mg/kg) were detected at levels above WDNR RCLs (250 mg/kg).
- Lead (150 mg/kg to 370 mg/kg) was detected at levels above WDNR RCLs (50 mg/kg) in two of the soil borings.

Three of the four USTs were removed during remediation efforts in February 1999, and the contaminated sediment around these tanks was excavated (4 ft. bgs to 13 ft. bgs). The remaining tank was upgrade post-remediation, and one new tank was installed. Post-remediation, contaminants were detected in multiple groundwater samples in levels above WDNR RCLs: benzene (260 µg/L), iron (10 mg/L). A continuing obligation was instated in 2003, requiring the maintenance of a cover for the Polar Volatile Organic Compounds (PVOC) contaminated sediment and it has been maintained thus far (WDNR, 2003).

2.5.2.5 Roundhouse Manor

The property immediately east of Ghost Town Fitness Center, the Roundhouse Manor apartments, was investigated in 2012 to address potential environmental impacts associated with the historic use of the site, including housing the railroad roundhouse, turn table, sand house, water tank, coal shed, hoist and coal dump, and rail spurs. Four soil borings were collected to depths of 10 to 16.5 ft bgs, with two borings converted to temporary monitoring wells. Groundwater was present at 10.5 to 12.5 ft bgs. Soil samples consisted of majority mixed layers of tightly packed fine to coarse sand, dense silty clay, weathered fractioned bedrock, and fat clay with pebbles and rock fragments. Soil and groundwater were sampled and analyzed for total petroleum hydrocarbons – diesel range organics (TPH-DRO), metals, VOCs, and PAHs. Investigations suggested the following:

- Low levels of arsenic (5.6 mg/kg to 11.4 mg/kg), lead (105 mg/kg to 133 mg/kg), and TPH-DRO (151 mg/kg to 170 mg/kg) were detected in soil samples above WDNR RCLs
- VOCs were detected in multiple soils samples, but none exceeded the corresponding WDNR RCLs.
- PAHs benzo(a)anthracene, benzo(a)pyrene, and phenanthracene were detected in groundwater samples above the WDNR preventive action limit in groundwater.

To further evaluate groundwater conditions, groundwater was resampled from a more robustly developed monitoring well, with no exceedances determined. Based on these results, the WDNR issued an environmental liability clarification letter and the site was granted "no action required" determination (WDNR, 2012).

2.6 Source, Nature, and Extent of Contamination

This section describes the conceptual site model (CSM), including source, nature, and extent of the contamination present at Parcel J. The CSM is a comprehensive representation of the subject property that documents the potential for exposure (under current and future land uses) to lead and other contaminants found in the soil, release and transport mechanisms, exposure pathways, and anticipated site receptors. The extent of contamination is discussed relative to the findings of previous investigations.

2.6.1 Sources of Contamination

The previous investigations indicate that historic fill along the western portion of Parcel J is sporadically impacted by elevated concentrations of lead. The area west of the Kaukauna Power Canal was historically used as a rail service/maintenance yard from the late 1800s through the 1980s, until being redeveloped as residential apartment complexes (Partner, 2018). As discussed in Section 2.1.2, the buildings on the properties adjacent to the Subject Property included carpentry, machine, blacksmith, tin, and repair shops, supply warehouses, engine and coal rooms, and a roundhouse for locomotive maintenance by the Chicago and Northwestern Railway.

The exact source of the contamination in the soil is unknown, but a PCS conducted in 2018 suggested that potential sources may include the rail spur, lead paint removal, paint shop buildings and the blacksmith shop that existed on/ near the property (WDNR, 2023). In addition to the use and removal of lead paint on/ near the Subject Property, the metallurgic processes used in the blacksmith/ machine shop may have contributed to the contamination on the Subject Property. **Table 7** is a Contaminant Source Matrix used in Great Lakes sediment testing manual, which identifies common contaminants associated with certain industries and processes. For metal-working related industries (as in the blacksmith shop) and coal storage, the potential contaminants include arsenic, PAHs, polychlorinated biphenyls (PCBs), lead and other heavy metals (USACE & USEPA, 1998).

2.6.2 Release and Transport Mechanisms

Lead and other COCs are present within the surface and subsurface soils at the Subject Property. Based on current and future land use, COCs could be released from the soil to the air if the soil is disturbed or exposed. Natural erosion mechanisms, such as stormwater runoff or frost heave, can expose contaminated surficial soil and increase the possibility of creating contaminated dust. Stormwater runoff could also carry contaminated soil to the Fox River. Currently the Subject Property is vegetated with ground cover, with no exposed or bare areas. No stormwater related erosion has been observed on the Subject Property. Although the Subject Property is located along the south bank of the Fox River, it is not included within a flood zone of the river (FEMA, 2024).

Leaching is not considered to be a significant transport mechanism for the contaminants found in the project area. In the conditions at the Subject Property, PAHs are solid due to their high melting and boiling points and very low aqueous solubility (Abdel-Shafy & Mansour, 2016). Due to this, leaching is not considered a significant transport mechanism for PAHs, as they tend to sorb to solid particles such as sediment and soil rather than volatilize or dissolve in water (ATSDR, 1995).

Further, the following PAHs were detected above USEPA's risk-based residential direct contact RSLs during the 2021 soil sampling investigation at the Subject Property: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-c,d)pyrene. Benzo(a)anthracene is a 4-ring PAH, benzo(a)pyrene, benzo(b)fluoranthene, and dibenz(a,h)anthracene are 5-ring PAHS, and indeno(1,2,3-c,d)pyrene is a 6-ring PAH. PAHs with 5 or more aromatic rings are considered heavier and are found predominantly on particulates and PAHs with 4 rings are in an intermediate position (Abdel-Shafy & Mansour). This suggests exposure to PAHs on the Subject Property is most likely to be through contaminated soil than exposure through vaporized PAHs.

Similarly, lead and other metals would have limited solubility in water and be primarily associated with the solid phase. Air transport has the greatest potential to disperse lead and other heavy metals. Mechanical suspension, especially from the use of machinery onsite, can create contaminated dust that spreads beyond the limits of the Subject Property (National Academies, 2017).

Overall, the most likely transport mechanism for the contaminants found at the Subject Property is mechanical. Bare soil can be disturbed to create contaminated dust. Contaminated soil could also be moved offsite on the shoes of users, tires of maintenance equipment, and other items that come in direct contact with exposed contaminated soil. Contaminated soil could also be transported to the Fox River via stormwater runoff if site soils were disturbed. Currently the site is vegetated with ground cover and is not subject to erosion. Volatilization and dissolution of the contaminants onsite are highly unlikely. Further, previous investigations of the Subject Property and adjacent parcels suggest that contaminants leaching from the soil to the groundwater is prevented or limited by the underlying native glacial till, which acts as an aquitard.

2.6.3 Exposure Pathways and Receptors

Based on current and future land use of the Subject Property examined in the previous sections of this report, there are many potential human receptors on or near the Subject Property. This includes residents in the adjacent apartment complexes (including children and possibly pregnant women), USACE workers who mow and otherwise maintain the site, and other recreational users of this site (including nearby residents who use the Subject Property to access the Fox River).

Lead and other heavy metals can enter the human body through the ingestion, skin contact, or inhalation (ASTDR, 2023). Based on the current and future uses of the Subject Property examined in previous sections of this report, there are many potential human receptors for heavy metals contaminants present on or near the Subject Property including residents in the adjacent apartment complexes, USACE workers who maintain the site, and other recreational users of the Subject Property. Heavy metals (including arsenic, cadmium, lead, and mercury, all detected at the Subject Property) are considered systemic toxicants that can induce multiple organ damage, though their toxicity depends on several factors including dose, route of exposure, chemical species, and the age, gender, genetics of exposed individuals (Tchounwou, 2014).

Ingestion and inhalation are the primary pathways for human exposure of heavy metals, though particularly for lead-contaminated soil, which is the primary COC at the Subject Property. For all receptors, if contaminated soil is disturbed, lead dust can be created and inhaled. Almost all inhaled lead is absorbed into the body (with children generally absorbing a higher percentage than adults, as they have a higher respiratory frequency). When fine particulate lead is inhaled, it can be absorbed directly through the lungs or can be carried by the mucociliary tree to the throat where it can be swallowed and absorbed via the gastrointestinal system. About 20-70% of ingested lead is absorbed into the body (with children generally absorbing a higher percentage than adults) (ASTDR, 2023). Children can be further exposed to lead and other heavy metals in the soil by swallowing or breathing in contaminated soil while playing: “Young children tend to put their hands, which may be contaminated with lead dust from soil, into their mouths. Some young children eat soil” (CDC, 2024). Dermal exposure is not considered a significant pathway for lead or the other heavy metals found at the Subject Property (Tchounwou, 2014).

PAHs have potential exposure pathways of inhalation, ingestion, and dermal contact (ASTDR, 2009). As discussed above, exposure to PAHs on the Subject Property through contaminated particles is more significant than exposure to vaporized PAHs. PAHs attached to dust particles can be inhaled and ingested by all receptors if contaminated soil is disturbed. Inhaled PAHs are absorbed through the mucous lining of the bronchi, while ingested PAHs are taken up by the gastrointestinal tract. When PAHs are swallowed, their absorption is generally slow (ASTDR, 1995). Though exposure through dermal contact is possible, PAHs with a higher molecular weight (such as those found at the Subject Property) are less readily absorbed than low molecular weight PAHs (Luo, 2020). Given this, dermal absorption is not considered a significant exposure pathway for the PAHs found onsite.

2.6.4 Nature and Extent of Contamination

Based on investigations conducted by USACE and others since 2003 (discussed in Sections 2.5.1 and 2.5.2), the main concern on the Subject Property is lead contamination in the soil. Lead has been detected in surficial soil above the USEPA RSL (200 mg/kg) and the USEPA Industrial RSL (800 mg/kg) (USEPA, 2024a). Within the top ft of soil, lead levels ranged from 10.9 mg/kg to 1,660 mg/kg. The contamination appears to be limited to the surficial fill layer of soil – the underlying native clay layer has little to no lead contamination, suggesting that the source of the contamination is contaminated fill placed at the Subject Property. The fill layer varies in depth across the site, the eastern and western end of the Subject Property have up to 4 ft of contaminated fill, whereas the center of the Subject Property has one ft or less of fill above the native clay layer.

Other contaminants have been identified with the contaminated fill layer at the Subject Property. PAHs were detected in the soil, though levels were generally consistent with typical urban background concentrations, there were some exceedances of USEPA Residential RSLs and regional background concentrations. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-c,d)pyrene had RSL exceedances at 0-3 ft bgs. Similar to the lead contamination, these exceedances were found only in the fill layer, and did not impact the underlying native clay layer. Additionally, minor RSL exceedances for arsenic and cadmium were detected at 0-3 ft bgs at various locations in the Subject Property. Soil was also analyzed for PCBs and TCLP RCRA metals, though concentrations of these contaminants were either non-detect or below regulatory levels.

Finally, groundwater investigations conducted on the Subject Property and adjacent parcels indicates that the contamination in the soil has little to no impact on the groundwater at the site. The water table was encountered from 7 ft bgs to greater than 10 ft bgs and groundwater appears to be flowing southeastern – away from the Fox River and the Subject Property. The native clay layer appears to act as an aquitard – limiting hydraulic connection between the contaminated fill and groundwater. Lead was not detected above hazardous levels in any groundwater investigations conducted on or near the Subject Property.

2.7 Streamlined Risk Evaluation

As stated in the *Guidance on Conducting Non-Time Critical Removal Action Under CERCLA* (USEPA, 1993): "Where standards for one or more constituents in a given medium are clearly exceeded, a removal action is generally warranted, and further quantitative assessment that considers all chemicals, their potential additive effects, or additive or multiple exposure pathways are generally not necessary". Thus, to evaluate potential risk to residential receptors, the USEPA RSLs, RMLs, and WI BTVs were considered.

All data were reviewed based on USEPA residential direct contact RSLs (target cancer risk [TR] = 1×10^{-6}; target hazard quotient [THQ]=0.1) (USEPA, 2024a) and USEPA residential direct contact RMLs (TR=1×10^{-4}; THQ=1) (USEPA, 2024b). When applicable, data were reviewed based on appropriate background levels. For PAHs, regional urban background soils concentrations were considered (Siemering & Thiboldeaux, 2021) as well as RSLs based on a

TR of 1×10^{-5} to address whether PAHs would represent a cumulative cancer risk greater than 1×10^{-5}. For arsenic, the statewide Background Threshold Value of 8 mg/kg was used (WDNR, 2013). When applicable, accepted state-wide BTV were considered (Stensvold, 2012).

The RSLs are chemical specific concentrations in soil that indicate when further evaluation may be necessary under CERCLA and the RMLs are chemical specific concentrations in soil that may be used to support the decision to undertake a CERCLA removal action. There are some contaminants (i.e., arsenic) which are naturally occurring in soils of the region or commonly occurring in urban soils of the region, in which case, BTVs may be used to evaluate potential risk. The arsenic BTV is based on RR-940, the WI state-wide soil arsenic background threshold value. The PAH background consideration was based on the 95% Upper Confidence Limits for PAHs in Milwaukee undisturbed soils (Siemering and Thiboldeaux, 2021). All other BTVs are based on non-outlier trace element maximum levels in WI from the 2012 USGS report *Distribution and Variation of Arsenic in WI Surface Soil, with Data on Other Trace Elements*. Background levels are used as a means of comparison when the accepted background level exceeds RSLs or RMLs. See **Table 8** for the above-described values for each parameter which was analyzed for in the 2021 soil sampling investigation at the Subject Property.

Tables 3-6, shows the results from the 2021 soil investigation at the Subject Property compared to the RSL, RML, and BTV. Based on these results, there is a clear need for CERCLA action at the Subject Property due to the RML exceedances within surficial soil at various locations across the site in close proximity to adjacent residents. Based on the RSL and RML exceedances, the following contaminants are identified as COCs: arsenic, cadmium, lead, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene. However, lead and benzo(a)pyrene are the primary COCs for this site due to their higher concentrations of contamination compared to the other contaminants found onsite. The other contaminants are all collocated with either lead or benzo(a)pyrene.

3 Identification of Removal Action Objectives

This section describes the Removal Action Objectives (RAOs) and scope for the NTCRA. RAOs define what the removal action is intended to accomplish. This section also summarizes planned activities, schedule, and the ARARs that need to be met to achieve the RAO.

3.1 Removal Action Objective

The goal of the NTCRA is to achieve final cleanup of contaminated materials to acceptable levels of risk to human health and the environment. As such, the following preliminary RAO was developed:

- Reduce human health risk by preventing direct contact to contaminants of concern (COCs) in soil that exceed risk-based criteria for residential settings.

The RAO for this NTCRA may be altered after this EE/CA report is submitted if additional information becomes available from stakeholders or other interested parties that requires

reevaluation of the RAO. Any alterations and refinements to the preliminary RAO will be reflected in the final RAO established in the Action Memorandum.

3.2 NTCRA Scope and Planned Activities

The scope of the NTCRA is to achieve cleanup of the contaminated soils at the Subject Property while attaining ARARs to the extent practicable, reduce the risk of exposure to adjacent residential property users, and address offsite transport to surface water and sediment in the Fox River. The following activities are planned to be performed during the NTCRA to meet the RAO:

- Develop and implement site-specific work plans, including a health and safety plan.
- Install dust monitoring stations and control measures for erosion, sediment, and dust.
- Excavate and remove soils to prescribed depths and/or contaminant concentrations.
- Dispose of excavated soil at an off-site licensed landfill.
- Conduct confirmatory sampling to determine if all soils with unacceptable contamination levels were removed.
- Backfill excavated area with clean fill and restore vegetative cover.
- Remove and dispose of all trees on Subject Property as part of the site excavation.
- If needed, dewater the riverbank to allow excavation of contaminated soil along northern edge of the Subject Property. Replace existing riprap with appropriate bank stabilization measures.

The future land use of the site is open space and will likely be used by residents of the adjacent apartment complexes for recreation. This EE/CA incorporates a goal to remove/ reduce the risk of exposure to COCs given the likelihood of humans coming in close contact with surface soils during future use of the site as this is the final remedy planned for this site.

3.3 NTCRA Schedule

The removal action process should be completed in a period of 18 to 24 months. This time period includes the following actions: assessment of data gaps, design of the removal action based on the recommended alternative, review by appropriate regulatory agencies and public comment, preparation of bid documents and bidding, completion of the removal action, and completion of the final removal action report. The removal action schedule is dependent on receipt of funding. It is anticipated that the completion of the removal action should take approximately 2 months. The optimal time to start that work, considering any endangered species restrictions or the weather, would be after the trees on the property are removed, which cannot take place between April 1st through September 30th. The review by appropriate regulatory agencies and the public comment period will take place in early Spring 2025. During the public commenting period, the NTCRA will be available to the public at the following address:

Kaukauna Public Library
207 Thilmany Rd. #200
Kaukauna, WI 54130

4 Identification and Analysis of Applicable or Relevant and Appropriate Requirements

4.1 Applicable or Relevant and Appropriate Requirements

ARARs include site-specific standards, requirements, criteria, or limitations established under federal environmental law or any more stringent standards, requirements, criteria, or limitations promulgated in accordance with a state environmental statute. The identification of ARARs is related to contaminants, specific site characteristics, and the particular removal action proposed for the site. The NCP, 40 CFR Part 300, states, "Removal actions… shall to the extent practicable considering the exigencies of the situation, attain ARARs under federal environmental or state environmental or facility siting laws" 40 CFR § 300.415(j). These requirements are threshold standards that any selected alternative must meet unless an ARAR waiver is invoked.

ARARs are either "applicable" or "relevant and appropriate." Both types of requirements are mandatory under CERCLA and the NCP.

- **Applicable**. Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria or limitations promulgated under federal or state environmental and facility citing 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 are applicable.

- **Relevant and Appropriate**. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria or limitations promulgated under federal or state environmental or facility citing laws that, while not "applicable" to hazardous substances, pollutants, contaminants, remedial actions, locations, or other circumstances 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 are relevant and appropriate.

ARARs are chemical, location, or action specific:

- **Chemical Specific**. These requirements address chemical or physical characteristics of compounds or substances on-site. These values establish acceptable amounts or concentrations of chemicals, which may be found in or discharged to the ambient environment.

- **Location Specific**. These requirements are restrictions placed upon the concentrations of hazardous substances or the conduct of cleanup activities because they are in specific locations. Location specific ARARs relate to the geographical or physical positions of sites, rather than to the nature of contaminants at sites.

- **Action Specific**. These requirements are usually technology based or activity-based requirements or limitations on actions taken with respect to hazardous substances, pollutants or contaminants. A given cleanup activity will trigger an action specific requirement. Such requirements do not themselves determine the cleanup alternative but define how chosen cleanup methods should be performed.

ARARs must be identified on a site-specific basis from information about specific chemicals at the site, the site location and specific features of the site, and actions that are being considered as part of the response action. The table below and **Appendix A** identifies and evaluates, on a site-specific basis, information about specific chemicals at the site, the site location and specific features of the site, and actions under consideration as part of the response action, and sets forth USACE determinations regarding those potential ARARs for each response alternative retained for detailed analysis in this EE/CA. In addition, non-promulgated advisories or guidance issued by federal or state governments, while not legally binding and therefore not ARARs, may be useful and are included in the table below and **Appendix A** as potential "to be considered" requirements that may complement but not override ARARs.

ARARs	Authority Citation	Applicable/ Relevant & Appropriate	Location	Chemical	Action
Federal					
Clean Water Act -Sect 402 - Storm Water Requirements: Regulates the discharge of storm water from industrial and construction sites, inter alia. Requires implementation of best management practices, including run-on and run-off controls, sedimentation basins, etc.	33 U.S.C. § 1342; 40 C.F.R. § Part 122;	Applicable	X		X
Clean Water Act Section 404: Regulates the discharge of dredged or fill material	33 U.S.C. § 1344; 40 C.F.R. Part 230;	Applicable			X
Discovery of endangered or threatened species: Requires federal agencies to assure that the continued existence of any endangered or threatened species and their habitats will not be jeopardized by a site action.	Endangered Species Act: Endangered Species Act 16 U.S.C. § 1531 et seq. 50 C.F.R. Part 200 50 C.F.R. Part 402	Applicable	X		X
Characterization of solid waste (all primary and secondary wastes): Must determine whether the waste is hazardous waste or not (just solid waste)	40 C.F.R.§ Part 261	Applicable		X	

ARARs	Authority Citation	Applicable/ Relevant & Appropriate	Location	Chemical	Action
Generation of RCRA hazardous waste for storage, treatment or disposal: Must obtain a detailed chemical and physical analysis on a representative sample of the waste(s), which at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with pertinent sections of 40 C.F.R.§ 264 and 268.	40 C.F.R. Parts 264 & 268; 40 C.F.R.§ 264.554 (Remediation Waste Staging Piles)	Applicable only if hazardous waste is found		X	
State					
Definition of Hazardous Waste: Hazardous Waste Management Standards; Solid wastes identified as hazardous under this statue must be managed as hazardous waste.	Wis. Admin. Code § NR 661.0003	Applicable		X	X
Definition of Solid Waste: Solid Waste Disposal and Recycling; Defines solid, non-hazardous wastes	Wis. Admin. Code § NR 661.0002	Applicable		X	X
Management of Contaminated Soil or Solid Wastes Excavated During Response Actions; NR 718.05. Storage of excavated contaminated soil; 718.05(1) (Exemption from solid waste program requirements); NR 718.12. Management of contaminated soil	Wis. Admin. Code § NR 718	Applicable			X
Soil Cleanup Standards	Wis. Admin. Code Ch. NR 720	To Be Considered (Not an ARARs because no substantive standard, just a procedure to determine risk).		X	X
Groundwater Monitoring Well Requirements	Wis. Admin. Code Ch. NR 141	Applicable if groundwater monitoring wells are installed.	X		X
Groundwater Quality Standards: NR 1401.10 (Public health related groundwater standards); NR 140.12. Public welfare related groundwater standards; NR 140.20 Indicator parameter groundwater standards; NR 140.22. Point of standards application for design and compliance; NR 140.28. Exemptions;	Wis. Admin. Code § NR 140	Only applicable to remedial action if groundwater is impacted			X
Stormwater Erosion Control Standards: Erosion control plan requirements; Runoff management - construction site performance standard for sites of one acre or more	Wis. Admin. Code § NR 216.46; 151.11	Applicable	X		X

ARARs	Authority Citation	Applicable/ Relevant & Appropriate	Location	Chemical	Action
Control of Particulate Emissions - Fugitive Dust: Use BMPs to reduce emissions from construction activities. May not be directly applicable, but at least appropriate and relevant.	Wis. Admin. Code § NR 415.04. Fugitive dust	Applicable or Appropriate and Relevant			X

In accordance with Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), no permits are required for the removal action, only substantive requirements are considered as potential ARARs. Administrative requirements are not ARARs and thus do not apply to actions conducted entirely on-site. Administrative requirements are those that involve consultation, issuance of permits, documentation, reporting, record keeping, and enforcement. The CERCLA has its own set of administrative procedures, which assure proper implementation of CERCLA. The Preamble to the Final NCP states that the application of additional or conflicting administrative requirements could result in delay or confusion. ARARs must be identified on a site-specific basis from information about specific chemicals at the site, the site location and specific features of the site, and actions that are being considered as part of the response action. Provisions of statutes or regulations that contain general goals that merely express legislative intent about desired outcomes or conditions, but are non-binding, are not ARARs. See id., 40 C.F.R. § 300.430(e).

Once the ARARs have been identified, it must be determined whether compliance with each of the ARARs will be possible for the removal action. There are conditions listed under CERCLA section 121(d)(4) in which ARARs may be waived, 42 U.S.C. § 9621(d)(4),. These conditions are:

- Interim Remedy Waiver – the removal action selected is only part of a total site cleanup that will attain such level or standard of control when completed.
- Greater Risk to Health and the Environment – compliance with such a requirement will result in greater risk to human health and the environment than alternative options.
- Technical Impractability (TI) – compliance with such requirement is technically impractical from an engineering perspective.
- Equivalent Standard of Performance – the removal action selected will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, criterion, or limitation, through use of another method or approach.
- Inconsistent application of State requirements with respect to a State standard, requirement, criterion, or limitation – the State has not consistently applied (or demonstrated the intention to consistently apply) a standard, requirement, criterion, or limitation, in similar circumstances at other response actions.

None of the ARARs identified for the project meet the waiver requirements and full compliance with all identified ARARs is required.

4.2 ARAR-Based Preliminary Remediation Goals (PRGs)

No federal regulations were identified for the site that provide cleanup standards, standards of control, or other substantive requirements that are applicable or relevant and appropriate for the action being taken to address contamination in soil and sediment. The NCP (40 C.F.R. § 300.525(e), requires USEPA to "consult with a state on all removal actions to be conducted in that state", and the state (WDNR) to identify potential state ARARs to USEPA on Fund-finances removal actions in a timely manner (40 C.F.R. § 300.525(d)). While the current removal is not an USEPA fund-lead action, USACE is evaluating all the potential ARARs that could inform the removal action. It is the federal agency's (USACE) responsibility to determine which ARARs can be practicably met and is not bound to comply with all requirements identified by the state. However, states have established state-wide standards that may be essential to the successful implementation of the removal action. In accordance with the NCP, USACE submitted a letter to Sarah Krueger, Project Manager of the WNDR, on July 15, 2022, requesting state ARARs be identified for Parcel at Kaukauna. In the November 2, 2022, letter (**Appendix C**), WDNR proposed using procedures listed in NR 720 to determine residual contaminant levels in soil that are protective of human health by direct contact and protective of groundwater (which uses enforcement standards established in NR 140). Since NR 720 provides a procedure to determine residual contaminant levels and does not provide a cleanup standard for contaminants in soil, the USACE does not consider this a substantive requirement that is an ARAR for the action being taken to address contamination in soil. Additionally, as described in Section 2, USACE has not identified impacts to groundwater quality and therefore could not identify NR 140 as an ARAR for the site. Since there were no federal or state regulations that provided a cleanup standard for contaminants in soil, there are no ARAR-based PRGs for this project.

4.3 Risk-Based PRGs

Due to the lack of federal or state regulations that provide cleanup standards for the COCs at the project site, the USACE considered using the USEPA's risk-based screening levels. The USEPA RSL for lead of 200 mg/kg will be used as a PRG and the PRG for PAHs will be to achieve a cumulative cancer risk of $< 1\times10^{-5}$ for residential direct contact across the carcinogenic PAHs of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene based on WDNR guidance for non-industrial direct contact soil RCLs. See **Table 9** for a full list of the risk-based PRGs.

5 Identification and Analysis of Removal Alternatives

The purpose of this section is to present the removal action alternatives proposed to achieve the RAO identified in Section 3. The selected removal action must meet the RAO. The identified potential remedial options were preliminarily screened according to their implementability, the COCs, and the site-specific conditions. The purpose of this screening effort is to evaluate the available removal options and to eliminate those not applicable to the Subject Property.

Soils with lead concentrations greater than the RSL of 200 mg/kg is present at locations JTP-1, JTP-2, JTP-3, JTP-9, JTP-11, JTP-13, JTP-14, and JTP-15 at depths of 0 to 4 ft bgs. These elevated lead concentrations are associated with historic surficial fill and decrease sharply to background levels within the underlying native reddish brown clayey till. PAH concentrations

exceed RSLs based on a TR of 1×10^{-5} at locations JTP-2, JTP-4, JTP-5, and JTP-6 at depths of 0 to 3 ft bgs, with benzo(a)pyrene exceeding the USEPA RML of 11,000 µg/kg at location JTP-4 within the 0-1 ft bgs interval. Similar to lead, concentrations of PAHs are generally highest within the surficial historic fill layer at depths of 0-3 ft bgs and decrease to background levels within the underlying native reddish brown clayey till. Generally, soil concentrations of lead and PAHs exceed screening criteria sporadically throughout the parcel within the surficial historic fill layer at depths of 0 to 3 ft bgs. These results indicate that a removal action under CERCLA is warranted to provide a long-term remedy and allow the property to be transferred. The parcel is currently vegetated with ground cover and is fenced, limiting contact with site soil. These conditions should continue to be maintained until the final removal action is completed.

5.1 Identification of Removal Action Alternatives

Current USEPA guidance suggests that there are two remedial actions that are protective long-term at residential properties: (1) excavation of contaminated soil followed by the placement of a clean soil cover barrier and (2) placement of a clean soil cover barrier without any excavation of contaminated soils (USEPA, 2003). Full excavation of contaminated materials followed by the placement of a clean soil cover is the preferred remedial action and is recommended at sites with relatively shallow contamination. USEPA recommends that full excavation of contaminated materials and placement of clean soil cover should be performed when conditions at the remedial action site do not preclude it. In areas where it may not be feasible to fully excavate contaminated materials, such as very large sites where full excavation may not be cost-effective, capping is also considered to be protective of human health.

Treatment technologies to reduce the bioavailability of soil lead, such as amending soil with phosphate or high iron biosolids composts, have not yet been proven to be protective in the long-term (USEPA, 2003).

Other existing technologies for soil remediation, such as rototilling, phytoremediation, and interim controls such as mulching, seeding, and sodding (without prior removal of contaminated soil), are not currently considered acceptable for residential lead cleanups (USEPA, 2003) .

5.2 Development of Removal Action Alternatives

5.2.1 Alternative 1 – No Action

Consistent with NCP and CERCLA guidance, a “no action” alternative is considered as a baseline for comparison. Under this alternative, no action would be taken at the site under current or future land use scenarios and contaminated soil would be left in place. Because there are no actions associated with Alternative 1, there are no capital or O&M costs associated with this alternative.

The No Action Alternative is not protective of human health and does not achieve the RAO; though it will be retained for further evaluation as a baseline.

5.2.2 Alternative 2 – Partial Removal and Off-Site Disposal with Cap

Alternative 2 would involve limited excavation and off-site disposal at a licensed landfill of shallow soil from the entire Subject Property parcel and cap the remaining contaminated material with clean soil. This alternative would address risk to residents and other users by removing surface soils that exceed levels that pose an unacceptable risk via direct contact. However, contaminated soils below the cap would be left in place, requiring annual inspection and maintenance and, potentially, additional remedial actions if land use of the parcel changed in the future.

Description
This alternative would excavate soil to a depth of 1 ft bgs across the entire parcel, resulting in approximately 900 cubic yards (CY) of in-situ material that would be disposed off-site at a licensed landfill. The remaining contaminated soil would be covered with a geofabric and backfilled with one ft of clean soil that would act as a direct contact cap for the remaining contamination. This would meet USEPA guidance, when contaminated soil is not removed to the full depth of contamination, to provide a minimum 12-inch clean soil barrier and place a permanent barrier/marker that is permeable, easily visible, and not prone to frost heave to separate the clean fill from the remaining contamination (USEPA, 2003). Continuing obligations would be required to maintain the integrity of the cap. Annual inspections of the cap would be required along with regular maintenance to ensure appropriate depth and cover of the underlying contamination. Additionally, since contamination would be left in place, five-year reviews would be required under CERCLA to evaluate the performance of the remedy and determine if the remedy continues to be protective of human health and the environment (USEPA, 2003).

A similar approach has been successfully implemented by an adjacent property, as described in Section 2.5.2.2: Fox Shores.

Preliminary Evaluation
Under this scenario, users of the site would be protected from direct contact with contaminated soils. The integrity of the cap would be maintained through annual inspection and maintenance. This continuing obligation would continue in perpetuity. Under current and anticipated future use of the site, risk to residents and other users is eliminated. However, if excavation or other changes are made to the Subject Property in the future, additional remedial action would be required.

This alternative is protective of human health and the environment and achieves the RAO. It is retained for further evaluation.

5.2.3 Alternative 3 – Removal and Off-Site Disposal (200 mg/kg cleanup standard)

Alternative 3 would involve excavation and off-site disposal of all soil with contaminant concentrations greater than identified clean-up levels from the entire Subject Property. This alternative would address risk to residents and other users by removing all contaminated soils that pose an unacceptable risk via direct contact.

Description
From the entire Subject Property, all soil with lead concentrations greater than 200 mg/kg and PAH contamination with a cumulative cancer risk > 1×10^{-5}, would be excavated and disposed of off-site at a licensed landfill. **Table 10** lists the lead and PAH PRGs for this alternative.

Depths of excavation would vary across the Subject Property. **Figure 11** shows the approximate depth of excavation at various points throughout the property, based on the soil sampling results of the 2021 site investigation (**Figure 10**). Overall, excavation depths would range from 1 to 4 ft bgs, representing a volume of approximately 1,600 CY of in-situ material. Soil samples from the bottom of the excavation would be collected and analyzed for lead and PAHs to confirm that clean-up levels were achieved. Excavation would continue until clean-up standards were achieved. Once excavation is complete, the site would be backfilled with clean soil and topsoil in order to appropriately grade the Subject Property. The site would then be reseeded.

No continuing obligations, such as monitoring or maintenance of a cap, would be required with this Alternative. Using the 200 mg/kg direct contact clean-up level for lead, rather than the BTV of 52 mg/kg, would mean the Subject Property will remain on the WDNR database for contaminated sites. Excess soil generated from future excavations on the Subject Property that exceed the BTV for lead would need to be managed in accordance with state solid waste rules.

Preliminary Evaluation
Under this scenario, users of the site would be protected from direct contact with contaminated soils. All soils with contaminants with unacceptable risk levels would be removed and disposed of off-site at a licensed landfill. Under current and anticipated future use of the site, risk to residents and other users is eliminated. This scenario would also reduce the disturbance to the soil cap on the adjacent properties and reduce the risk to the foundation of the adjacent apartment building, which are in close proximity to the property line.

This alternative is protective of human health and the environment and achieves the RAO. It is retained for further evaluation.

5.2.4 Alternative 4 – Removal and Off-Site Disposal (52 mg/kg cleanup standard)

This Alternative includes removal of the soils that exceed direct contact risk criteria as provided in Alternative 3, as well as soil with lead concentrations greater than the WDNR BTV of 52 mg/kg. All excavated soils would be disposed of off-site at a licensed landfill. This alternative would address all soils with contaminant concentrations greater than WDNR default RCLs and excess soil from future excavations on the Subject Property would be suitable for reuse.

Description
In addition to the excavations noted for Alternative 3, additional soil would be removed at certain locations to achieve the lead BTV of 52 mg/kg in site soils. **Table 11** lists the lead and PAH PRGs for this alternative.

Depths of excavation would vary across the Subject Property. **Figure 12** shows the approximate depth of excavation at various points throughout the property, based on the soil sampling results of the 2021 site investigation (**Figure 10**). Overall, excavation depths would range from 1 to 5 ft bgs, representing an in-situ volume of approximately 1,930 CY of material. These excavation depths and volumes are extrapolations, as lead concentrations greater than 52 mg/kg extend deeper than the available soil samples in several locations. The uncertainty associated with the vertical extent of this contamination adds risk to this Alternative, as the site may require excavation much deeper than is currently estimated.

Soil samples from the bottom of the excavation would be collected and analyzed for lead and PAHs to confirm that clean-up levels were achieved. Excavation would continue until clean-up standards were achieved. Once excavation is complete, the site would be backfilled with clean soil and topsoil in order to appropriately grade the Subject Property. The site would then be reseeded.

No continuing obligations, such as monitoring or maintenance of a cap, would be required with this Alternative. The Subject Property would also not be required to remain on the WDNR database for contaminated sites due to remaining soils that exceed the lead BTV.

Preliminary Evaluation
Under this scenario, users of the site would be protected from direct contact with contaminated soils. All soils with contaminants with unacceptable risk levels would be removed and disposed of off-site at a licensed landfill. Under current and anticipated future use of the site, risk to residents and other users is eliminated. This scenario would require deeper excavation near the adjacent apartment building, which may pose a risk to the structure and the adjacent soil cap.

This alternative is protective of human health and the environment and achieves the RAO. It is retained for further evaluation.

6 Comparative Analysis of Removal Action Alternatives

The purpose of this section is to provide a comparative analysis against each of the evaluation criterion of the alternatives presented in Section 5. This will identify the advantages and disadvantages of each alternative relative to one another. Pursuant to the NCP, each alternative is analyzed using the following evaluation criteria: effectiveness, implementability, and cost.

6.1 Effectiveness Comparison

The effectiveness of each alternative is evaluated by each alternative's protectiveness of human health and the environment; attainment of ARARs; long-term effectiveness and permanence; and short-term effectiveness. No alternative would provide reduction of toxicity, mobility, or volume through treatment. The long-term effectiveness and permanence criterion is evaluated in considering the magnitude of residual risks and adequacy and reliability of controls. Short-term effectiveness is evaluated based on impacts to human health and the environment during active implementation of the removal action.

Alternative 1 would be the least effective of all four of the alternatives. It would not provide any additional protection of human health or the environment and does not achieve the RAO.

The effectiveness of Alternatives 2, 3, and 4 are comparable with respect to the following:

- Protection of human health; they would allow for residential uses of the Subject Property.
- Protection of workers, the community, and the environment during implementation.

What differentiates the effectiveness of 2, 3, and 4 is long-term effectiveness and permanence and short-term effectiveness. Alternatives 3 and 4 would be the most effective alternative in reducing potential human risks by permanently removing the soils that are a direct contact risk for residential exposure. Alternative 2 would have less long-term effectiveness and permanence than alternatives 3 or 4, because not all lead contaminated soil that is a residential direct contact risk is permanently removed.

Alternatives 3 and 4 would both be effective in achieving the RAO and the risk based PRGs set for the Subject Property. However, Alternative 3 would have less short-term effects as less soil would be disturbed and require off-site transportation and disposal. Alternative 1 would have the most short-term effects as no soil would be disturbed and transported off-site for disposal, followed by Alternative 2, which would require less disturbance of soil and off-site transportation, and disposal of contaminated soil compared to Alternatives 3 and 4.

Based on the comparative analysis of the alternatives, Alternatives 2, 3, and 4 would be effective at protecting human health and the environment and achieving the RAO. Alternative 2 would have less short-term effects, while Alternatives 3 and 4 would be more effective in the long-term.

6.2 Implementability Comparison

The implementability criterion addresses the technical feasibility of implementing the response (including availability of services and materials), and the administrative feasibility (including required permits, easements or right-of-ways, impact to adjoining properties, and ability to impose institutional controls).

Alternative 1 is the most implementable since no construction, operation, disposal, or easements are associated with the alternative. Each of the other alternatives would require right of entries to adjacent parcels to support construction actives and require equipment, personnel and services, and off-site landfill capacity. There is expected to be suitable off-site landfill capacity available for each alternative.

Alternatives 2, 3, and 4 are all technically implementable, but they vary in levels of short term and long-term effort. Of the three alternatives that address the risk based PRGs, Alternative 3 is the easiest to implement, followed by Alternative 4, and then Alternative 2. While Alternative 2 would be easier to implement during the initial removal action, it would require USACE to implement long-term operation and maintenance measures to protect the integrity of the cap, including annual inspection and maintenance of the cap, which decreases the implementability of the alternative significantly. Also, Alternative 2 may require additional remedial action if the

land use ever changes in the future, which also negatively effects implementability. Alternative 4 will require more labor and equipment, and off-site landfill capacity compared to Alternative 3, and would have greater operational difficulties associated with excavating to deeper depths in close proximity to the adjacent apartment building foundations and along the Fox River shoreline.

Thus, Alternative 1 is the most implementable alternative, followed by Alternative 3, then Alternative 4, and lastly Alternative 2.

6.3 Cost Comparison

Projected costs were calculated using direct capital costs, indirect capital costs, and annual post-removal site control costs. Consistent with guidance, the costs presented are estimated using current costs of labor and materials, and actual costs are expected to range from 30 percent below to 50 percent above the costs presented. The projected costs presented for the EE/CA removal action alternatives are estimates only for the sole purpose of comparing alternatives and should not be considered design-level cost estimates. Details that formed the basis for the removal action alternative cost projections are provided in **Appendix B.**

Alternative 1 is the lowest cost alternative at $0 but does not meet the risk-based PRGs. Alternative 2 is the next lowest cost, followed by Alternative 3, and then Alternative 4, which is the highest cost. Alternative 2 is approximately $66,000 less than Alternative 3. Therefore, Alternative 2 is the lowest cost alternative that satisfies the risk-based PRGs.

7 Recommended Removal Action Alternative

The purpose of this section is to describe the recommended removal action alternative and the reason for the selection.

Taking into consideration the evaluation criteria presented in the EE/CA, the recommended removal action alternative for the Subject Property is Alternative 3 (see **Table 12**). Alternative 3 involves excavation and off-site disposal of contaminated soil within a licensed landfill from the approximate areas shown in **Figure 12.** This alternative would excavate all soil that exceeds the residential direct contact criteria for lead and PAHs. This alternative would not require long-term monitoring or maintenance of the Subject Property to prevent unacceptable risks. The estimated cost to complete Alternative 3 is approximately $1,800,000.

Alternative 3 is the recommended removal action alternative based on the results of the comparative analysis completed in Section 6, which determined that it is a technically feasible alternative that is protective of human health and the environment, achieves the RAO, does not require continuing obligations, and is less costly and more implementable than Alternative 4. This alternative is anticipated to be acceptable to both state and community stakeholders.

8 Contracting, Cost, and Funding Considerations

8.1 Contracting Considerations

Response personnel may use contractors to assist in implementing the recommended alternative set forth in the EE/CA. The Following Contracting options are available:

Multiple Award Task Order Contract (MATOC - LRD Regional): is a type of Indefinite Delivery Indefinite Quantity (IDIQ)contract where there are multiple awardees. IDIQs are contracts that provide an indefinite quantity of products or services for a fixed period. MATOC awardees can compete for future task orders issued under the MATOC. This would be our suggested contracting method for the following reasons:

- **Flexibility**: MATOCs allow the contracting agency to issue task orders (TOs) under an existing contract. Once a MATOC is awarded, the agency can quickly procure specific services or products as needed without the need for new competition for each task. This makes the procurement process faster and more efficient, especially for recurring or varying needs.
- **Streamlined Process**: With a MATOC, contractors are already pre-qualified. This means that, for each task order, the government does not need to go through a full procurement process as they would with an IFB. They can simply solicit proposals from pre-approved contractors and award the work quickly.
- **Reduced Administrative Burden**: Since the contracting vehicle (MATOC) is already in place, the administrative work for both the agency and contractors is reduced. This contrasts with IFBs, where a new bidding process must be initiated for each contract.

Invitation for Bid (IFB): An Invitation for Bid (IFB) is a formal request issued by a government agency soliciting sealed bids from potential suppliers or contractors for a specific project or service. Unlike other procurement methods, an IFB focuses on obtaining competitive bids primarily based on price. This would be the suggested method if using the regional MATOC is not able to be utilized for the following reasons:

- **Clear and Transparent Pricing:** IFBs are typically awarded to the lowest responsive and responsible bidder. This makes the pricing process very clear and transparent, which is often desirable for both the contracting agency and the bidders. The public can see who was awarded the contract and for what price, which can help ensure accountability.
- **Competitive Bidding Process:** An IFB allows the government to obtain competitive bids, which can drive down the price of the goods or services. Contractors submit their best prices upfront, and the government selects the lowest qualified bid. This competition helps ensure taxpayers are getting the best value for money.
- **Simple and Well-Defined Requirements:** IFBs work best for contracts where the scope of work, specifications, and requirements are well-defined and straightforward. This makes it ideal for projects that do not require ongoing or complex adjustments. If the specifications are clear, the IFB process ensures that the contractor knows exactly what is expected.

Design-Build: Design-build is a project delivery method that combines two, usually separate services into a single contract. With design-build procurements, owners execute a single, fixed-

fee contract for both architectural/engineering services and construction. This option provides the Agency with less control over the design and implementation methodology of the project, and thus it is not a preferred method when dealing with remedial clean-up actions.

8.2 Cost Management

Costs directly associated with developing and performing the EE/CA are part of the overall contract expenditures. EE/CA costs are charged against the project ceiling in this case. These are tracked, along with cleanup costs. Developing the EE/CA costs fall into the design phase of the project, while implementing the EE/CA will fall into the construction costs. This cost breakdown will be broken up the same way for any of the contracting options that would be used. Costs that are attributable to the EE/CA include sampling and analytical costs incurred in support of selecting an option or in preparing the report itself and manpower used to gather information on response options. Sampling and analytical costs incurred during implementation of the selected removal action are covered in the overall contract cost.

8.3 EE/CA Funding

Funding for the EE/CA came from the regional (LRD) common O&M budget. This project is fully funded to include design, soil removal, and closeout. EE/CA preparation is added into the design phase of the project, which falls into the overall project cost and is fully funded. EE/CA preparations is not tracked separately from other cleanup costs.

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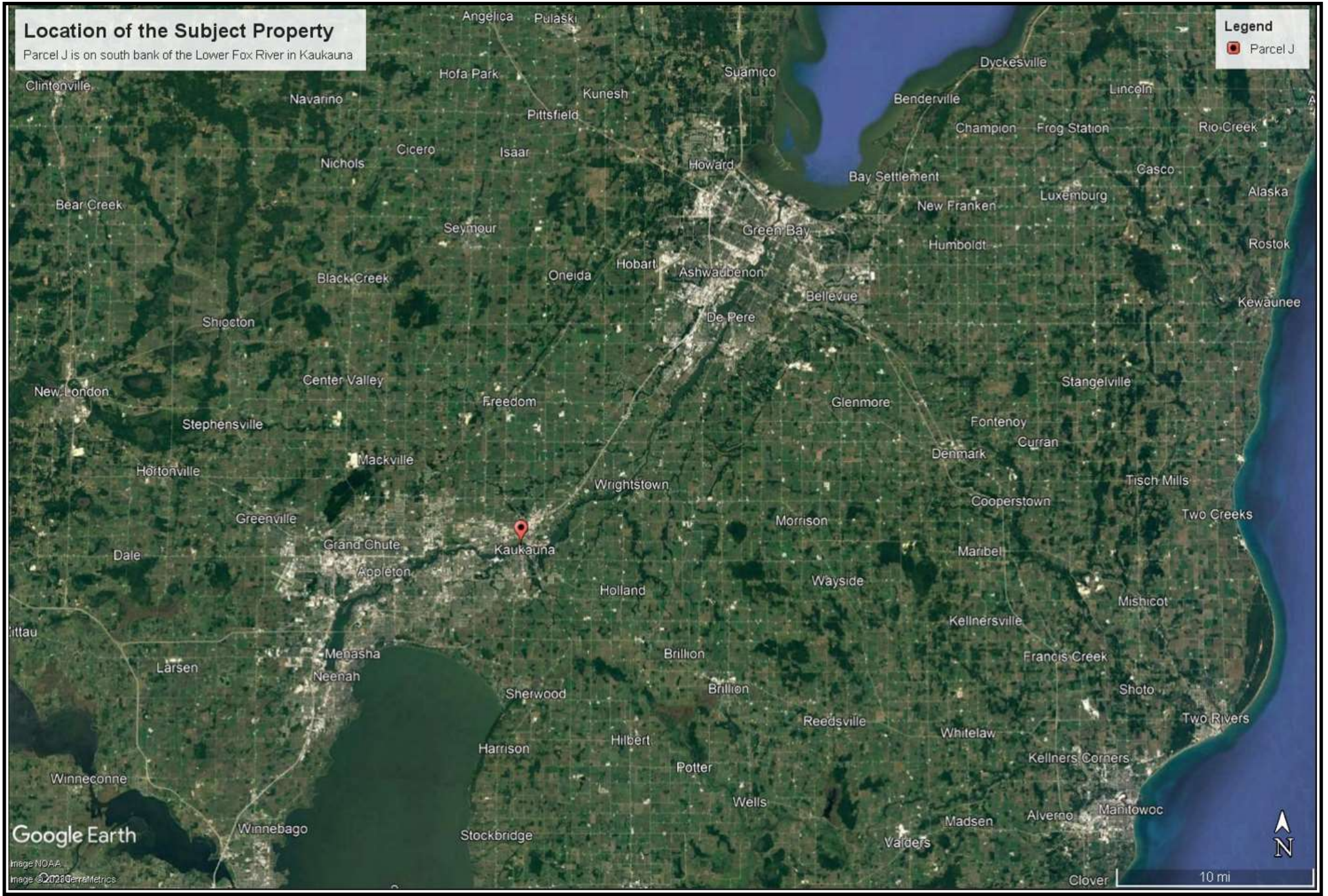
Figures



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Chicago District

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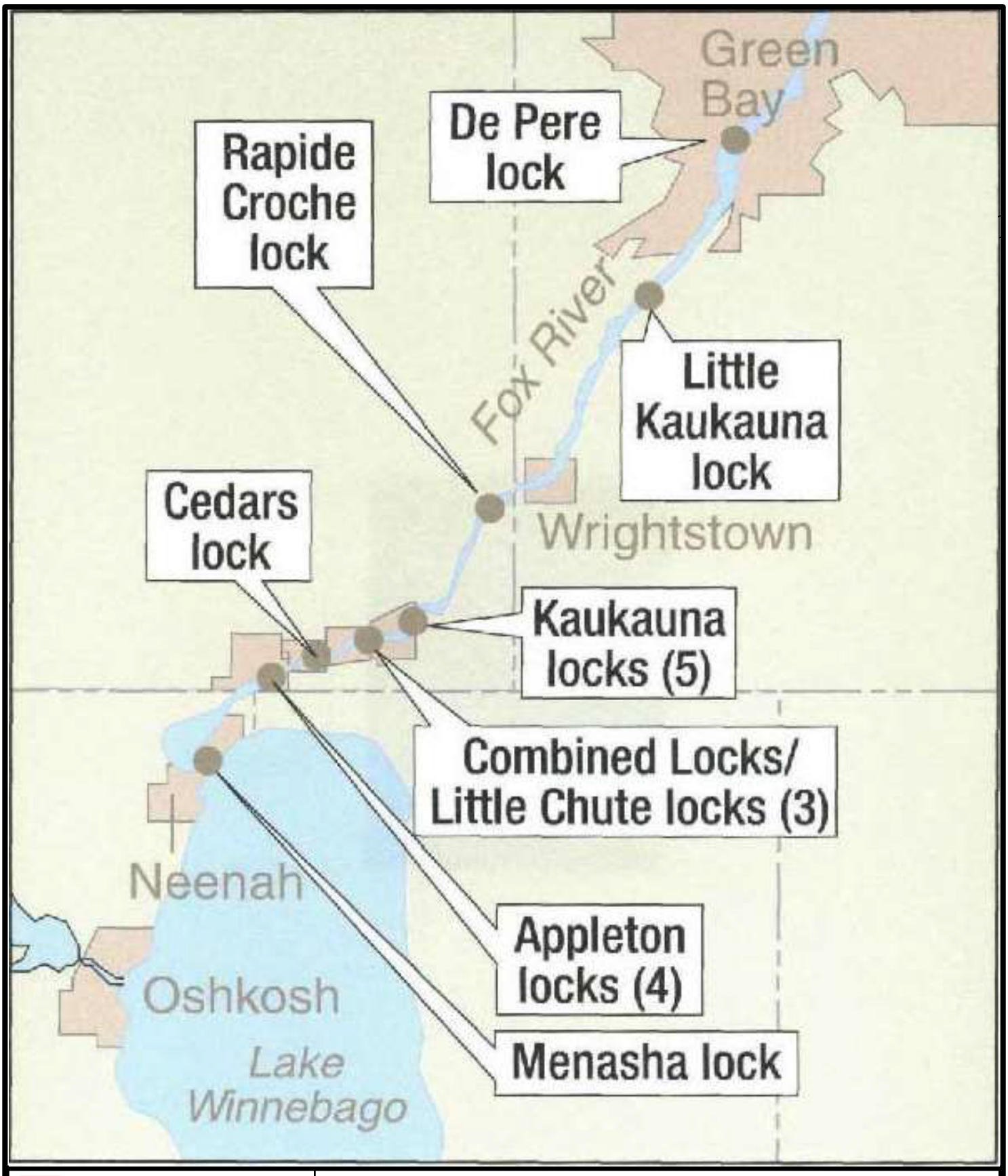
KAUKAUNA PARCEL J
VICINITY MAP
KAUKAUNA, WISCONSIN

FIGURE 1



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LOWER FOX RIVER SYSTEM

KAUKAUNA POWER CANAL PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 2

Date Saved: 16 Oct 2024

Legend

Parcel J Boundary

Kaukauna Lock Locations

0 1,000 Feet

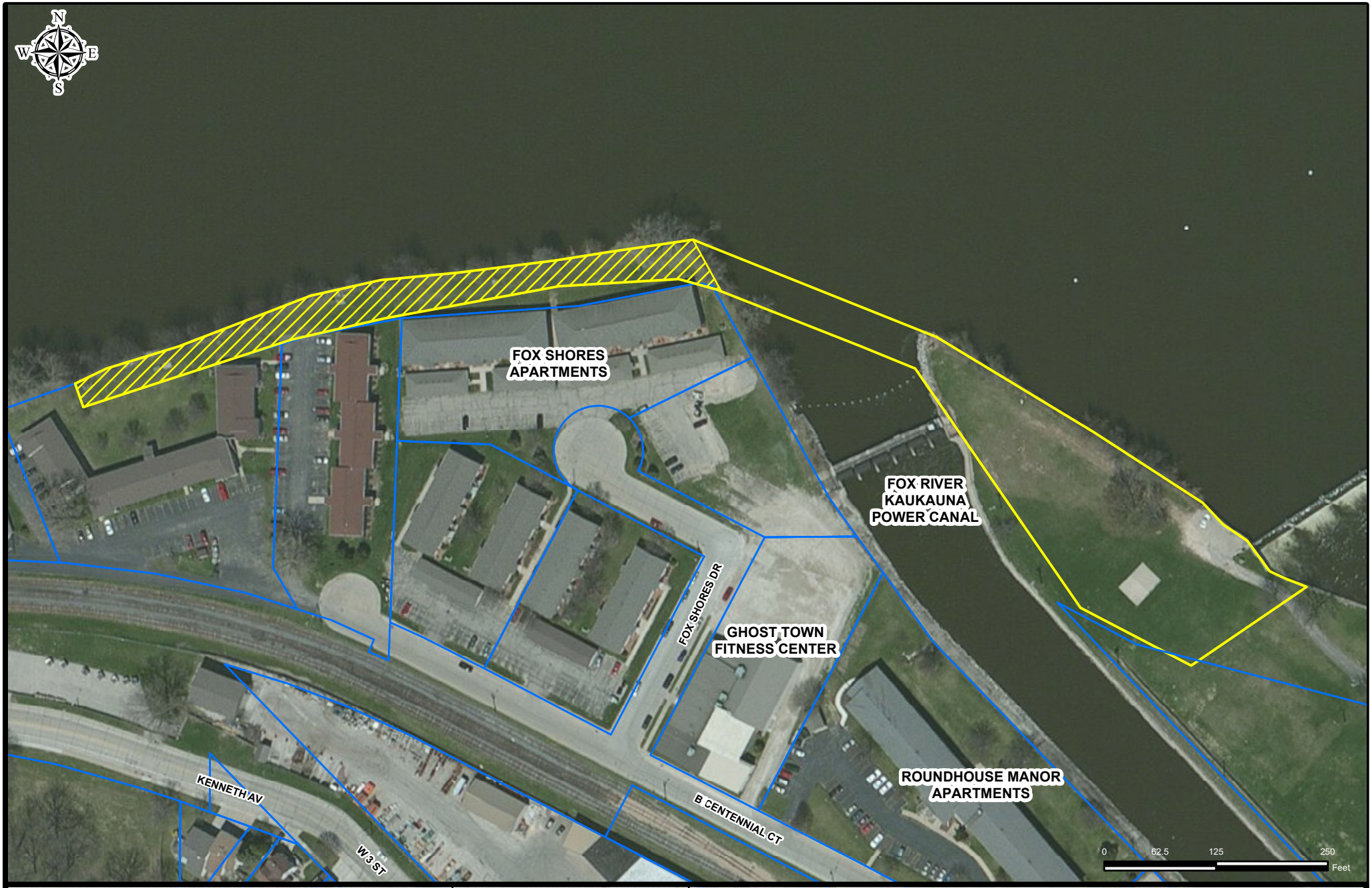
US Army Corps of Engineers
Chicago District

LOCATION OF LOCKS NEAR PARCEL J

KAUKAUNA POWER CANAL PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 3

Date Saved: 16 Oct 2024



Legend

- Parcel J Sample Area
- Parcel J Boundary
- Tax Parcel Boundary

US Army Corps of Engineers
Chicago District

LOCATION OF PARCEL J NEAR KAUKAUNA POWER CANAL

KAUKAUNA POWER CANAL PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 4

Date Saved: 02 Oct 2024

U.S. Fish and Wildlife Service
National Wetlands Inventory

Kaukauna Parcel J

June 28, 2024

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

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Date Saved: 04 Oct 2024

KAUKAUNA PARCEL J
USFWS WETLANDS INVENTORY
KAUKAUNA, WISCONSIN

FIGURE 5

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KAUKAUNA PARCEL J
PROPOSED FENCE LOCATION
KAUKAUNA, WISCONSIN

FIGURE 6

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HAZARDOUS SIGNAGE
KAUKAUNA PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 7

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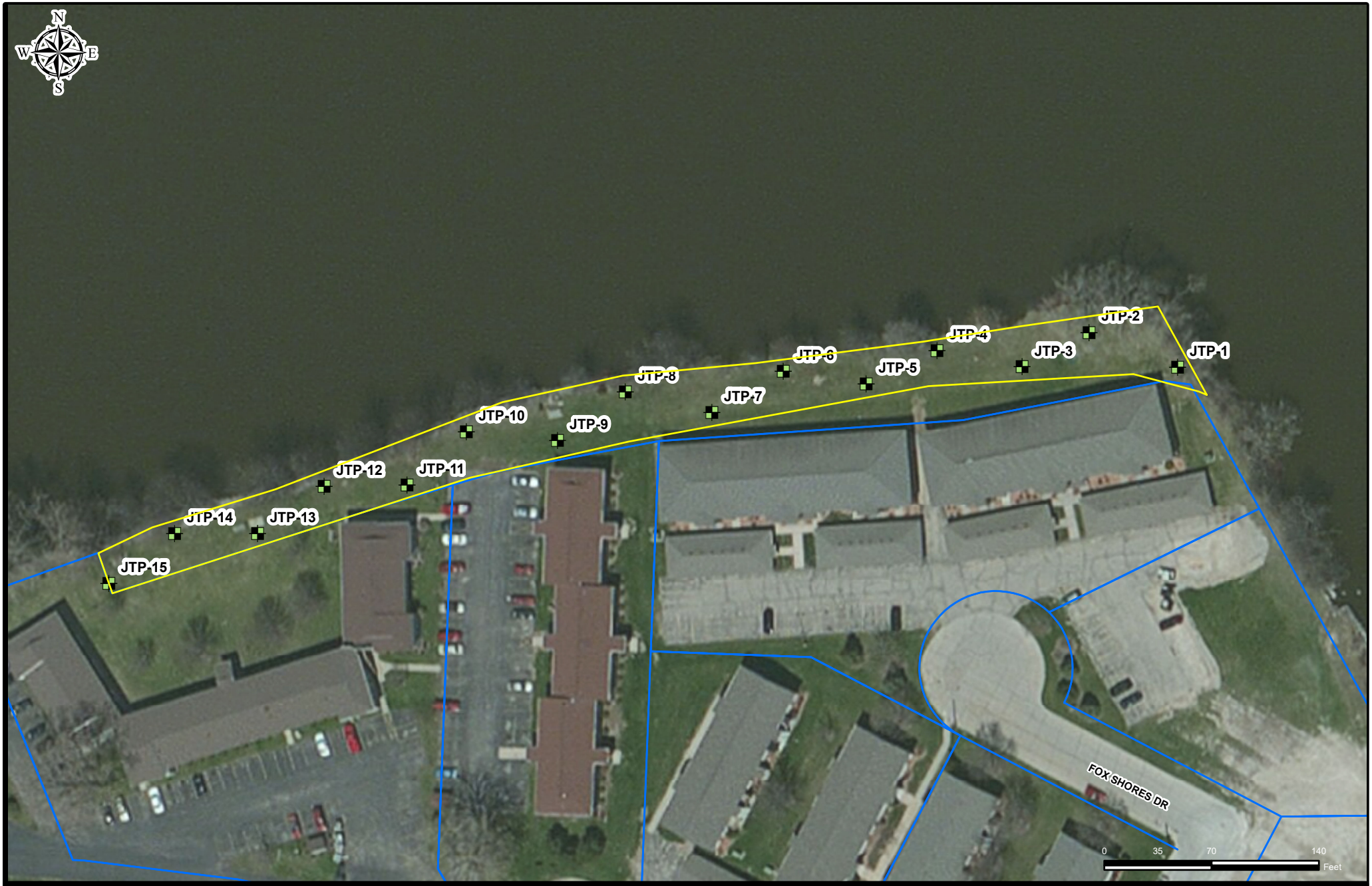
of Engineers
Chicago District

Date Saved: 04 Oct 2024

PICNIC TABLE AND GRILL AT PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 8



Legend

- Proposed Test Pit Locations
- Parcel J Sample Area
- Tax Parcel Boundary

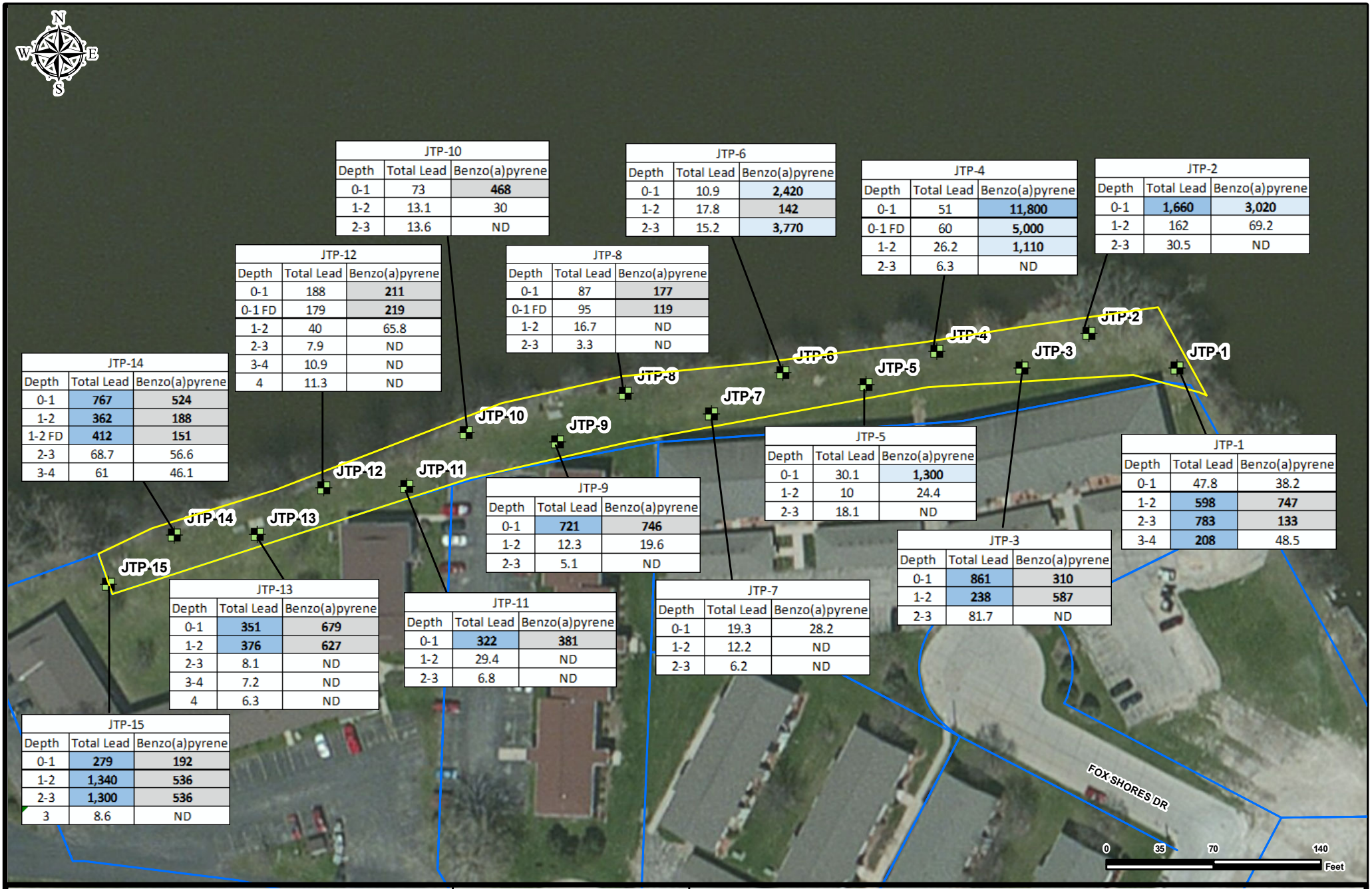
US Army Corps of Engineers
Chicago District

PARCEL J PROPOSED TEST PIT LOCATIONS

KAUKAUNA PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 9

Date Saved: 03 Oct 2024



JTP-10		
Depth	Total Lead	Benzo(a)pyrene
0-1	73	**468**
1-2	13.1	30
2-3	13.6	ND

JTP-6		
Depth	Total Lead	Benzo(a)pyrene
0-1	10.9	**2,420**
1-2	17.8	**142**
2-3	15.2	**3,770**

JTP-4		
Depth	Total Lead	Benzo(a)pyrene
0-1	51	**11,800**
0-1 FD	60	**5,000**
1-2	26.2	**1,110**
2-3	6.3	ND

JTP-2		
Depth	Total Lead	Benzo(a)pyrene
0-1	**1,660**	**3,020**
1-2	162	69.2
2-3	30.5	ND

JTP-12		
Depth	Total Lead	Benzo(a)pyrene
0-1	188	**211**
0-1 FD	179	**219**
1-2	40	65.8
2-3	7.9	ND
3-4	10.9	ND
4	11.3	ND

JTP-8		
Depth	Total Lead	Benzo(a)pyrene
0-1	87	**177**
0-1 FD	95	**119**
1-2	16.7	ND
2-3	3.3	ND

JTP-14		
Depth	Total Lead	Benzo(a)pyrene
0-1	**767**	**524**
1-2	**362**	**188**
1-2 FD	**412**	**151**
2-3	68.7	56.6
3-4	61	46.1

JTP-5		
Depth	Total Lead	Benzo(a)pyrene
0-1	30.1	**1,300**
1-2	10	24.4
2-3	18.1	ND

JTP-1		
Depth	Total Lead	Benzo(a)pyrene
0-1	47.8	38.2
1-2	**598**	**747**
2-3	**783**	**133**
3-4	**208**	48.5

JTP-9		
Depth	Total Lead	Benzo(a)pyrene
0-1	**721**	**746**
1-2	12.3	19.6
2-3	5.1	ND

JTP-3		
Depth	Total Lead	Benzo(a)pyrene
0-1	**861**	**310**
1-2	**238**	**587**
2-3	81.7	ND

JTP-13		
Depth	Total Lead	Benzo(a)pyrene
0-1	**351**	**679**
1-2	**376**	**627**
2-3	8.1	ND
3-4	7.2	ND
4	6.3	ND

JTP-11		
Depth	Total Lead	Benzo(a)pyrene
0-1	**322**	**381**
1-2	29.4	ND
2-3	6.8	ND

JTP-7		
Depth	Total Lead	Benzo(a)pyrene
0-1	19.3	28.2
1-2	12.2	ND
2-3	6.2	ND

JTP-15		
Depth	Total Lead	Benzo(a)pyrene
0-1	**279**	**192**
1-2	**1,340**	**536**
2-3	**1,300**	**536**
3	8.6	ND

Legend

- 2021 Test Pit Results
- Parcel J Sample Area & Transect
- Tax Parcel Boundary

US Army Corps of Engineers
Buffalo District

Drawn By: h5tdekmh
Date Saved: 23 Dec 2024
Time Saved: 1:47:37 PM

2021 TEST PIT LEAD (MG/KG) & BENZO(A)PYRENE (UG/KG) RESULTS PER DEPTH INTERVAL (FT.)

KAUKAUNA POWER CANAL PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 10

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N

JTP-1
JTP-2
JTP-3
JTP-4
JTP-5
JTP-6
JTP-7
JTP-8
JTP-9
JTP-10
JTP-11
JTP-12
JTP-13
JTP-14
JTP-15

0 50 100 200 Feet

Legend

2021 Test Pit Locations

Parcel J Sample Area & Transect

Approximate Excavation Depths (feet)

- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- 3 - 3.5
- 3.5 - 4

0 150 300 600 Feet

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Buffalo District

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CORPS OF ENGINEERS
BUFFALO, NY

ALTERNATIVE 3
APPROXIMATE EXCAVATION DEPTH CONTOURS

Project: Kaukauna_ParcelJ.aprx
Layout Name: Alt3_ExcavationContours
Drawn By: h5tdekmh
Date Saved: 1/19/2025
Time Saved: 1052

KAUKAUNA POWER CANAL PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 11

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Legend

- 2021 Test Pit Locations
- Parcel J Sample Area & Transect

Approximate Excavation Depths (feet)

- 0 - 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- 2.5 - 3
- 3 - 3.5
- 3.5 - 4

US Army Corps of Engineers® Buffalo District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
BUFFALO, NY

ALTERNATIVE 4
APPROXIMATE EXCAVATION DEPTH CONTOURS

Project: Kaukauna_ParcelJ.aprx
Layout Name: Alt4_ExcavationContours
Drawn By: h5tdekmh
Date Saved: 1/19/2025
Time Saved: 1052

KAUKAUNA POWER CANAL PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 12

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Tables

Table 1 - Kaukauna Locks and Dam Primary Resources Summary

Source	Date	
Sanborn Map	1894	**Property** *Property southwest of dam:* Not shown on available Sanborn maps. *Property northeast of dam:* Land-use appears similar to that in 1890. *Lock 1:* The maps do not show the eastern half of the Lock 1 Property. Land-use on the depicted southern and northern portions of the Lock 1 Property is similar to that of 1890. *Lock 2, 3, 4, and 5:* These properties are not shown on the available Sanborn maps.
		Surrounding *Property southwest of dam:* A roundhouse (coal sheds, black smith, machine shop, repair shop, carpenter shop) and rail yard is depicted south of the Property. *Property northeast of dam:* Land-use surrounding the Property is similar to that in 1890. *Lock 1:* The maps do not show the eastern half of the Lock 1 Property. Depicted land-use surrounding the northern portion of the Property is similar to that in 1890. The land-use surrounding the southern portion of the Property is also similar to that in 1890. However, some occupants have changed and building composition may have changed (i.e., buildings were added and/or removed). Manufacturing facilities listed west to east include: Russell Bro's Flour Mill/"Victoria Mills" Water Power; Kaukauna Paper Co. Paper and Pulp Mill; Thilmany Pulp and Paper Mill; Kaukauna Lumber and Mfg. Co's; Kaukauna Electric Light. *Locks 2, 3, 4, and 5:* The area surrounding these properties is not shown on available Sanborn maps
Sanborn Map	1900	**Property** *Property southwest of dam:* Not shown on available Sanborn maps.
		Property northeast of dam: Land-use on Property appears similar to that in 1894. Address along Wisconsin Avenue: 61 – 71, 203 – 231, 30 – 42, 301 – 309, and 912 – 913 (south side); 1201 – 1208, 200 – 234, 801, 902 – 911, and 328 – 332 (north side). *Lock 1*: The maps do not show the eastern half of the Lock 1 Property. Land-use on the depicted southern and northern portions of the Lock 1 Property is similar to that in 1894. *Locks 2, 3, 4, and 5:* Not shown on available Sanborn maps.
		Surrounding *Property southwest of dam*: Land-use south of the Property is similar to that in 1894 (i.e., the roundhouse is still present). *Property northeast of dam*: Land-use surrounding the Property is similar to that in 1894.

Source	Date	
Sanborn Map (cont.)	1900	*Lock 1*: The maps do not show the eastern half of the Lock 1 Property. Land-use surrounding the northern portion of the Property is similar to that in 1894. The land-use surrounding the southern portion of the Property is similar to that in 1894. However, some occupants have changed and building composition may have changed (i.e., buildings were added and/or removed). Kaukauna Lumber and Mfg. Co. is no longer shown on the Sanborn map; buildings for that facility are no longer present. Manufacturing facilities listed west to east include: Russell Bro's Flour Mill/"Victoria Mills" Water Power; Union Bag and Paper Co.; Thilmany Pulp and Paper Mill; Kaukauna Electric Light Co.; and Solar Mfg Co. *Locks 2, 3, 4, and 5*: The area surrounding these properties is not shown on available Sanborn maps.
Sanborn Map	1906	**Property** *Property southwest of dam*: Not shown on available Sanborn maps. *Property northeast of dam*: Land-use on Property appears similar to that in 1900. *Lock 1*: The maps do not show the eastern half of the Lock 1 Property. Land-use on depicted portion of Property appears to be similar to that in 1900. *Lock 2*: Not shown on available Sanborn maps. However, the Sanborn map covering land west of this Property indicates the vicinity is "vacant." *Locks 3, 4, and 5:* Not shown on available Sanborn maps. However, the Sanborn map covering land further west of these properties indicates this vicinity is "vacant."
		Surrounding
		Property southwest of dam: Land-use is similar to that in 1900 (i.e., the roundhouse is still present). Standard Oil Co. (gasoline and kerosene tanks) is present southwest of the roundhouse, south of the rail yard.
		Property northeast of the dam: Land-use surrounding the Property is similar to that in 1900. Some address numbers appear to have changed along Wisconsin Avenue. *Lock 1*: The maps do not show the eastern half of the Lock 1 Property. A few buildings are no longer present north of the Property; the bottling company is no longer depicted. South of the Property, Russell Bro's Flour Mill/"Victoria Mills" Water Power company is no longer present, nor is the land on which it once stood. Solar Mfg. Co. land is now occupied by Boyd Paper Co. The other occupants of the properties south of the Property are the same. However, it appears as though more structures have been added at the Union Bag and Paper Co. and Thilmany Pulp and Paper Co. properties. *Lock 2*: The area surrounding this Property is not shown on the available Sanborn maps. However, the Sanborn map covering the land west of this area indicates this area is "vacant." *Locks 3, 4, and 5*: The area surrounding these properties is not shown on the available Sanborn maps. However, the Sanborn map covering land further west of this area indicates this area is "vacant."

Source	Date	
U.S. Government Historical Map (company records)	1910	**Property** *Property southwest of dam*: Small building with a well is shown approximately 200 feet west of the southern end of the dam. The purpose of this building is not identified. A railroad spur and water closet are shown on the Property west of the Kaukauna Water Power Co's. Power Canal. *Property northeast of dam*: "Guard Lock Skeleton Gates" and a needle house are shown immediately north of the dam. Three additional small buildings are shown on the Property which appear to be associated with the neighboring properties.
		Lock 1: A coal shed, U.S. Warehouse, U.S. Lock House (current Lockmaster's dwelling) and barn are shown in the immediate vicinity north of Lock 1. Small buildings associated with neighboring properties are on the Property north of the U.S. Canal between the area northeast of the dam and Lock 1. One half of a machine shop on Canal St. approximately 300 feet west of Catherine St. is on the Property. Buildings associated with the Union Bar and Paper Co. and Thilmany Paper Mill are also shown on the Property south of the U.S. Canal between Island St. and Lock 1. *Lock 2*: A U.S. Lock House and barn are shown immediately north of Lock 2. *Lock 3*: The timber shed, U.S. Dry Dock, and garage with lean-to are shown at the current locations. Other buildings shown are a shed, old pump house, shop, and outhouse. A handwritten note on this map indicates that the land currently holding the Project Office was acquired May 1, 1948. A U.S. Stone Dock is shown on the south side of the U.S. Canal midway between Lock 3 and Lock 4.
		Lock 4: No buildings are shown at Lock 4.
		Lock 5: A lock tender's dwelling (current Lockmaster's dwelling), shed, water closet, barn, and two unidentified small buildings are shown at Lock 5.
		Surrounding *Property southwest of dam*: Land-use is similar to that in 1906. The following buildings are identified: Engine House (roundhouse), office, shorehouse. blacksmith shop machine shop, carpenter shop, transfer table, and two paint shops. The land immediately south of the dam (current location of Cops Construction and the Kaunkauna Public Library) is identified as the Kaukauna fairground. *Property northeast of the dam:* Land-use surrounding the Property is similar to that in 1906 (i.e. mixed residential and commercial). *Lock 1*: Victoria Mills, Union Bag and Paper Co., Thilmany Paper Mill, Electric Light Plant, and Solar Manufacturing are shown south of the U.S. Canal between Island St. and Lock 1. The land north of the U.S. Canal is shown as residential. *Lock 2*: A Branch Track of Chicago & Northwestern Railway is shown south of and then crossing immediately east of Lock 2. The land north of Lock 2 appears to be platted for residential development. No development is shown immediately south of Lock 2. *Lock 3:* Development surrounding this Property is not shown.

Source	Date	
U.S. Government Historical Map (company records)	1910	*Lock 4:* The Grignon House is shown north of Lock 4. Buildings associated with the Outagamie Paper Co. (recovery building, carpenter shop, wood room, digester building, boiler room, engine room, bleach room, and office) are shown southwest of Lock 4. The Merritt Black quarry is shown immediately south of the U.S. Canal approximately 300 feet east of Lock 4. *Lock 5*: No development is shown around Lock 5.
Sanborn Map	1913	**Property** *Property southwest of dam*: Not shown on available Sanborn maps. *Property northeast of dam*: Land-use appears similar to that in 1910. *Lock 1*: The maps do not show the eastern half of the Lock 1 Property. Land-use appears to be similar to that in 1906; the Property continues to support portions of the adjacent property buildings. The uses of these adjacent buildings have undergone some minor changes, although their general use as commercial/light industrial and residential properties has remained consistent. See below for more details on surrounding property. *Locks 2, 3, 4, and 5:* Not shown on available Sanborn maps.
		Surrounding *Property southwest of dam:* Land-use south of the Property is similar to that in 1910 (i.e., the roundhouse and other railroad buildings are still present). Property is identified as Chicago & Northwestern railroad. *Property northeast of dam:* Land-use surrounding this Property is similar to that of 1906. Vacancies are noted in many of the commercial buildings. *Lock 1:* The maps do not show the eastern half of the Lock 1 Property. The foundry/machine shop (former black smith shop) located north of the Property has expended eastward. In addition, a "garage" with one 120-gallon UST is depicted east of the foundry. The Union Bag and Paper Co., Thilmany Pulp and Paper Co., Kaukauna Electric Light Co., and Cornell and Ward Toilet Paper Factory are shown south of the U.S. Canal west of Lock 1. *Locks 2, 3, 4, and 5:* The area surrounding these properties is not shown on the available Sanborn maps.
Sanborn Map	1925	**Property** *Property southwest of dam*: Not shown on available Sanborn maps. *Property northeast of dam:* Land-use appears similar to that in 1913. The uses of some adjacent buildings to the north have undergone some changes, although their general use as commercial/light industrial and residential properties has remained consistent. See below for more details on surrounding property. *Lock 1:* The maps do not show the eastern half of the Lock 1 Property. Land-use appears similar to that in 1913. *Lock 2, 3, 4, and 5*: Not shown on available Sanborn maps.

Source	Date	
Sanborn Map (cont.)	1925	**Surrounding** *Property southwest of dam*: Land to the east is shown as being occupied by the municipal administration building at 101 Main Avenue (swimming pool, fire department, office, post office). This building is the current Cops Construction Building. The roundhouse and rail yard is still present south of the properties.
		Property northeast of the dam: A printing business and two "garages," each with a gas tank, are present on the south side of Wisconsin Avenue (215/900 Wisconsin Avenue, 179 Wisconsin Avenue; and 141/143 Wisconsin Avenue, respectively). Most other commercial businesses are depicted as stores or offices, with their specific operations omitted from the Sanborn descriptions. Addresses along Wisconsin Avenue appear to have been adjusted and most properties are shown with two addresses; Wisconsin Avenue has been separated into West and East Wisconsin Avenue. New addresses along W. Wisconsin Avenue: 101 – 265 (south side), 100-266 (north side); New address along E. Wisconsin Avenue: 101 – 141 (south side), 100 (north side).
		Lock 1: The maps do not show the eastern half of the Lock 1 Property. The garage located north of the Property is now occupied by office and general storage. The former foundry is now identified as Kaukauna Machine Co. Other land-use north of the Property is similar to that in 1913. Two manufacturing facilities are depicted south of the Property: Union Bag and Paper Corp. and Thilmany Pulp and Paper Company. Thilmany Pulp and Paper Company has expanded east to encompass land area formerly occupied by other manufacturing facilities.
		Locks 2, 3, 4, and 5: The area surrounding these properties is not shown on available Sanborn maps.
Reverse Directory	1943	**Property** *Property southwest of dam*: No Reverse directories were ascertained for this Property.
		Property northeast of dam: May support portions of the commercial businesses and residential properties identified along the south side of E. and W. Wisconsin Avenue. See below for more details on surrounding properties.
		Lock 1: Fox River Navigation Co. 8 identified at 250 Canal Street; U.S. Engineer's Office 275W and Richards Ripley 288J (Lockmaster at Lock 1) identified at "end" of Canal Street.
		Lock 2: Property not specifically identified.
		Locks 3, 4, and 5: East from the railroad tracks that bisect the Lock 3 Property, residential properties are identified south of Augustine Street. It is not known if these residences are specifically situated on the northern portions of the properties. They may be north adjacent to the properties.

Source	Date	
Reverse Directory (cont.)	1943	**Surrounding** *Property southwest of dam*: No Reverse directories were ascertained for the area surrounding these properties. *Property northeast of dam*: Businesses identified on the south side of E. Wisconsin Avenue include beauty shop, taverns, and restaurant. Businesses identified on the south side of W. Wisconsin Avenue include grocery store, tavern, barber shop, restaurant, clothing store, shoe repair, and stationary and printing co. (215). The former garages identified on earlier Sanborn maps at 179 and 141/143 are listed as vacant and as a Ben Franklin Variety Store, respectively, in the Reverse directory. Businesses of note on the north side of W. Wisconsin Avenue include a gas station (200) and a jewelry store (124). Residential properties are also identified on E. and W. Wisconsin Avenue. *Lock 1*: No additional addresses identified for Canal Street. Outagamie County Teachers Training School was identified at 160 E. Wisconsin Avenue and is located immediately north of Canal Street. *Lock 2:* Residential properties are identified along Grignon. *Locks 3, 4, and 5:* Trinity Ev. Lutheran School identified north of Lock 2, on the south side of Augustine Street. Residential properties are identified on the north and south sides of Augustine Street from E. Tobacnoir to the northeast.
Sanborn Map	1945	**Property** *Property southwest of dam*: Not shown on available Sanborn maps. *Property northeast of dam:* Land-use appears similar to that in 1943. *Lock 1:* The maps do not show the eastern half of the Lock 1 Property. Buildings located on the south side of Canal Street include Office (250) and U.S. Government warehouses. Other buildings depicted south of Canal Street in earlier Sanborn maps are no longer present (including the machine shop). Land-use south of the canal appears similar to that in 1925. *Locks 2, 3, 4, and 5*: Not shown on available Sanborn maps.
		Surrounding *Property southwest of dam:* Municipal administration building still present. Municipal maintenance garage with gas UST is located further east of the Property, across Main Avenue (100 Main Avenue). Roundhouse and railyard are still present south. *Property northeast of dam:* Land-use appears similar to that in 1943. Former garages identified in 1925 are shown as vacant (179) and as a store (141/143) on the Sanborn map. However, gas tanks were still shown as present at the properties. The printing facility is apparent at 215. An outbuilding, formerly used for general storage in 1925, is identified as used auto storage in 1945. Although this building is located near the edge of the bluff, it is not situated on the Property. *Lock 1*: The maps do not show the eastern half of the Lock 1 Property. Buildings located south of Canal Street, including the machine shop, are no longer present. South of the Property, Thilmany Pulp and Paper Company occupies the entire land area; Union Bag and Paper Corp. is shown as a division of Thilmany Pulp and Paper Co. *Locks 2, 3, 4, and 5:* The area surrounding these properties is not shown on available Sanborn maps.

Source	Date	
Reverse Directory	1951	**Property** *Property southwest of dam*: No Reverse directories were ascertained for this Property. *Property northeast of dam:* May support portions of the commercial businesses and residential properties identified along the south side of E. and W. Wisconsin Avenue. See below for more details on surrounding properties. *Lock 1:* Fox River Navigation Co., U.S. Engineer's Office, and Richards Ripley (Lockmaster) are identified at 250 Canal Street. Residential addresses are identified along Canal Street, and if these residences are south of the street, they may overlap part of the Property. However, the previous Sanborn map (1945) did not depict additional structures south of Canal Street between E. Wisconsin Avenue and 250 Canal Street. *Locks 2, 3, 4, and 5*: Similar listings as in 1943.
		Surrounding *Property southwest of dam*: No Reverse directories were ascertained for the area surrounding this Property. *Property northeast of dam*: Land-use appears similar to that in 1945. The following are changes of note: a printing company is identified north of E. Wisconsin Avenue (100); and Nu-Way Cleaners is identified south of W. Wisconsin Avenue (127). *Lock 1:* Land-use appears similar to that in 1945. However, residential properties, although not depicted on the south side of Canal Street on the 1945 Sanborn maps, are identified along Canal Street. *Locks 2, 3, 4, and 5:* Similar listings as in 1943.
Aerial Photograph	1952	**Property** *Property southwest of dam:* Approximately 300 feet of the western portion of Property is not shown on the available aerial photograph. Property appears wooded; possible surface water is present on eastern portion of Property. No structures are apparent. *Property northeast of dam*: Based on the review of the aerial photographs, Property does not appear to support any structures or portions of structures as previously discussed. The Property appears open/vacant and wooded. The remnants of the Guard Lock are obvious. *Lock 1*: The northern portion of Lock 1 Property supports approximately two or three structures in its eastern half. One of these buildings is at the current location of the Lockmaster's dwelling. The other buildings were previously identified as warehouses. The southern shore of the Property appears to support a roadway/driveway for Thilmany Paper. *Lock 2*: The former Lockmaster dwelling present at Lock 2. No other buildings observed. A railroad line crosses the canal at the boundary between Lock 2 and Lock 3. *Lock 3*: Timber Shed, garage with lean-to, and dry dock are evident. Additional buildings are also observed. *Locks 4 and 5*: Properties are not included in photograph.

Source	Date	
Aerial Photograph (cont.)	1952	**Surrounding** *Property southwest of dam*: The land south of the Property and north of the head race, is open/vacant. Buildings are apparent further east/southeast (including the municipal administration building and garage). The roundhouse and railyard are apparent to the south. Dark colored areas are apparent on the roundhouse property area. Two water tanks (Sanborn 1945) are also visible. *Property northeast of dam*: Land north/northwest of the Property along the riverbank, appears open/vacant. Land-use north/northeast appears similar as in 1951 (i.e., mostly commercial businesses). *Lock 1*: The area north of the Property supports small commercial or residential property; there are no structures south of Canal Street (with the exception of the buildings on the Property). The land south of the Property supports the paper company. The paper company extends further east than depicted on previous Sanborn maps. *Locks 2, 3, and 4*: A large manufacturing facility [Thilmany Pulp and Paper Company] is present south of these properties. This area was not shown on available Sanborn maps; therefore, the date of development of this area is not known. Dark surface patches, a smoke stack, potential disposal ponds, outdoor storage, and surface disturbances are apparent on this property to the south. Land-use north of these properties appears mostly open with some residential and/or agricultural development; Augustine Street is not paved. Land area surrounding Lock 5 Property is not shown on the aerial photograph.
Historic Map	1954	**Property** Only the eastern-most portion of the Lock 5 Property is shown and the scale makes assessment difficult. No structures are depicted.
		Surrounding Potential structures are depicted north of Lock 5.
Historic Map	1955	**Property** The scale makes assessment difficult. The Property land-use appears similar to that in 1952.
		Surrounding The scale makes assessment difficult. The land-use surrounding the Property appears similar to that in 1952.
Sanborn Map	1956	**Property** *Property southwest of dam*: Not shown on available Sanborn maps. *Property northeast of dam*: Land-use appears similar to that in 1952. *Lock 1*: The maps do not show the eastern half of the Lock 1 Property. Land-use appears similar to that in 1952. Parcel buildings are still depicted on the north side of the canal (office and U.S. Government Warehouse). The driveway/roadway on the south side of the canal is identified as Thilmany Road on the Sanborn map. *Locks 2, 3, 4, and 5:* Not shown on available Sanborn maps.

Source	Date	
Sanborn Map (cont.)	1956	*Property southwest of dam*: Land-use south and east/southeast of the Property appears similar to that in 1952. Municipal administration building still present. Municipal maintenance garage with gas UST is located further east of the Property, across Main Avenue (100 Main Avenue). Roundhouse and railyard are still present south. *Property northeast of dam*: Land-use surrounding the Property appears similar to that in 1952. A filling station and auto sales and service shop are located north of E. Wisconsin Avenue (200 and 222 Lawe Street, respectively). The two gas tanks (179 and 141/143 W. Wisconsin Avenue) are no longer depicted; 215 E. Wisconsin Avenue is no longer identified as a printer. *Lock 1*: The maps do not show the eastern half of the Lock 1 Property. Land-use appears similar to that in 1952. One oil tank, three solvent USTs, and four wax tanks are depicted on the Thilmany Pulp and Paper Company property. *Locks 2, 3, 4, and 5:* Not shown on available Sanborn maps.
Aerial Photograph	1957	**Property** *Property northeast of dam*: Land-use appears similar to that in 1952 and 1956. Former guard lock remnants can be distinguished. *Lock 1:* Lockmaster's dwelling, garage, and two warehouses observed. *Lock 2:* Land-use appears similar to that in 1952. Lockmaster's dwelling can be seen. *Lock 3*: Land-use appears similar to that in 1952. Timbershed, garage with lean-to, and other structures can be seen. Dry dock is vegetated. *Locks 4 and 5:* Both properties are included in the aerial photograph. Both Lock 4 and 5 are apparent. Dense vegetation immediately north and south of Lock 4 so no structures can be seen. Lockmaster's dwelling at Lock 5 can be seen.
		Surrounding *Property southwest of dam*: Land-use surrounding these properties appears similar to that in 1952 and 1956. Municipal administration building still present. Municipal maintenance garage with gas UST is located further east of the Property, across Main Avenue (100 Main Avenue). Roundhouse and railyard are still present south. *Property northeast of dam*: Land-use surrounding these properties appears similar to that in 1952 and 1956. *Lock 1*: Land-use surrounding the Property is similar to that in 1952 and 1956. The oil and wax tanks depicted on the previous Sanborn map are visible on the Thilmany Pulp and Paper Co. property. A dark surface area is apparent surrounding the oil tank. *Locks 2, 3, 4, and 5*: Augustine Street, located parallel to the canal, appears completed (i.e., paved) past the eastern-most boundary of Lock 5 Property. A large disturbance, possibly a gravel pit, is visible north of Augustine Street; the other land-use north of the properties appears to be agricultural and/or residential. Land-use south of the properties is similar to that in 1952. Residence immediately north of Lock 5 is present.

Source	Date	
Aerial Photograph	1964	**Property** *Property southwest of dam*: Land-use appears similar to that in 1956. A surface disturbance (possible filling) is apparent on south end of dam. No structures are observed. *Property northeast of dam*: Land-use appears similar to that in 1957. *Lock 1:* Lockmaster's dwelling, garage, and two warehouses observed. *Lock 2:* Lockmaster's dwelling no longer observed. No structures evident at Lock 2. *Lock 3*: Timber shed, garage with lean-to, and Dry Dock evident. Possible construction activities at future location of Project Office. *Locks 4 and 5*: Land-use appears similar to that in 1957. A small, thin canal trends parallel north of the main canal. No buildings observed at Lock 4. Lockmaster's dwelling evident at Lock 5.
		Surrounding *Property southwest of dam:* Land-use surrounding the Property appears similar to that in 1957. *Property northeast of dam:* Land-use surrounding the Property appears similar to that in 1957. *Lock 1:* Land-use surrounding the Property appears similar to that in 1957. *Locks 2, 3, 4, and 5*: Land-use surrounding the properties appears similar to that in 1957. A surface disturbance, indicative of filling, is present south of Lock 3 Property; new settling basins are apparent south of Lock 5; and a large surface disturbance, indicative of a gravel pit, is present north of Locks 4 and 5. Residence north of Lock 5 is present.
Aerial Photograph	1971	**Property** *Property southwest of dam*: Land-use appears similar to that in 1964. The surface disturbance (filled area) on the south end of the dam includes all of the Property between the south end of the dam and the head race. *Property northeast of dam*: The land area along the northwest banks appears disrupted; an apparent access road from E. Wisconsin Avenue leads to the disturbance. *Lock 1*: Land-use appears similar to that in 1964. *Locks 2, 3, 4, and 5*: Land-use appears similar to that in 1964. Construction activities apparent at the current location of the Project Building.
		Surrounding *Property southwest of dam*: Land-use surrounding the Property appears similar to that in 1964. The land area surrounding the roundhouse and rail yard buildings appears disrupted and surface debris/storage is apparent in some areas. Building composition of the roundhouse property appears to have changed (i.e., some buildings were removed). *Property northeast of dam*: Land-use surrounding the Property appears similar to that in 1964. *Lock 1:* Land-use surrounding the Property appears similar to that in 1964. *Locks 2, 3, 4, and 5*: Land-use surrounding the properties appears similar to that in 1964.

Source	Date	
Reverse Directory	1972	**Property** *Property southwest of dam*: No Reverse directories were ascertained for this Property. *Property northeast of dam*: Based on aerial photograph review, this Property does not appear to support any of the commercial buildings located on the south side of the E. and W. Wisconsin Avenue. *Lock 1*: U.S. Corps of Engineers and Kurt Hartstern (Lockmaster) were listed at 301 Canal Street. No listing for 250 Canal Street. *Locks 2, 3, 4, and 5*: Residential properties are listed for Augustine Street. Based on aerial photographs, these properties appear to support structures associated with the canal and the locks, not specifically residential properties. No listings for 1008 Augustine Street.
		Surrounding *Property southwest of dam*: No Reverse directories were ascertained for the area surrounding this Property. *Property northeast of dam*: Commercial businesses are listed along E. and W. Wisconsin Avenue. The printing company is no longer identified at 100 E. Wisconsin Avenue; and Nu-Way Cleaners is identified at 127 W. Wisconsin Avenue. *Lock 1:* Two additional residential listings were identified on Canal Street. *Locks 2, 3, 4, and 5:* Similar listings as in 1951 (i.e., residential listings)
Historic Map	1974	**Property** *Property southwest of dam*: No structures depicted. An unimproved roadway is present in eastern portion. *Property northeast of dam*: No structures depicted. Land-use appears similar to that in 1971. *Lock 1*: Several small structures are depicted north of the canal near Lock 1 (one west of the Lock is likely 301 Canal Street). *Lock 2*: One small structure is depicted on the north shore at the west end of Lock 2 itself. *Lock 3:* Two to three structures are depicted north of the canal extension, including the Project Office. *Locks 4 and 5*: No structures are depicted on these properties.
		Surrounding *Property southwest of dam*: The roundhouse is not depicted as present south of the Property. Other land-use surrounding the properties appears similar to that in 1971. *Property northeast of dam and Locks 1, 2, 3, 4, and 5*: Land-use surrounding these properties appears similar to 1971. Industrial waste ponds and a sewage disposal area are identified south of Lock 5 and a quarry is identified north of Locks 4 and 5.

Source	Date	
Aerial Photograph	1981	**Property** *Property southwest of dam*: Land-use appears similar to that in 1974. Small surface disturbances are apparent on the west portion of the Property near the bank of the river. Surface disturbances are no longer apparent on the east portion of the Property. The unimproved road depicted on the 1974 historical map is not apparent. *Property northeast of dam*: The surface disturbance seen in 1971 is no longer apparent on the river bank. Land-use appears similar to that in 1974. *Locks 1 and 2*: Large Oil House, Lockmaster's dwelling and garage are apparent north of Lock 1. No structures are apparent at Lock 2. *Lock 3:* Generator House, Project Office, timber shed, garage with lean-to, lockshelter, and oil house are apparent at Lock 3. Dry dock appears full of vegetation. *Locks 4 and 5*: Land-use appears similar to that in 1974.
		Surrounding *Property southwest of dam:* As depicted in the 1974 historical map, the roundhouse and rail yard associated buildings are no longer present. A new building is located west of the location of the former roundhouse. *Property northeast of dam*: Land-use surrounding the Property appears similar to that in 1974. The training school for teachers, located at the intersection of Wisconsin Avenue and Canal Street is no longer present. *Locks 1, 2, 3, 4, and 5*: Land-use surrounding these properties appears similar to that in 1974.
Historical Map	1984	**Property** *All properties*: The eastern most edge of Lock 5 Property is not shown. Land-uses depicted for these properties are similar to that depicted in 1974.
		Surrounding *Property southwest of dam*: Two new buildings are depicted to the south of the western portion of the Property. Land-use depicted for the remaining surrounding area is similar to that depicted in 1974. *Property northeast of dam and Locks 1, 2, 3, 4, and 5*: Land-use depicted for the area surrounding these properties is similar to that depicted in 1974
U.S. Government Historical Map (company records)	1986	**Property** *Property Southwest of the Dam*: No structrues are shown on the Property. *Property Northeast of the Dam*: No structures are shown on the Property. *Lock 1:* The large oil house and the Lockmaster's dwelling are shown north of Lock 1. *Lock 2*: No structures are identified. *Lock 3*: The project office, dry dock, and lockshelter are shown. *Lock 4*: The lockshelter is shown. *Lock 5*: The Lockmaster's dwelling and garage are shown.

Source	Date	
U.S. Government Historical Map (company records) (cont.)	1986	**Surrounding** *Southwest and Northeast of the Dam*: Land use is not specifically identified expect for the Kaukauna Public Library (current location) and Kaukauna Electric and Water Department (current Cops Construction location). *Locks 1, 2, 3, and 4:* Land use north of these locks is not identified. Thilmany Pulp & Paper Co. occupies the land south of these locks. *Lock 5:* Land use north of Lock 5 is not identified. The City of Kaukauna Sewage Plant and Thilmany Paper Waste Treatment Facility are located south of Lock 5.
Reverse Directory	1990	**Property** *Property southwest of dam*: No Reverse directories were ascertained for this Property. *Property northeast of dam*: No Reverse directories were ascertained for this Property. *Lock 1* [redacted] was listed at 250 Canal Street. However, this address may no longer be associated with the Property. 301 Canal Street was not listed. *Locks 2 and 3:* Government of United States and State of Wisconsin are listed at 1008 Augustine Street (Lock 3). *Locks 4 and 5*: Residential properties are listed for Augustine Street and these residences are not likely situated on these properties.
		Surrounding *Property southwest of dam*: No Reverse directories were ascertained for the area surrounding these properties. *Property northeast of dam*: Commercial businesses are listed for Wisconsin Avenue (no longer identified as W. Wisconsin Avenue) and E. Wisconsin Avenue. Clark's Cleaners was identified at 211 Wisconsin Avenue; Nu-Way Cleaners was no longer listed at 127 Wisconsin Avenue. *Lock 1*: Residential properties were listed for Canal Street. *Locks 2, 3, 4, and 5:* Similar listings as in 1951 (i.e., residential listings on Augustine Street)
Historical Map	1992	**Property** *Property southwest of dam*: No structures depicted. An unimproved roadway is still depicted over an east portion of Property. However, that roadway is not apparent in the 1981 aerial photograph. *Property northwest of dam:* No structures depicted. This Property is not shaded-in, indicating no urban development of the Property. *Lock 1:* Two buildings are depicted near Lock 1. *Lock 2:* One structure is still depicted near Lock 2. *Lock 3*: Five structures are depicted in the vicinity of the canal extension portion of the Property. The historical map indicates Locks 2 and 3 have been combined into one long lock system and that the canal extension is no longer present. This is not observed during the site inspection. Lock 2 and 3 appeared as described for previous historical resources. *Locks 4 and 5*: No structures depicted. The small, thin canal, first observed in the 1964 aerial photograph, is not depicted on the historical map.

Source	Date	
		Surrounding *Property southwest of dam*: The area surrounding the Property is shaded-in, symbolizing urban development for the area. Specific building footprints are not depicted.
		Property northeast of dam and Locks 1, 2, 3, 4, and 5: The area surrounding the properties is mostly shaded-in; the areas not shaded in depict building structures (i.e., development). The quarry and the sewage disposal area and industrial waste ponds depicted on the 1974 (and 1984) historical maps are still indicated south and north of Locks 4 and 5.
Aerial Photograph	1992	**Property** *Property southwest of dam:* The square-shaped disturbance, first apparent in the 1956 aerial photograph, but not seen in more recent photographs, is again apparent. A dark area, possibly trees, is apparent north of the disturbance. An unimproved road/driveway is present on the southeast portion of the Property, possibly utilized for dam access from the south shore. No structures are apparent on the properties. *Property northeast of the dam:* Land-use appears similar to that in the 1992 historical map. *Lock 1*: Large Oil House, Lockmaster's dwelling, and garage are apparent near Lock 1. A circular structure and a small area of surface disturbance/debris are located along the canal bank, west/southwest from the large Oil House. *Lock 2*: One or two structures are apparent. *Lock 3*: Project Office area is as observed during the April 2000 site inspection. The photograph does not indicate the merger of Locks 2 and 3 and the filling of the canal extension. *Locks 4 and 5:* Land-use at these properties appears similar to that in the 1992 historical map. The small, thin channel north of the canal that was not depicted on the historical map is partially apparent on the Lock 5 Property.
		Surrounding *Property southwest of dam*: The area of the former roundhouse and rail yard now supports multiple multifamily buildings. Other land-use in the area is similar to that in 1981. *Property northeast of the dam and Locks 1, 2, 3, 4, and 5:* Land-use surrounding these properties is similar to that in the 1992 historical map.

Table 2 - Federal T&E species information

Species Name	Federal Status	Habitat	Potential to Occur
Northern long-eared bat (Myotis septentrionalis)	Endangered	Hibernates in caves and mines – swarming in surrounding wooded areas in autumn. Roosts and forages in upland forests and woods during the summer.	Potential to occur; No known hibernacula. Wooded riparian areas may provide opportunities for summer roosting.
Rusty patched bumble bee (*Bombus affinus)*	Endangered	Natural and semi-natural upland grassland, shrubland, woodlands and forests	Potential to occur; project within the high potential zone (HPZ).
Monarch butterfly (*Danaus plexippus*)	Candidate	Prairies and natural areas with blooming forbs and *Asclepias spp.*	Not expected to occur; lack of suitable habitat.
Whooping Crane (*Grus americana*)	Experimental Population, Non-Essential	Lives and breeds in marshes, wetlands, and prairies.	Not expected to occur; lack of suitable habitat.

Table 3. Kaukauna Parcel J Soil RCRA Metals Concentrations (ALS 2021)

Metal (mg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2024)	Background Threshold Value	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2024)	JTP-1				JTP-2			JTP-3			JTP-4				JTP-5			JTP-6		
				light brown loam/fill	light brown loam/fill	light brown loam/fill	reddish brown clay with gravel	dark brown loam/fill	reddish brown clay/loam	reddish brown clay	light brown gravelly loam/fill	Black gravelly fill/coal	reddish brown gravelly clay	light brown gravelly loam/fill	light brown gravelly loam/fill	light brown sand and gravel	reddish brown gravelly clay	light brown gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	light brown gravelly loam/fill	light brown sand and gravel	reddish brown gravelly clay
				0-1	1-2	2-3	3-4	0-1	1-2	2-3	0-1	1-2	2-3	0-1	0-1 FD	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3
Silver	39		390	0.18 U	0.19 U	0.88 U	0.9 U	0.93 U	0.82 U	0.18 U	4.2	0.98 J	0.96 U	0.17 U	0.17 U	0.9 U	0.19 U	0.16 U	0.19 U	1.3 J	0.15 U	0.17 U	0.18 U
Arsenic	0.68	8.3	35	3	10	17	7 J	31	4.6 J	3	27	26	6 J	3	5	3.6 U	5	4	5	7 J	3	3	3
Barium	1,500	364	15,000	35	111	80	76	516	61	48	68	90	87	36	48	47	82	55	86	118	14	42	39
Cadmium	0.71	1	7.1	0.18 U	0.76	0.88 U	0.9 U	1.9 J	0.82 U	0.18 U	2.4 J	0.96 U	0.96 U	0.33 J	0.39 J	0.9 U	0.19 U	0.26 J	0.21 J	2 J	0.15 U	1.2	0.18 U
Chromium, Total		44		13	20	32	22	19	17	16	24	13	24	14	19	17	29	20	26	27	8	8	17
Mercury	1.1		11	0.065 UJ	0.22 J	0.24 J	0.093 J	0.74 J	0.075 J	0.068 UJ	0.21 J	0.25 J	0.27 J	0.095 J	0.08 J	0.069 UJ	0.071 UJ	0.068 UJ	0.07 UJ	0.076 UJ	0.061 UJ	0.062 UJ	0.067 UJ
Lead	200	52	200	48	598	783	208	1,660	162	31	861	238	82	51	60	26	6	30	10	18	11	18	15
Selenium	39		390	1.8 U	1.9 U	8.8 U	9 U	9.3 U	8.2 U	1.8 U	8.7 U	9.6 U	9.6 U	1.7 U	1.7 U	9 U	1.9 U	1.6 U	1.9 U	10.5 U	1.5 U	1.7 U	1.8 U

Metal (mg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2024)	Background Threshold Value	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2024)	JTP-7			JTP-8				JTP-9			JTP-10			JTP-11		
				light brown gravelly loam/fill	light brown sand and gravel	reddish brown clay	dark gray gravelly loam/fill	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown clay
				0-1	1-2	2-3	0-1	0-1 FD	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3
Silver	39		390	0.17 U	0.16 U	0.19 U	0.92 U	0.92 U	0.17 U	0.16 U	0.88 U	0.18 U	0.17 U	0.15 U	0.17 U	0.17 U	4.8	0.16 U	0.17 U
Arsenic	0.68	8.3	35	5	1.8 J	4	6.2 J	7.2 J	4	1.9 J	9 J	4	4	4	4	3	13	1.9 J	7
Barium	1,500	364	15,000	49	12	83	36	44	36	19	41	51	45	41	52	34	91	31	84
Cadmium	0.71	1	7.1	0.17 U	0.38 J	0.19 U	1.2 J	0.94 J	0.17 U	0.16 U	1.2 J	0.18 U	0.17 U	0.42 J	0.17 U	0.17 U	6.3	0.2 J	0.17 U
Chromium, Total		44		20	7	33	26	34	15.5 J	9	11	18	17	14	16	13	22	12	19
Mercury	1.1		11	0.068 UJ	0.066 UJ	0.072 UJ	0.11 J	0.19 J	0.065 UJ	0.066 UJ	0.34 J	0.07 UJ	0.066 UJ	0.07 J	0.082 J	0.07 UJ	0.079 J	0.066 UJ	0.071 UJ
Lead	200	52	200	19	12	6	87	95	17	3	721	12	5	73	13	14	322	29	7
Selenium	39		390	1.7 U	1.6 U	1.9 U	9.2 U	9.2 U	1.7 U	1.6 U	8.8 U	1.8 U	1.7 U	1.5 U	1.7 U	1.7 U	25.5 J	1.6 U	1.7 U

Metal (mg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2024)	Background Threshold Value	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2024)	JTP-12						JTP-13					JTP-14					JTP-15			
				dark brown gravelly loam/fill	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown clay	reddish brown clay	reddish brown clay	dark gray loam/fill	dark gray gravelly loam/fill	reddish brown clay with sand and gravel	reddish brown clay with sand and gravel	reddish brown clay with sand and gravel	dark gray sandy loam/fill	dark brown gravelly loam/fill	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown clay	dark brown loam/fill	dark gray loam/fill	dark gray gravelly loam/fill	reddish brown gravelly clay
				0-1	0-1 FD	1-2	2-3	3-4	4	0-1	1-2	2-3	3-4	4	0-1	1-2	1-2 FD	2-3	3-4	0-1	1-2	2-3	3
Silver	39		390	0.9 U	0.82 U	0.18 U	0.18 U	0.21 U	0.21 U	0.9 U	0.93 U	0.17 U	0.16 U	0.19 U	0.85 U	0.91 U	0.86 U	0.19 U	0.19 U	0.92 U	0.95 U	0.87 U	0.18 U
Arsenic	0.68	8.3	35	8.1 J	7 J	4	2 J	8	8	8.2 J	7.9 J	3	3	5	15	15	8.9 J	4	3	5.9 J	11	14	3
Barium	1,500	364	15,000	72	55	46	33	163	149	74	49	26	39	51	77	89	56	53	39	62	159	110	51
Cadmium	0.71	1	7.1	0.92 J	0.82 U	0.19 J	0.18 U	0.21 U	0.21 U	1.1 J	1.2 J	0.17 U	0.16 U	0.19 U	1.9 J	8.0	1.5 J	0.21 J	0.22 J	0.92 U	2.2 J	2.2 J	0.18 U
Chromium, Total		44		12	13	16	12	49	42	20	12	10	11	19	19	24	18	16	14	17	21	21	18
Mercury	1.1		11	0.097 J	0.086 J	0.07 UJ	0.069 UJ	0.081 UJ	0.085 UJ	0.49	0.21	0.071 U	0.07 U	0.071 U	0.57	0.33	0.38	0.077 U	0.13 J	0.48	4.8	2.8 J	0.072 U
Lead	200	52	200	188	179	40	8	11	11	351	376	8	7	6	767	362	412	69	61	279	1,340	1,300	9
Selenium	39		390	9 U	8.2 U	1.8 U	1.8 U	2.1 U	2.1 U	9 U	9.3 U	1.7 U	1.6 U	1.9 U	8.5 U	9.1 U	8.6 U	1.9 U	1.9 U	9.2 U	9.5 U	8.7 U	1.8 U

> USEPA Residential Direct Contact Regional Screening Level/WDNR Non-Industrial Direct Contact Residual Contaminant Level (May 2024)

> USEPA Residential Direct Contact Regional Screening Level (May 2024) and Background Threshold Value

> USEPA Residential Regional Removal Management Level (May 2024)

U: Not detected at the specified detection limit

J: Estimated value

Table 4. Kaukauna Parcel J Soil PAH Concentrations (ALS 2021)

PAH (µg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2024)	Residential Direct Contact Residual Screening Levels (TR=1E-05; THQ=0.1)(May 2024)	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2024)	JTP-1				JTP-2			JTP-3			JTP-4				JTP-5			JTP-6		
				light brown loam/fill	light brown loam/fill	light brown loam/fill	reddish brown clay with gravel	dark brown loam/fill	reddish brown clay/loam	reddish brown clay	light brown gravelly loam/fill	Black granular fill/coal	reddish brown gravelly clay	light brown gravelly loam/fill	light brown gravelly loam/fill	light brown sand and gravel	reddish brown gravelly clay	light brown gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	light brown gravelly loam/fill	light brown sand and gravel	reddish brown gravelly clay
				0-1	1-2	2-3	3-4	0-1	1-2	2-3	0-1	1-2	2-3	0-1	0-1 FD	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3
Acenaphthene	360,000	3,600,000	3,600,000	18.1 U	31.2 J	18.7 U	19.3 U	142	18.7 U	17.5 U	37.5 J	73 J	20 U	2,870	199	42 J	20 U	92.5 J	18.8 U	21 U	472	17.6 U	686
Acenaphthylene				18.1 U	69.3 J	18.7 U	19.3 U	438	18.7 U	17.5 U	18.6 U	19.8 U	20 U	651	697	177	20 U	156	18.8 U	21 U	395	22.8 J	404
Anthracene	1,800,000	1,800,000	18,000,000	18.1 U	151	44.3 J	19.3 U	945	22.1 J	17.5 U	251	328	20 U	4,060	1,300	282	20 U	361	18.8 U	21 U	1,350	37.1 J	2,920
Benzo(a)anthracene	1,100	11,000	110,000	21 J	761	135	38.8 J	**3,410**	88.7 J	17.5 U	303	877	20 U	**13,300**	**4,510**	990	20 U	**1,230**	21 J	21 U	**2,300**	116	**4,480**
Benzo(a)pyrene	110	1,100	11,000	38.2 J	**747**	**133**	48.5 J	**3,020**	69.2 J	17.5 U	**310**	**587**	20 U	**11,800**	**5,000**	**1,110**	20 U	**1,300**	24.4 J	21 U	**2,420**	**142**	**3,770**
Benzo(b)fluoranthene	1,100	11,000	110,000	25.6 J	570	229	71.3 J	**4,420**	150	17.5 U	377	**1,150**	20 U	**6,840**	**4,320**	787	20 U	1,000	20.4 J	21 U	**1,910**	112	**2,940**
Benzo(g,h,i)perylene				52.6 J	415	205	65.7 J	2,090	93.3 J	17.5 U	521	1,190	22.5 J	4,890	2,900	650	20 U	795	20.8 J	21 U	1,350	91.8 J	1,720
Benzo(k)fluoranthene	11,000	110,000	1,100,000	23.3 J	586	187	29.1 J	2,300	58.1 J	17.5 U	258	434	20 U	6,170	3,670	974	20 U	1,040	24.8 J	21 U	1,790	118	2,870
Chrysene	110,000	1,100,000	11,000,000	39.2 J	935	211	29.5 J	5,180	274	17.5 U	542	2,260	20 U	14,600	4,440	954	20 U	1,230	24.7 J	21 U	2,260	119	4,050
Dibenz(a,h)anthracene	110	1,100	11,000	18.1 U	103 J	42.8 J	19.3 U	**720**	27 J	17.5 U	65 J	**340**	20 U	**1,300**	**714**	**148**	20 U	**188**	18.8 U	21 U	**320**	26 J	**537**
Fluorene	240,000	240,000	2,400,000	18.1 U	39 J	18.7 U	19.3 U	234	18.7 U	17.5 U	33.9 J	120	20 U	2,810	385	74.5 J	20 U	128	18.8 U	21 U	672	17.6 U	2,580
Fluoranthene	240,000	240,000	2,400,000	29.2 J	1,240	225	57.9 J	5,450	83.5 J	17.5 U	548	381	22.6 J	25,300	11,300	2,200 J	25.2 J	2,490	35.2 J	29.5 J	6,310	235	12,200
Indeno(1,2,3-c,d)pyrene	1,100	11,000	110,000	26.3 J	387	172	55.9 J	**2,050**	44.8 J	17.5 U	275	779	20 U	**4,580**	**3,030**	662	20 U	805	19.7 J	21 U	**1,450**	97 J	**1,940**
Naphthalene	2,000	20,000	130,000	18.1 U	69.4 J	63.7 J	53.6 J	463	45.5 J	17.5 U	104 J	622	20 U	1,060	250	81.4 J	20 U	98.9 J	18.8 U	21 U	336	85.4 J	384
Phenanthrene				23.2 J	794	219	108 J	4,620	211	17.5 U	461	2,110	21.6 J	36,600	5,010	1,020	20 U	1,550	19.8 J	21 U	6,190	181	15,200
Pyrene	180,000	180,000	1,800,000	50.2 J	1,720	245	67.2 J	5,130	105 J	17.5 U	590	645	22.7 J	32,800	10,700	1,980 J	24.5 J	2,500	38.5 J	26 J	5,040	213	8,270

PAH (µg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2024)	Residential Direct Contact Residual Screening Levels (TR=1E-05; THQ=0.1)(May 2024)	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2024)	JTP-7			JTP-8				JTP-9			JTP-10			JTP-11		
				light brown gravelly loam/fill	light brown sand and gravel	reddish brown clay	dark gray gravelly loam/fill	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown clay
				0-1	1-2	2-3	0-1	0-1 FD	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3
Acenaphthene	360,000	3,600,000	3,600,000	17.6 U	17.5 U	19.2 U	18.8 U	18.3 U	17.9 U	18 U	17.9 U	18.8 U	18.3 U	17 U	19.3 U	19 U	18.4 U	17.5 U	18.3 U
Acenaphthylene				17.6 U	17.5 U	19.2 U	18.8 U	18.3 U	17.9 U	18 U	228	18.8 U	18.3 U	17 U	19.3 U	19 U	61.1 J	17.5 U	18.3 U
Anthracene	1,800,000	1,800,000	18,000,000	17.6 U	17.5 U	19.2 U	46.6 J	33.6 J	17.9 U	18 U	116	18.8 U	18.3 U	35.6 J	19.3 U	19 U	150	17.5 U	18.3 U
Benzo(a)anthracene	1,100	11,000	110,000	25.2 J	17.5 U	19.2 U	130	113	17.9 U	18 U	648	18.8 U	18.3 U	324	21 J	19 U	330	22.4 J	18.3 U
Benzo(a)pyrene	110	1,100	11,000	28.2 J	17.5 U	19.2 U	**177**	**119**	17.9 U	18 U	**746**	19.6 J	18.3 U	**468**	30 J	19 U	**381**	17.5 U	18.3 U
Benzo(b)fluoranthene	1,100	11,000	110,000	29.8 J	17.5 U	19.2 U	180	117	17.9 U	18 U	734	18.8 U	18.3 U	548	32.3 J	19 U	503	24.6 J	18.3 U
Benzo(g,h,i)perylene				24.2 J	17.5 U	19.2 U	166	117	17.9 U	18 U	538	18.8 U	18.3 U	399	23.7 J	19 U	394	27.2 J	18.3 U
Benzo(k)fluoranthene	11,000	110,000	1,100,000	24.9 J	17.5 U	19.2 U	139	86.1 J	17.9 U	18 U	704	18.8 U	18.3 U	433	20.3 J	19 U	384	24.7 J	18.3 U
Chrysene	110,000	1,100,000	11,000,000	33 J	17.5 U	19.2 U	160	135	17.9 U	18 U	885	18.8 U	18.3 U	485	28.9 J	19 U	714	28.8 J	18.3 U
Dibenz(a,h)anthracene	110	1,100	11,000	17.6 U	17.5 U	19.2 U	32.8 J	18.3 U	17.9 U	18 U	**129**	18.8 U	18.3 U	86.1 J	19.3 U	19 U	80.6 J	17.5 U	18.3 U
Fluorene	240,000	240,000	2,400,000	17.6 U	17.5 U	19.2 U	18.8 U	18.3 U	17.9 U	18 U	17.9 U	18.8 U	18.3 U	17 U	19.3 U	19 U	18.4 U	17.5 U	18.3 U
Fluoranthene	240,000	240,000	2,400,000	43.9 J	17.5 U	19.2 U	221	204	17.9 U	18 U	1,310	20.2 J	18.3 U	784	40.2 J	19 U	671	36.7 J	18.3 U
Indeno(1,2,3-c,d)pyrene	1,100	11,000	110,000	22.6 J	17.5 U	19.2 U	146	94.1 J	17.9 U	18 U	529	18.8 U	18.3 U	393	19.3 U	19 U	308	17.5 U	18.3 U
Naphthalene	2,000	20,000	130,000	18 J	17.5 U	19.2 U	108 J	138	17.9 U	18 U	147	18.8 U	18.3 U	76.3 J	19.3 U	19 U	306	24.5 J	18.3 U
Phenanthrene				32.7 J	17.5 U	24 J	502	449	17.9 U	18 U	891	18.8 U	18.3 U	363	27.3 J	19 U	695	42.5 J	18.3 U
Pyrene	180,000	180,000	1,800,000	41.3 J	17.5 U	19.2 U	255	226	17.9 U	18 U	1,220	20.1 J	18.3 U	629	34.1 J	19 U	681	36.7 J	18.3 U

PAH (µg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2024)	Residential Direct Contact Residual Screening Levels (TR=1E-05; THQ=0.1)(May 2024)	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2024)	JTP-12						JTP-13					JTP-14					JTP-15			
				dark brown gravelly loam/fill	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown clay	reddish brown clay	reddish brown clay	dark gray loam/fill	dark gray gravelly loam/fill	reddish brown clay with sand and gravel	reddish brown clay with sand and gravel	reddish brown clay with sand and gravel	dark gray sandy loam/fill	dark brown gravelly loam/fill	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown clay	dark brown loam/fill	dark gray loam/fill	dark gray gravelly loam fill	reddish brown gravelly clay
				0-1	0-1 FD	1-2	2-3	3-4	4	0-1	1-2	2-3	3-4	4	0-1	1-2	1-2 FD	2-3	3-4	0-1	1-2	2-3	3
Acenaphthene	360,000	3,600,000	3,600,000	18.4 U	18.4 U	18.5 U	19.2 U	22.4 U	22.5 U	59.7 J	84.3 J	18.5 U	18.6 U	19.5 U	18.5 U	18.3 U	19.1 U	19.6 U	20 U	19.9 U	34.3 J	18.4 U	19.1 U
Acenaphthylene				18.4 U	18.4 U	18.5 U	19.2 U	22.4 U	22.5 U	54.2 J	44.6 J	18.5 U	18.6 U	19.5 U	18.5 U	18.3 U	19.1 U	19.6 U	20 U	19.9 U	19.6 U	18.4 U	19.1 U
Anthracene	1,800,000	1,800,000	18,000,000	40.8 J	51.4 J	18.5 U	19.2 U	22.4 U	22.5 U	226	301	18.5 U	18.6 U	19.5 U	84.5 J	26.2 J	24.2 J	19.6 U	20 U	36 J	139	130	19.1 U
Benzo(a)anthracene	1,100	11,000	110,000	193	185	30.8 J	19.2 U	22.4 U	22.5 U	620	610	18.5 U	18.6 U	19.5 U	394	142	118	39.6 J	39.3 J	157	473	488	19.1 U
Benzo(a)pyrene	110	1,100	11,000	**211**	**219**	65.8 J	19.2 U	22.4 U	22.5 U	**679**	**627**	18.5 U	18.6 U	19.5 U	**524**	**188**	**151**	56.6 J	46.1 J	**192**	**536**	**536**	19.1 U
Benzo(b)fluoranthene	1,100	11,000	110,000	208	182	32 J	19.2 U	22.4 U	22.5 U	514	448	18.5 U	18.6 U	19.5 U	469	152	137	40.8 J	39.4 J	164	417	443	19.1 U
Benzo(g,h,i)perylene				132	129	37.8 J	19.2 U	22.4 U	22.5 U	358	338	18.5 U	18.6 U	19.5 U	351	117	94.2 J	34.4 J	28 J	106 J	334	319	19.1 U
Benzo(k)fluoranthene	11,000	110,000	1,100,000	144	144	50 J	19.2 U	22.4 U	22.5 U	533	494	18.5 U	18.6 U	19.5 U	360	147	114	48.4 J	28.6 J	141	390	429	19.1 U
Chrysene	110,000	1,100,000	11,000,000	230	225	55.4 J	19.2 U	22.4 U	22.5 U	729	671	18.5 U	18.6 U	19.5 U	502	153	179	44.5 J	40.6 J	180	559	531	19.1 U
Dibenz(a,h)anthracene	110	1,100	11,000	30.9 J	38.9 J	18.5 U	19.2 U	22.4 U	22.5 U	96.4 J	85.2 J	18.5 U	18.6 U	19.5 U	105 J	29.6 J	24.6 J	19.6 U	20 U	24.6 J	84.3 J	80.6 J	19.1 U
Fluorene	240,000	240,000	2,400,000	18.4 U	19.7 J	18.5 U	19.2 U	22.4 U	22.5 U	61 J	102 J	18.5 U	18.6 U	19.5 U	26 J	18.3 U	19.1 U	19.6 U	20 U	19.9 U	35.8 J	29.2 J	19.1 U
Fluoranthene	240,000	240,000	2,400,000	407	383	97.1 J	19.2 U	22.4 U	22.5 U	1,270	1,430	18.5 U	18.6 U	19.5 U	612	248	185	76.3 J	60.9 J	301	912	984	19.1 U
Indeno(1,2,3-c,d)pyrene	1,100	11,000	110,000	135	135	40.7 J	19.2 U	22.4 U	22.5 U	364	346	18.5 U	18.6 U	19.5 U	331	107 J	90.9 J	35.1 J	33.2 J	111 J	358	345	19.1 U
Naphthalene	2,000	20,000	130,000	136	149	28.5 J	19.2 U	22.4 U	22.5 U	250	207	18.5 U	18.6 U	19.5 U	464	79.9 J	111 J	40.1 J	76.3 J	72 J	273	281	19.1 U
Phenanthrene				312	436	50.9 J	19.2 U	22.4 U	22.5 U	1,120	1,440	18.5 U	18.6 U	19.5 U	822	191	217	81 J	77.5 J	206	856	737	19.1 U
Pyrene	180,000	180,000	1,800,000	370	339	85.7 J	19.2 U	22.4 U	22.5 U	1,160	1,240	18.5 U	18.6 U	19.5 U	560	219	182	67.7 J	56.6 J	262	852	872	19.1 U

> USEPA Residential Direct Contact Regional Screening Level/WDNR Non-Industrial Direct Contact Residual Contaminant Level (May 2024)

> USEPA Residential Direct Contact Screening Level (TR=1E-05)

> USEPA Residential Regional Removal Management Level (May 2024)

U: Not detected at the specified detection limi

J: Estimated value

Table 5. Kaukauna Parcel J Soil PCB Concentrations (ALS 2021)

PCB arcolor (mg/kg)	JTP-10	JTP-14	JTP-3
	reddish brown gravely clay	reddish brown gravely clay	light brown gravelly loam/fill
	1-2	2-3	0-1
PCB-1016	0.011 U	0.012 U	0.011 U
PCB-1221	0.011 U	0.012 U	0.011 U
PCB-1232	0.011 U	0.012 U	0.011 U
PCB-1242	0.011 U	0.012 U	0.011 U
PCB-1248	0.011 U	0.012 U	0.011 U
PCB-1254	0.011 U	0.012 U	0.011 U
PCB-1260	0.011 U	0.012 U	0.011 U

U: Not detected at the specified detection limit

Table 6. Kaukauna Parcel J Soil TCLP Metal Concentrations (ALS 2021)

Metal (mg/L)	Sample ID									Regulatory Level (mg/L)
	JTP 1 1-2	JTP 1 2-3	JTP 14 0-1	JTP 14 1-2	JTP 15 1-2	JTP 15 2-3	JTP 2 0-1	JTP 3 0-1	JTP 9 0-1	
Silver	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	5.0
Arsenic	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	5.0
Barium	0.46	0.53	0.37	0.39	0.92	0.7	0.65	0.4	0.34	100.0
Cadmium	0.008 J	0.006 J	0.007 J	0.0055 J	0.011	0.01	0.027	0.01	0.0065 J	1.0
Chromium, Total	0.009 U	0.009 U	0.009 U	0.009 U	0.015 J	0.009 U	0.009 U	0.009 U	0.009 U	5.0
Mercury	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.2
Lead	0.29	0.24	0.2	0.076	0.67	0.2	0.29	0.05	0.16	5.0
Selenium	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	1.0

U: Not detected at the specified detection limit

J: Estimated value

Table 7 - Contaminant Source Matrix from the Great Lakes Testing Manual

										INDUSTRIES																																
CONTAMINANTS	Aminum	Ammunitions	Anluti-Fouling Paints	Automobile	Batteries	Chemical Manufacturing	Commercial Farming	Corrosion Metallurgy	Dairy	Detergents/Surfactants	Dye	Electrical	Explosives	Flat Glass	Fruits and Vegetables	Leather/Tanning	Meat Products	Metal Finishing Refining	Metallurgical Processes	Nitric Acid Manufacturing	Oxide Manufacturing	Perfume	Pesticides/Fertilizers	Petroleum Refining	Phosphate Mining	Phosphorus	Photographic	Pigments/links	Plastics	Printing Plates	Pulp and Paper Mills	Rubber	Steam Power	Steel/Iron	Sulfuric Acid	Textiles	Utilities	Valuable Mineral Mining	Waster Water Treatment Plants	Potential non-point Sources	Boat Manufacturing/Boat Repair	Boat Refueling
Acenaphthene																																										
Aldrin																																										
Ammonia																																										
Aniline																																										
Arsenic																																										
Benzo(a)anthracene																																										
Benzo(a)pyrene																																										
Cadmium																																										
Chlordane																																										
Chlorpynifos																																										
Chromium																																										
Copper																																										
Cyanide																																										
DDE																																										
DDT																																										
Dieldrin																																										
Endrin																																										
Ethyl Parathion																																										
Fluoranthene																																										
Heptachlor																																										
HCB																																										
HCBD																																										
HCCPD																																										
Lead																																										
Mercury																																										
2-Methylnaphthalene																																										
Nickel																																										
Oil and Grease																																										
Organotin/Tin																																										
PCBs																																										
Phenanthrene																																										
Phosphorus																																										
Pyrene																																										
Selenium																																										
TCDD																																										
TCDF																																										
Toxaphene																																										
Zinc																																										

Table 8: RSLs, RMLs, and BTV/RCLs of CoCs

Analyte	RSL (mg/kg)	RML (mg/kg)	BTV/RCL* (mg/kg)
Metals			
Arsenic	0.68	35	8.3
Barium	1,500	15,000	364
Cadmium	0.71	7.1	1
Chromium, Total	--	--	44
Mercury	1.1	11	--
Lead	200	200	52
Selenium	39	390	--
Silver	39	390	--
PAHs			
Acenaphthene	360	3,600	3,590
Acenaphthylene	--	--	--
Anthracene	1,800	18,000	17,900
Benzo(a)anthracene	1.1	110	11.4
Benzo(a)pyrene	0.11	11	1.15
Benzo(b)fluoranthene	1.1	110	11.5
Benzo(g,h,i)perylene	--	--	--
Benzo(k)fluoranthene	11	1,100	115
Chrysene	110	11,000	1,150
Dibenz(a,h)anthracene	0.11	11	1.15
Fluorene	240	2,400	2,390
Fluoranthene	240	2,400	2,390
Indeno(1,2,3-c,d)pyrene	1.1	110	11.5
Naphthalene	2.0	130	55.2
Phenanthrene	--	--	--
Pyrene	180	1,800	1,790

* - The BTV value is used for metals and the RCL value is used for PAHs

BTV: Wisconsin state background threshold value (Stensvold, 2012)

RCL: WDNR Non-Industrial Residual Contaminant Levels

RSL: USEPA Regional Screening Level (USEPA, 2024a)

Table 9: Risk-based PRGs

CoC	Risk-based PRG (mg/kg)	Basis
Benzo(a)pyrene	0.115	RSL
Lead	200	RSL
BTV = Wisconsin state background threshold value (Stensvold, 2012) RSL = USEPA Regional Screening Level (USEPA, 2024a)		

Table 10: CoC Residential RSLs and Background Levels; Alternative 3 clean-up levels

Contaminant	USEPA Residential RSL (mg/kg)	Background concentration (mg/kg)
Benzo(a)pyrene	**0.115**	1.15[1]
Lead	**200**	52 [2]
[1]The cleanup goal for PAHs is to achieve a cumulative cancer risk of less than 1E-05 to be consistent with WDNR RCL guidance. [2]WDNR-approved background values from RCL spreadsheet.		

Table 11: CoC Residential RSLs and Background Levels; Alternative 4 clean-up levels

Contaminant	USEPA Residential RSL (mg/kg)	Background concentration (mg/kg)
Benzo(a)pyrene	**0.115**	1.15 [1]
Lead	200	**52** [2]
[1]The cleanup goal for PAHs is to achieve a cumulative cancer risk of less than 1E-05 to be consistent with WDNR RCL guidance. [2]WDNR-approved background values from RCL spreadsheet.		

Table 12: Comparative Analysis Matrix

	Evaluation Criteria					Total Score
	Long Term Effectiveness	Short Term Effectiveness	Ability to Achieve RAO	Implementability	Cost	
Alternative 1	0	3	0	3	3	9
Alternative 2	2	2	3	1	2	10
Alternative 3		1.5		2	1.5	11
Alternative 4	3	1	3	1.5	1	9.5

Notes:

- 0 = Lowest Ranking/does not meet ARARs or risk based PRGs
- 3 = Highest Ranking
- The highest total score is the most advantageous and should be the recommended alternative.

Appendix A

ARARs	Authority Citation	Applicable/ Relevant & Appropriate	Location	Chemical	Action
Federal					
Clean Water Act -Sect 402 - Storm Water Requirements: Regulates the discharge of storm water from industrial and construction sites, inter alia. Requires implementation of best management practices, including run-on and run-off controls, sedimentation basins, etc.	33 USC Section 1342; 40 CFR Part 122;	Applicable	X		X
Clean Water Act Section 404: Regulates the discharge of dredged or fill material	33 USC §1344; 40 CFR pr 230;	Applicable			X
Discovery of endangered or threatened species: Requires federal agencies to assure that the continued existence of any endangered or threatened species and their habitats will not be jeopardized by a site action.	Endangered Species Act: Endangered Species Act 16 USC 1531 et seq. 50 CFR Part 200 50 CFR Part 402	Applicable	X		X
Characterization of solid waste (all primary and secondary wastes): Must determine whether the waste is hazardous waste or not (just solid waste)	40 C.F.R.§ Part 261	Applicable		X	
Generation of RCRA hazardous waste for storage, treatment or disposal: Must obtain a detailed chemical and physical analysis on a representative sample of the waste(s), which at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with pertinent sections of 40 C.F.R.§ 264 and 268.	40 C.F.R.§ Parts 264 & 268; 40 CFR §264.554 (Remediation Waste Staging Piles)	Applicable only if hazardous waste is found		X	
State					
Definition of Hazardous Waste: Hazardous Waste Management Standards; Solid wastes identified as hazardous under this statue must be managed as hazardous waste.	Wis. Admin. Code § NR 661.0003	Applicable		X	X
Definition of Solid Waste: Solid Waste Disposal and Recycling; Defines solid, non-hazardous wastes	Wis. Admin. Code § NR 661.0002	Applicable		X	X
Management of Contaminated Soil or Solid Wastes Excavated During Response Actions; NR 718.05. Storage of excavated contaminated soil; 718.05(1) (Exemption from solid waste program requirements); NR 718.12. Management of contaminated soil	Wis. Admin. Code § NR 718	Applicable			X

ARARs	Authority Citation	Applicable/ Relevant & Appropriate	Location	Chemical	Action
Soil Cleanup Standards	Wis. Admin. Code Ch. NR 720	To Be Considered (Not an ARARs because no substantive standard, just a procedure to determine risk).		X	X
Groundwater Monitoring Well Requirements	Wis. Admin. Code Ch. NR 141	Applicable if groundwater monitoring wells are installed.	X		X
Groundwater Quality Standards: NR 1401.10 (Public health related groundwater standards); NR 140.12. Public welfare related groundwater standards; NR 140.20 Indicator parameter groundwater standards; NR 140.22. Point of standards application for design and compliance; NR 140.28. Exemptions;	Wis. Admin. Code § NR 140	Only applicable to remedial action if groundwater is impacted			X
Stormwater Erosion Control Standards: Erosion control plan requirements; Runoff management - construction site performance standard for sites of one acre or more	Wis. Admin. Code § NR 216.46; 151.11	Applicable	X		X
Control of Particulate Emissions - Fugitive Dust: Use BMPs to reduce emissions from construction activities. May not be directly applicable, but at least appropriate and relevant.	Wis. Admin. Code § NR 415.04. Fugitive dust	Applicable or Appropriate and Relevant			X

Appendix B

CELRC-ECE-C January 13, 2025

MEMORANDUM FOR RECORD

SUBJECT:	Basis of Estimate
PROJECT:	Kaukauna Parcel J
	Preliminary Cost of Four Alternatives

1.0 Background

Cost Engineering has been requested to determine the feasibility level costs for multiple remediation alternatives for Parcel J in Kaukauna, WI. The options that were estimated are.

Parcel J

Option 1 : No Action

Option 2: Excavate 1' of soil and add cap
- Volume removed: 900 cubic yards
- Includes backfill.
- Includes ongoing monitoring requirements (annual inspections, 5-year reports, and 10-year repair over 100-year period

Option 3: Excavate to 200ppm.
- Volume removed: 1,600 cubic yards (does not include contingency)
- Includes backfill.
- ongoing monitoring requirements not included.

Option 4: Excavate to 52ppm.
- Volume removed: 1,930 cubic yards (does not include contingency)
- Includes backfill.
- ongoing monitoring requirements not included.

2.0 Cost Summary

Parcel J (Assuming land side access)	**Total Cost**

Option 1- No action	$0
Option 2 – Excavate 1' of soil and add cap	$1,732,004.89
Option 3 – 200 ppm for lead clean up level	$1,797,925.60
Option 4 – 52 ppm for lead clean up level	2,993,420.00

The above costs do not include any Real Estate costs.
The contingency was estimated to be 30% at this stage due to the many unknowns (these are discussed in more detail below).

3.0 Basis of Design

There is no formal design for this work currently. Quantities were developed by the PDT and Cost for the various alternatives.

- **Second Alternative:**
  - 900 CY of soil excavated and hauled off site.
  - Soli removed 100% assumed to be non-hazardous.
  - Cost of ongoing monitoring obligations provided by Buffalo District.

- **Third Alternative:**
  - 1,600 CY of soil excavated and hauled off site.
  - Soli removed 100% assumed to be non-hazardous.
  - Cost of ongoing monitoring obligations not considered for this alternative.

- **Fourth Alternative:**
  - 1,930 CY of soil excavated and hauled off site.
  - Soli removed 100% assumed to be non-hazardous.
  - Cost of ongoing monitoring obligations not considered for this alternative.

- **All Alternatives:**
  - Access was assumed to be from land side through parking lot. If this is not a possibility the costs for Parcel J will go up considerably. Marine access would require an additional location to stage/load/offload all

equipment and materials as well as decrease productivity. A daily rate for marine plant was calculated to develop a rough cost.

- Dewatering is included depending on the depth/time of excavation.

4.0 Basis of Estimate

The work for all the alternatives was assumed to be done by a Small Business contractor. A small excavator would be used due to the limited size of the areas and a small loader/skid steer would move the material to/from the excavation areas.

Testing was also included. For the deeper excavations it was assumed that after each foot test would be done to see if additional excavation would be needed.

Clean fill/topsoil will be placed in the excavated areas and covered by seed/sod.

Trucking of the soil was assumed to be by a subcontractor. 100% of the material was assumed to be non-hazardous. The non-hazardous disposal site is in Whitelaw, WI. approx. 30 miles away.

One of the largest risks is the potential of having construction access on Parcel J from the water and not through the parking lot. This would result in additional marine plant to move material, personnel, and equipment to/from the jobsite. Depending on the depth of water adjacent to the site some dredging may be required to get enough depth for the barge. This would also slow productivity considerably from the costs shown since material would need to be handled multiple times. The Marine Plant would include a tug, 2 work barges, captain, 2 deckhands plus an additional excavator/operator at staging area. With the same markups as the option the Marine Plant is approx. $12,000/day alone without decrease in productivity

Parcel J work includes temporary fencing due to proximity of the apartment buildings, removal of all trees (approx. 30 based on Google Earth) and replacing/repairing riprap along the shoreline.

5.0 Markups

The Prime Contractor was assumed to perform a majority of the work. Subcontractors are included for ancillary work (testing, temporary fencing, cofferdam work, tree removal and landscape work). For the prime contractor, a 15% Home Office markup, 10% for mobilization/demobilization, 15% profit and 2% bond were used. It was assumed this would be done by a Small Business Contractor due to the size of the work. Subcontractors have a 10% Home Office overhead and 10% profit. Overtime was only included for dewatering work. A 90% productivity factor was included on all items. Job Office Overhead was calculated for each alternative and includes a Superintendent, Safety and Quality Control personnel.

A 30% contingency was added to all options. Since this is early in development there are numerous unknowns that could significantly impact the overall cost such as cofferdam requirement, dewatering, quantity of material required to be removed, etc.

6.0 Construction Schedule

A detailed construction schedule was not prepared for each option. Time would be required for plans and specifications, solicitation/award, and preconstruction submittals. Additional time would be required for establishment of seed/sod depending on time of year the work is completed.

The undersigned is the point of contract for this memorandum.

Weronika Zasadzki
Cost Engineer
Civil and Cost Engineering Section
USACE Chicago District

Appendix C

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
2984 Shawano Avenue
Green Bay WI 54313-6727

Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
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November 2, 2022

Linda M. Sorn, P.E.
Chief, Engineering and Construction Division
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, CHICAGO DISTRICT
231 SOUTH LA SALLE STREET, SUITE 1500
CHICAGO, IL 60604

Subject: Proposed Non-Time Critical Removal Action Applicable or Relevant and Appropriate Requirements for USACE - Parcel J (Kaukauna Power Canal) BRRTS # 02-45-548419, End of 420 Bicentennial Court Apartments, City of Kaukauna, Outagamie County, Wisconsin

Dear Ms. Sorn:

The purpose of this letter is to provide you with an identification of applicable or relevant and appropriate requirements (ARARs) for the non-time critical removal action proposed at the USACE - Parcel J (Kaukauna Power Canal) site (Site) in Kaukauna, Wisconsin. The U.S. Army Corps of Engineers (USACE) requested a list of all ARARs in a letter dated July 15, 2022.

The USACE is the "responsible party," as defined in Wis. Admin. Code § NR 700.03(51), for the Site under Wis. Stat. § 292.11(3). The USACE must follow all applicable law to address the discharge of the hazardous substance or other environmental pollution to the environment Wis. Stat. ch. 292, Wis. Admin. Code chs. NR 700-799, and other statutes and rules referenced in this letter. The non-time critical removal action (Remedial Action) is considered a remedial action under Wis. Admin. Code ch. NR 724.

The Site has soil impacted with Resource Conservation and Recovery Act (RCRA) metals and Polycyclic Aromatic Hydrocarbons (PAHs) from historic and adjacent land use. Based on the information provided, we have identified the following Wisconsin Department of Natural Resources (WDNR) ARARs. Any federal, other state agency, or local, and municipal ARARs that may be applicable are not included in this letter. The WDNR Administrative Codes are available at: http://docs.legis.wisconsin.gov/code/toc/nr. If there are activities that are not covered in the ARAR request letter and other Site documents reviewed to prepare this letter, additional ARARs may apply.

The ARAR request letter states that the Remedial Action includes the removal of contaminated Site soils. No additional information has been provided regarding the specific details of the soil removal. The Department anticipates that as part of the Remedial Action, the USACE will do the following:

1) Develop and implement a Site Health and Safety Plan,

2) Identify, characterize, remove, and properly dispose of contaminated soil,

3) Develop and implement a post-removal sampling plan to verify cleanup,

4) Backfill excavated areas with clean material and topsoil,

5) Restore excavated areas to pre-removal conditions, and

6) Prepare and submit a summary report of the Remedial Action.

If the proposed Remedial Action is not sufficient to meet Wis. Admin. Code ch. NR 726 case closure requirements, the USACE should determine if further investigation and/or remedial action is necessary.

The following ARARs have been identified for the proposed Remedial Action.

A. Hazardous Waste Management Standards

Contaminated Media

Contaminated media could be considered hazardous; however, there is flexibility on how contaminated media (i.e. soil and groundwater) are managed. Solid wastes identified as hazardous waste under Wis. Admin. Code § NR 661.0003 must be managed as hazardous waste. We recommend that you review the document entitled, "Guidance for Hazardous Waste Remediation," available at http://dnr.wi.gov/files/PDF/pubs/rr/RR705.pdf for specific information on the options available.

B. Solid Waste Disposal and Recycling

Solid wastes defined under Wis. Admin. Code § NR 661.0002 are non-hazardous. Under Wis. Admin. Code § NR 718.05(1), sites where less than 2,500 cubic yards of excavated contaminated soil are stored by a responsible party for no more than 6 months are exempt from solid waste program requirements under Wis. Stat. ch. 289 and Wis. Admin. Code chs. NR 500-538, provided the responsible party meets all requirements set forth in Wis. Admin. Code § NR 718.05. If the volume of non-hazardous contaminated soil to be stored exceeds 2,500 cubic yards , the soil will be stored for more than 6 months, or the facility is already licensed for solid waste storage, the exemption in Wis. Admin. Code § NR 718.05(1) does not apply and solid waste program requirements, including requirements under Wis. Admin. Code § NR 502.05, apply.

Under Wis. Admin. Code § NR 718.07, a solid waste collection and transportation service operating license is required under Wis. Admin. Code § NR 502.06 when excavated contaminated soils are transported; however, a responsible party may transport excavated contaminated soil in vehicles the responsible party owns without a solid waste collection and transportation service operating license, if the excavated contaminated soil is hauled to a site or facility in compliance with the requirements of Wis. Admin. Code ch. NR 718 or to a licensed solid waste storage, treatment or disposal facility. A responsible party must cover contaminated soil, as necessary, to prevent the loss of any material during transport.

Disposal of non-hazardous contaminated soils and solid waste is regulated under the solid waste rules set forth in Wis. Admin. Code chs. NR 500-538. Generally, the plan of operation for the landfill accepting the waste must include that waste for the responsible party to dispose the waste at that landfill. The landfill operator must agree to accept the soils, and all requirements for waste characterization must be met.

C. Air Management Standards

Wisconsin Admin. Code ch. NR 445 is applicable to any toxic substances discharged because of material disturbance or transportation. Additional applicable standards include: the primary and secondary ambient air quality standards in Wis. Admin. Code ch. NR 404, the fugitive dust requirement of Wis. Admin. Code ch. NR 415, the malodorous emissions abatement or control requirements of Wis. Admin. Code ch. NR 429, the visible emissions limitation standards of Wis. Admin. Code ch. NR 431, and the testing, inspection, and determination of compliance requirements of Wis. Admin. Code ch. NR 439.

D. Soil Quality Standards

WDNR has outlined a process for calculating soil cleanup standards in Wis. Admin. Code ch. NR 720. The procedures outlined in that chapter should be used to determine the residual contaminant levels or performance

standards for each exposure or migration pathway of concern, and for each soil contaminant of concern at this Site. The contaminants found in soils at the site currently include RCRA metals and PAHs. These contaminants may also be released to surface soils during waste management/removal activities associated with the removal action.

Wisconsin Admin. Code §§ NR 720.10 and 720.12 identify the procedures for determining residual contaminant levels for organic or inorganic chemicals that are protective of human health from direct contact with contaminated soil and are protective of groundwater. These rules apply to all soils regardless of depth. WDNR understands that the removal actions proposed at this time do not intend to result in permanent protection of groundwater. For all future removal activities, WDNR urges the USACE to follow the requirements and procedures set forth in Wis. Admin. Code ch. NR 720 to determine and meet residual contaminant levels, if possible.

Any contaminated soils that are proposed to be managed on the Site must meet the requirements in Wis. Admin. Code ch. NR 718, including specific testing and location standards.

As described above in Section B, any contaminated soils that are proposed to be disposed of at a licensed landfill must meet the disposal facility requirements in Wis. Admin. Code ch. NR 500-538.

Any soil placed as backfill needs to be clean soil and free of debris; if it is not, then a Wis. Admin. Code NR 718 exemption is required. Material from an off-site source must be tested to confirm no contaminants are present and to ensure that the geotechnical properties of the soil are appropriate prior to placement at the Site.

E. Soil Borings, Sampling, and Reporting Results

New soil borings must be installed in accordance with the standards in Wis. Admin. Code ch. NR 141. Wisconsin Admin. Code § NR 141.23 contains requirements for documenting boring and well construction on WDNR issued forms. Wisconsin Admin. Code § NR 141.17 also includes requirements for investigative waste management from the construction and development of the borings and wells. The solid and hazardous waste management requirements outlined above also apply. Investigative wastes should be managed in accordance with Wis. Admin. Code ch. NR 718 and the guidance document, "Guidance for the Management of Investigative Waste," available at: https://dnr.wi.gov/DocLink/RR/RR556.pdf. Finally, Wis. Admin. Code § NR 141.25 has requirements for boring and monitoring well abandonment and documentation of that abandonment.

Sampling and analysis of samples from borings must comply with Wis. Admin. Code § NR 716.13. Under Wis. Admin. Code § NR 716.13, samples must be collected and handled according to the procedures specified in Wis. Admin. Code § NR 140.16(1) and must be analyzed at a laboratory accredited under Wis. Admin. Code ch. NR 149. This rule also specifies method reporting limits.

F. Stormwater Erosion Control Standards

Construction projects where one acre or more of land will be disturbed must comply with the erosion control plan requirements outlined in Wis. Admin. Code § NR 216.46, including the development and implementation of a site-specific erosion control plan that meets the performance standards in Wis. Admin. Code § NR 151.11 and includes the required information in Wis. Admin. Code § NR 216.46(4), the site map requirements in Wis. Admin. Code § NR 216.46(5), the best management practices in Wis. Admin. Code § NR 216.46(6), the material discharge requirements in Wis. Admin. Code § NR 216.46(7), the velocity control requirements in Wis. Admin. Code § NR 216.46(8) and the inspection requirements in Wis. Admin. Code § NR 216.46(9). The plan must also meet the specific requirements for storm water management plans in Wis. Admin. Code § NR 216.47, including best management practices under Wis. Admin. Code § NR 216.47(6). WDNR's Stormwater Program has technical standards and other reference documents that may be found at http://dnr.wi.gov/topic/stormwater/standards/index.html.

Although this Site is less than one acre, the above stormwater erosion control standards are included for the USACE to consider incorporating as part of the Remedial Action, which may assist with any local and or municipal permit requirements pertaining to stormwater.

G. Green and Sustainable Remediation

We ask, to the extent practicable, that you implement sustainable remediation practices at this Site by following the Wisconsin Initiative for Sustainable Remediation and Redevelopment (WISRR) Green and Sustainable Remediation Manual, which may be found at http://dnr.wi.gov/files/PDF/pubs/rr/RR911.pdf

H. Public Information and Participation

Wisconsin Admin. Code § NR 714.07 provides that responsible parties must conduct all necessary public participation and notification activities at a site and evaluate the need for and the level of public participation and notification using certain prescribed criteria.

Should you have any questions regarding this letter, please contact me at (920) 510-8277 or Sarah.Krueger@wisconsin.gov.

Sincerely,

Sarah Krueger
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US Army Corps
of Engineers
Buffalo District

Soil Investigation

Parcel J
Fox Shores Drive
Kaukauna, Wisconsin
(BRRTS No. #02-45-548419)

September 2021

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1. Introduction

1.1 General

This evaluation has been prepared to summarize the field activities and analytical results associated with a soil investigation performed at Parcel J, a federally owned parcel along the Fox River in Kaukauna, Wisconsin, managed by the U.S. Army Corps of Engineers (USACE) (Figure 1). The U.S. Army Corps of Engineers (USACE) performed this field investigation to gather data necessary to evaluate soil contaminant concentrations within site soils.

In August 2020, the Wisconsin Department of Natural Resources (WDNR) issued a letter indicating that USACE was responsible for the investigation and remediation of contaminated soil on Parcel J (BRRTS #02-45-548419). Parcel J has previously been investigated by USACE in 2001, 2003, 2004 and 2005 as part of the larger transfer of federal properties associated with the Fox River navigation system to the State of Wisconsin. The Memorandum of Agreement (MOA) between the Department of the Army and the State of Wisconsin (dated September 11, 2000) provides that "Subject to the availability of funds and based on the Environmental Baseline Studies to be completed pursuant to paragraph C.2. of this Article, the Government agrees to complete any necessary remediation action required by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and provide the applicable warranties and covenants required by section 120(h) of CERCLA." Due to elevated lead concentrations within the western portion of Parcel J (west of the Kaukauna Power Canal) this portion of the parcel was not transferred with the rest of the Fox River properties (the eastern portion was retained by USACE for operation and maintenance of the adjacent federal dam). USACE will perform this field investigation to gather data necessary to evaluate soil lead concentrations along the western portion of Parcel J.

The field activities describe within this Technical Memorandum are consistent with the elements set forth in the CERCLA (CERCLA; 42 [USC] 9601 et seq.), as amended; the National Contingency Plan (NCP) of March 8, 1990 (40 Code of Federal Regulations [CFR] Part 300).

A Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) were developed and comprise the Sampling and Analysis Plan (SAP) for the SI. The SAP provided a consistent framework of policies, procedures, functional activities and organization that were used during field and laboratory activities related to the acquisition of chemical data. The QAPP outlined the Quality Assurance (QA) program and Quality Control (QC) procedures that were used to verify and maintain the level of performance required to meet the project objectives. An Activity Hazard Analysis (AHA) was prepared for the SI field activities and attached as Appendix A of the SAP (USACE, 2021).

1.2 Site Description

Parcel J is located on the Lower Fox River in the City of Kaukauna, Outagamie County, WI, approximately 40 kilometers (km) [25 miles (mi)] southwest of Green Bay (Figure 1). Parcel J is approximately 2.4 acres, with the parcel bisected into two portions by the Kaukauna Power

Canal. The western portion is a thin strip of land along the south shore of the Fox River on the west side of the Kaukauna Power Canal, approximately 700 feet long and 25 to 50 feet wide (0.6 acres), and the eastern portion is about 1.8 acres between the Fox River and east side of the Kaukauna Power Canal, at the Fox River U.S. Dam Right Abutment. The eastern portion is associated with USACE operation and maintenance of the Dam. A portion of the parcel downstream of the Dam (0.5 acres) was transferred to the State of Wisconsin. The western portion of Parcel J is abutted by several residential apartment complexes and the eastern portion is abutted by a city park.

Previous investigations of the western portion of Parcel J indicate that lead concentrations within shallow soils (0-4 feet) sporadically exceed the residential direct contact screening level of 400 mg/kg, ranging from 15 to 11,000 mg/kg. Shallow soils generally consist of historic fill made up of sand and gravel with silty clay. The fill is underlain by native glacial till (red-brown silty clay) to a depth of 10 to 15 feet, at which contact with bedrock is assumed. Groundwater is present at depths of 7 to >10 feet, although wells probed to a depth of 15 feet produced only limited quantities of water for sample collection due to the low hydraulic conductivity of the overburden soils. Shallow groundwater flow is to the south, moving away from the Fox River. Previous groundwater sampling on the parcel indicated lead was not detectable at a detection limit of 1 µg/L.

Parcel J is designated by the Wisconsin Department of Natural Resources (WDNR) in the Bureau for Remediation and Redevelopment Tracking System (BRRTS) as No.02-45-548419.

1.3 Site History

In 1872, the USACE acquired navigational control of the Fox River waterway, between the cities of Menasha and De Pere, Wisconsin.

By the 1940s, the Fox River, which originally played a major role in regional transportation and commerce, saw a major decline in navigation with the advent of railroads and highways. The Upper Fox River locks (Portage to Lake Winnebago) were abandoned by the USACE in 1962. In 1983, the USACE closed the Lower Fox River to commercial traffic and discontinued operation and maintenance of the locks and placed its property holdings in caretaker status. The USACE continued to own and operate nine federal dams and retain control over four privately-owned dams on the Lower Fox River, however, as part of its flood control responsibilities.

Beginning in the 1980's, an effort began to transfer ownership of the locks from the USACE to the State of Wisconsin with the goal of renovating and reopening the locks for commercial and recreational boating. In preparation for this transfer, a MOA was signed on September 11, 2000 (USACE 2015) by the Wisconsin Governor, the Secretary of the WDNR, and the Assistant Secretary of the Army for Civil Works. In the MOA (Paragraph B of Article I), the federal government agreed to "complete any necessary remediation action required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and to provide the applicable warranties and covenants required by Section 120(h) of CERCLA."

In 2001, the FRNSA was created to manage the Fox River Locks following this transfer of ownership of the system from the USACE to the State of Wisconsin DOA. As specified in Chapter 237, Wisconsin Statutes, the FRNSA's primary mission is to repair, rehabilitate, operate and maintain the locks system.

On September 17, 2004, the USACE began transferring the ownership of the 17 locks, 38 ha (94 ac) of land bordering the Lower Fox River, three harbors, and an assortment of related buildings along the Lower Fox River to the Wisconsin DOA. The western portion of Parcel J was not included in this transfer due to the presence of lead contamination in soil.

The area west of the Kaukauna Power Canal was historically used as a rail service/maintenance yard, including carpentry, machine, blacksmith, tin, and repair shops, supply warehouses, engine and coal rooms, and a roundhouse for locomotive maintenance, by the Chicago and Northwestern Railway from the late 1800s through the 1980s, until being redeveloped as residential apartment complexes (Partner 2018). The western portion of Parcel J is located along the northern periphery of the historic rail service/maintenance yard, with historic development in the form of buildings and tracks occurring to the south.

A Phase 1 Environmental Site Assessment (ESA) and Environmental Baseline Survey of the Fox River properties was conducted in 2000 (Barr 2000). A review of this assessment does not indicate that products containing emerging contaminants, including PFAS, were produced, used, handled or stored at the site. Previous investigations indicate that historic fill along the western portion of the parcel is sporadically impacted by elevated concentrations of lead. USACE has not had any discernable historic use of this portion of the property.

1.3.1 Previous Investigations and Remedial Activities

The eastern portion of Parcel J was investigated in 2001, after a Phase I Environmental Site Assessment (ESA) indicated potential recognized environmental conditions (RECs) including historic surface disturbances and historic industrial use by the Kaukauna Water Power Company (Barr 2000). Three temporary groundwater wells were installed and sampled for volatile organic compounds (VOCs) (Kc-1-01, Kc-2-01, and Kc-3-01) and three soil borings were collected for analyses of soil polychlorinated biphenyls (PCBs) and metals (Kd-1-01, Kd-2-01, Kd-3-01) (Altech 2001). Soil metal concentrations were below screening criteria (lead concentrations ranged from 39 to 291 mg/kg) and PCBs were not detectable in soil. VOCs were not detected in groundwater except for low level detections of toluene and ethyl benzene, which were below screening criteria. Soils generally consisted of reddish brown moderately hard and moderately plastic silty clay (glacial till) with minor percentages of sand and gravel, with increased sand and gravel occasionally in the upper 2 to 3 feet. Fill material was occasionally encountered, consisting of dark brown to black sandy clay, with cinders, wood fragments, gravel, and concrete fragments intermixed with portions of native clay soil. Groundwater was encountered at depths of 9 to 10 feet; however, the wells were extremely slow to recharge, indicating the clayey soils to be of low permeability.

The western portion of Parcel J was initially investigated in 2003 to address the potential impact of past adjacent industrial use (Altech 2006). Soil was sampled and analyzed for metals and VOCs from three locations at depth intervals of between 0 and 2 feet below ground surface.

Lead was identified as the contaminant of concern for the property as lead concentrations ranged from 61 to 320 mg/kg, greater than the then non-industrial direct contact screening criteria of 250 mg/kg. Further sampling occurred in 2004, in which 17 locations were sampled to a maximum depth of 4 feet. Soil borings were screened at 0.5 to 1.0 foot intervals with an XRF to profile lead concentrations. XRF lead concentrations ranged from < 30 mg/kg to 4,000 mg/kg, with the highest concentrations occurring within the 0-2-foot depth interval. The bottom depth interval of each soil boring was submitted for laboratory analysis of lead. Laboratory determined lead concentrations ranged from 18 to 11,000 mg/kg at depths of 0.5 to 4 feet below ground surface. To further characterize soil lead concentrations across the soil profile, ten soil borings were collected in 2005 to depths of 8.5 to 10 feet below ground surface. Soil was sampled and analyzed for lead at depth intervals of 0-2 feet, 4-6 feet, and 7-9 feet. Soil lead concentrations in the 0-2 feet interval ranged from 15 to 2,100 mg/kg, compared to a range of 3.3 to 79 mg/kg across the deeper intervals. Samples for toxic characteristic leaching procedure (TCLP) and synthetic precipitation leaching procedure (SPLP) testing were collected from the two locations with the highest lead concentrations (440 mg/kg and 2,100 mg/kg). TCLP results ranged from 0.85 to 1.1 mg/L, below the hazardous waste threshold of 5.0 mg/L. The SPLP results ranged from 27 to 330 µg/L, above the WDNR groundwater preventive action limit and enforcement standard for lead of 1.5 µg/L and 15 µg/L, respectively. Three temporary groundwater wells were also installed to depths of 15 feet, however only one well produced enough groundwater to be sampled, again indicating very slow recharge rates from the predominantly clay soils. Lead was not detectable in the groundwater sample at a reporting limit of 1 µg/L, less than the preventative action limit of 1.5 µg/L. Across the sampling events, elevated lead levels have been limited to the upper 4 feet of soil, within the shallow fill/sand-based soil layers, with reduced lead concentrations within the deeper, native clay-based soil layers. Depth to groundwater ranged from 7 to greater than 10 feet. Across the three sampling events, 50 samples were collected across 30 locations, with lead concentrations greater than the residential direct contact screening criteria in 10 of the 50 total samples, and at 10 of the 30 locations. Most of the elevated results within the western portion of Parcel J are located across the eastern half toward the Power Canal.

Three adjacent properties associated with the historic rail service/maintenance yard have recently been the subject of environmental investigations: Fox Shores apartments (BRRTS #02-45-582746), Ghost Town Fitness (BRRTS #02-45-5479110), and the Roundhouse Manor apartments (BRRTS #07-45-559282) (Figure 2). These properties housed most of the buildings and rail spurs associated with the rail yard and are down gradient of Parcel J.

The Fox Shores apartment complex immediately south of the western portion of Parcel J has been subject to various remedial investigations from 2018 to 2020, including sampling of 27 soil borings to depths of between 1.5 and 10 feet, and 5 groundwater wells (Stantec 2020). Soil samples generally consisted of silty clay, with some sand and gravel layers and fill layers within the upper 4 feet. Samples were collected primarily from the 0-2 and 2-4 feet intervals for laboratory analysis of polycyclic aromatic hydrocarbons (PAHs), VOCs, and RCRA metals. Groundwater was sampled in the fall and the spring for PAHs, VOCs and RCRA metals. Groundwater was generally encountered at 4 to 6 feet below ground surface, and the wells were able to be purged dry, again owing to the low hydraulic conductivity of the mainly clay soils. Groundwater flow was toward the south, moving away from the Fox River and Parcel J. Across

two rounds of groundwater sampling, arsenic was above the preventive action limit of 1 µg/L in 3 of the 5 wells, with concentrations ranging from 1.3 to 17 µg/L in those wells, with one instance of being above the enforcement standard of 10 µg/L. Arsenic is a naturally occurring constituent in soil and groundwater and is sometimes found at high levels (>10 µg/L) in groundwater in Outagamie County (WDNR 2021). Concentrations of benzo(a)pyrene (0.36 µg/L), benzo(b)fluoranthene (0.29 µg/L), and chrysene (1.5 µg/L) were detected above the groundwater enforcement standard of 0.2 µg/L across three separate wells, however, were believed to be associated with suspended solids within the sample, rather than mobile dissolved results. VOCs were not detected at levels above groundwater screening criteria. Based on these results it was concluded that groundwater impacts were minimal, with site soil contaminants not significantly impacting groundwater quality. The soil sampling results indicated the widespread presence of historic urban fill consisting of clay with sand/gravel present at depths of up to 3 feet, underlain by native silty clay soil. Within the shallow soil samples (0-4 feet), arsenic, lead, and various PAHs were occasionally detected above residential direct contact screening criteria. Arsenic was detected above the background threshold value of 8 mg/kg in 12 of 27 samples, with a maximum concentration of 240 mg/kg and lead was detected above the residential direct contact criteria of 400 mg/kg in 7 out of 27 samples with a maximum concentration of 97,000 mg/kg. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)flouranthene, dibenzo(a,h)anthrathene and indeno(1,2,3-cd)pyrene were the PAHs detected above residential direct contact criteria, with benzo(a)pyrene most often exceeding criteria, with 21 out of 31 results above the criteria of 0.115 mg/kg. When compared to typical urban background soil concentrations, 5 out of 31 results exceeded 95% Upper Confidence Limits for PAHs in Milwaukee undisturbed soils (Siemering and Thiboldeaux 2021). These conditions were associated with apparent petroleum impacted soils sporadically located between the apartment buildings north of Bicentennial Court and along landscaped areas adjacent to Bicentennial Court and Fox Shores Drive. VOCs were not detected above screening criteria.

The property immediately southeast of the Fox Shores apartment complex, Ghost Town Fitness Center, was subject to soil and groundwater sampling and analysis in 2006. A soil boring and groundwater well were installed to evaluate potential environmental impacts associated with the historic use as a rail service/maintenance yard (Terracon 2006). Specifically, this area historically consisted of the machine shop, blacksmith, and locomotive roundhouse. Soil and groundwater were analyzed for diesel range organics, VOCs, and RCRA metals. Groundwater was encountered at 4 feet below ground surface. Soil concentrations did not exceed screening criteria, however there were minor exceedances of the groundwater preventive action limit for arsenic (3 µg/L compared to 1 µg/L) and selenium (14.7 µg/L compared to 10 µg/L). Based on these results the site was granted a PAL exemption and closure in 2006.

The property immediately east of Ghost Town Fitness Center, the Roundhouse Manor apartments, was investigated in 2012 to address potential environmental impacts associated with the historic use of the site, including housing the railroad roundhouse, turn table, sand house, water tank, coal shed, hoist and coal dump, and rail spurs. Four soil borings were collected to depths of 10 to 16.5 feet, with two borings converted to temporary monitoring wells. Groundwater was present at 10.5 to 12.5 feet below ground surface. Soil and groundwater were sampled and analyzed for total petroleum hydrocarbons – diesel range organics (TPH-DRO), metals, VOCs, and PAHs. Low levels of arsenic (5.6 mg/kg to 11.4 mg/kg), lead (105 mg/kg to

133 mg/kg), and TPH-DRO (151 mg/kg to 170 mg/kg) were detected in soil samples above screening criteria and PAHs benzo(a)anthracene, benzo(a)pyrene, and phenanthracene were detected above the preventive action limit in groundwater. To further evaluate groundwater conditions, groundwater was resampled from a more robustly developed monitoring well, with no exceedances determined. Based on these results, the site was granted a no further action required determination.

Based on the previous investigations of the western portion of Parcel J, lead concentrations within shallow soils (0-4 feet) sporadically exceed the residential direct contact screening level of 400 mg/kg. Shallow soils generally consist of historic fill made up of sand and gravel with silty clay. The fill is underlain by native glacial till (red-brown silty clay), which is of low hydraulic conductivity, limiting groundwater flow and infiltration. Groundwater is present at depths of greater than 7 feet and flows to the south, moving away from the Fox River and Parcel J. Previous groundwater sampling on the parcel and on adjacent, downgradient properties, confirm limited impacts to groundwater from soil contaminants. Contaminant conditions are assumed to be associated with the historic development of the adjacent area to the south as a rail service/maintenance yard.

2. Project Scope and Objectives

The objective of the field work and analysis described in this section is to define contaminant concentrations in fill and soils along the western portion of Parcel J. Based on the previous investigations on Parcel J and adjacent parcels, RCRA metals and PAHs in surficial soils require further evaluation.

2.1 Definition of the Problem

Soil sampling and analysis is needed to determine the extent that soils may need to be remediated along the western portion of Parcel J due to lead and/or PAH contamination (Figure 2). The USACE proposed this field investigation to determine the horizontal and vertical extent of contaminant impacted soil along the western portion of Parcel J.

2.2 Project Objectives

The following Data Quality Objectives (DQOs) were established for the SAP following the USEPA DQO process. The SAP DQOs were established using available previous site investigation data to evaluate potential remedial activities associated with the handling and/or removal of impacted material.

The objectives for the field investigation were:

- Determine whether soil contaminant concentrations along the western portion of Parcel J represent a risk to human health.
- Determine the horizontal and vertical extent, and volume of contaminated soil that may have to be remediated.

2.3 Project Action Levels

The western portion of Parcel J is undeveloped and USACE has no active use of the area. However, this portion of the parcel is adjacent to several residential apartment complexes. As such, apartment residents may come into contact with site soil if they enter the parcel. To evaluate the potential risk to apartment residents from direct contact with parcel soils, the USEPA Regional Screening Level (RSL) and Regional Removal Management level (RML) for lead in residential soil of 400 mg/kg will be used as a screening criterion (USEPA 2021a,b). This represents the USEPA screening level for lead in soil for residential land use (USEPA 1994).

PAH data will be reviewed based on USEPA residential direct contact RSLs (target cancer risk [TR]=1E-06; target hazard quotient [THQ]=0.1), regional urban background concentrations for Milwaukee, WI (Siemering and Thiboldeaux 2021), and USEPA residential direct contact RMLs (TR=1E-04; THQ=1) (USEPA 2021b).

RCRA metals data will be reviewed based on USEPA residential direct contact RSLs (TR=1E-06; THQ=0.1), Wisconsin background threshold values, and USEPA residential direct contact RMLs (TR=1E-04; THQ=1).

The RSLs are chemical specific concentrations in soil that indicate when further evaluation may be necessary under CERCLA and the RMLs are chemical specific concentrations in soil that may be used to support the decision to undertake a CERCLA removal action.

3. Field Activities

3.1 General

This section describes the field activities that were performed on May 25, 2021.

The scope of the field work and analysis included the following activities:

- Excavation of 15 test pits.
- Field classification and profiling of soil layers.
- Collection of soil samples for laboratory analysis.

3.2 Mobilization/Demobilization

The health and safety procedures outlined in the AHA were followed during performance of all on-site activities. The field investigation activities were completed in modified level D personal protective equipment (PPE).

3.3 Test Pit Excavation

Fifteen test pits were excavated along the parcel at the approximate locations shown on Figure 3. Test pits were excavated utilizing a Wacker Neuson EZ 28 Mini Excavator equipped with a 2 ft-

wide bucket. The test pits were excavated until native material or refusal was encountered, which was generally at depths of 1 – 4 feet below ground surface. Upon completion, all test pits were backfilled and compacted in one-foot lifts with the excavated spoils materials.

Samples were collected across one-foot intervals following procedures identified in the FSP (USACE, 2021). The fill and soil units encountered were documented on Test Pit logs which are provided in Appendix A.

All soil and sediment samples were shipped under chain-of-custody (COC) control to ALS Environmental Laboratory of Middletown, PA. Soil samples were analyzed for RCRA metals by EPA 6010C and PAHs (16 priority pollutants) by EPA 8270D. Three samples were analyzed for total polychlorinated biphenyls (PCBs) as aroclors by EPA 8082A. Samples with lead results greater than 400 mg/kg were also subjected to Toxicity Characteristic Leaching Procedure (TCLP) testing for metals (EPA 1311).

3.4 Equipment Decontamination

To assure that no outside contamination was introduced into the samples/data, thereby invalidating the samples/data, all non-dedicated/non-disposable equipment used during the SI was decontaminated as per the FSP (USACE, 2021).

3.5 Field Variances

Several conditions in the field made it necessary to implement modifications to excavation and sampling as presented in the FSP. Test pit locations JTP-1, JTP-8, JTP-10, JTP-12, and JTP-14 were offset slightly to avoid either a utility line or trees.

4. Sub Surface Conditions and Site Geology

Geologic conditions at the site are characterized by unconsolidated deposits overlaying consolidated/competent bedrock. The unconsolidated deposits generally consist of dark brown loam/fill ranging from 1 to 3 feet thick overlying native reddish brown clayey till. The bedrock at the site is of the Sinnipee Group which consists of tan, gray of buff dolomite with some limestone and shale (Brown, 2005). The Sinnipee Group includes Galena, Decorah and Platteville Formations. Previous soil borings indicate that depth to bedrock is greater than 10 feet below ground surface along the parcel (Altech 2006). Groundwater was not encountered in any test pit. Previous temporary monitoring wells and borings along the Parcel J indicate groundwater may be present at depths of greater than 7 feet below ground surface (Altech 2006).

5. Site Investigation Results

The USACE received data reports from ALS Environmental Laboratory and these reports were reviewed by a USACE chemist. The USACE review verified compliance with requested testing, completeness of the analytical report, and confirm the receipt of all requested deliverables. In addition, the data was verified to identify method, batch, or individual sample results which may have limitations or be unacceptable.

Table 1 presents the soil analytical results for lead, arsenic, barium, cadmium, chromium, mercury, selenium, and silver. Lead concentrations were greater than the USEPA residential screening level of 400 mg/kg on a sporadic basis across the site at locations JTP-1 (1-3 feet), JTP-2 (0-1 feet), JTP-3 (0-1 foot), JTP-9 (0-1 foot), JTP-14 (0-2 feet), and JTP-15 (1-3 feet), ranging up to 1,660 mg/kg. Lead concentrations within the top foot of soil greater than 400 mg/kg were limited to locations JTP-2 (1,660 mg/kg), JTP-3 (861 mg/kg), JTP-9 (721 mg/kg), and JTP-14 (767 mg/kg) representing 4 out of 15 locations. Lead concentrations within the top foot of soil ranged from 11 mg/kg to 1,660 mg/kg, with an average concentration of 365 mg/kg and a median concentration of 188 mg/kg. Generally, lead concentrations were highest in the surficial fill layer to depths of 1-3 feet, and decreased sharply to background levels within the underlying native reddish brown clay till. Within the underlying reddish brown soils, lead concentrations ranged from 3 mg/kg to 208 mg/kg, with an average concentration of 32 mg/kg and a median concentration of 12 mg/kg. Soil concentrations of arsenic, barium, cadmium, chromium, mercury, selenium, and silver were generally below residential direct contact RSLs or background threshold values, with the exception of low-level exceedances of arsenic and mercury collocated with elevated lead concentrations. Arsenic concentrations were greater than the background threshold value of 8 mg/kg at locations JTP-1 (1-3 feet), JTP-2 (0-1 foot), JTP-3 (0-2 feet), JTP-9 (0-1 foot), JTP-11 (0-1 foot), JTP-14 (0-2 feet), and JTP-15 (1-3 feet), ranging up to 31 mg/kg. Arsenic concentrations within the top foot of soil greater than 8 mg/kg were limited to sample locations JTP-2 (31 mg/kg), JTP-3 (27 mg/kg), JTP-9 (9 mg/kg), JTP-11 (13 mg/kg), and JTP-14 (15 mg/kg), representing 5 out of 15 samples. Arsenic concentrations within the top foot of soil ranged from 3 to 31 mg/kg, with an average concentration of 10 mg/kg and a median concentration of 6 mg/kg. Similar to lead, arsenic concentrations were lower within the underlying reddish brown soils, ranging from 2 mg/kg to 8 mg/kg, with an average and median concentration of 4 mg/kg. Mercury concentrations were only greater than the residential direct contact RSL of 1.1 mg/kg at location JTP-15, at a depth interval of 1-3 feet below ground surface. These concentrations were 2.8 mg/kg and 4.8 mg/kg, which would represent Hazard Quotients (HQ) of less than 1.

Table 2 presents the soil analytical results for PAHs. Most results were not inconsistent with typical urban background concentrations, with the exception of locations JTP-2 (0-1), JTP-4 (0-1), and JTP-6 (0-3). At these locations, concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene exceeded USEPA residential RSLs and 95% upper confidence limits for background concentrations in Milwaukee, WI (Siemering and Thiboldeaux 2021). The concentration of benzo(a)pyrene at location JTP-4 (0-1 foot) of 11,800 µg/kg exceeded the USEPA residential RML of 11,000 µg/kg, although this result was not replicated within the field duplicate sample, which was 5,000 µg/kg. Within the top foot of soil, benzo(a)pyrene concentrations greater than the undisturbed Milwaukee soils UCL of 2,060 µg/kg were limited to locations JTP-2 (3,020 µg/kg), JTP-4 (11,800 µg/kg; 5,000 µg/kg duplicate), and JTP-6 (2,420 µg/kg). Benzo(a)pyrene concentrations within the top foot of soil ranged from 30 µg/kg to 11,800 µg/kg, with an average concentration of 1,486 µg/kg and a median concentration of 468 µg/kg. Similar to lead, in most instances PAH concentrations decrease substantially within the underlying native reddish brown clayey till, to non-detectable levels. An exception was location JTP-6, where PAH concentrations within the reddish brown clay at the interface with the fill layer were similar to concentrations within the surficial fill.

Figure 4 displays the soil lead and benzo(a)pyrene concentrations for each test pit location. Generally, soil concentrations above screening criteria are present sporadically throughout the parcel within historic surficial fill to depths of 1 to 3 feet below ground surface with decreasing concentrations within the underlying native reddish brown clayey till. These conditions are consistent with results from previous investigations on the parcel and adjacent parcels.

Table 3 presents the soil analytical results for PCBs. PCBs were not detectable in the sampled soils.

Table 4 presents the TCLP testing results for metals. All sample results were less than regulatory thresholds for the toxicity characteristic.

6. Conclusions

This soil investigation indicates that in most instances site soils meet residential screening criteria, however there are discrete areas of elevated contaminant concentrations. Currently the parcel has vegetated ground cover and is fenced, limiting contact with site soil if not disturbed. These conditions should continue to be maintained. Soils with lead concentrations greater than the USEPA screening level for residential land use of 400 mg/kg are present at locations JTP-1, JTP-2, JTP-3, JTP-9, JTP-14, and JTP-15 at depths of 1 to 3 feet below ground surface. These lead concentrations are associated with historic surficial fill and decrease sharply to background levels within the underlying native reddish brown clayey till. PAH concentrations exceed USEPA residential RSLs and typical urban background levels at locations JTP-2, JTP-4, and JTP-6 at depths of 1 to 3 feet below ground surface, with benzo(a)pyrene exceeding the USEPA residential RML at location JTP-4 within the 0-1 foot interval. Similar to lead, concentrations of PAHs are generally highest within the surficial historic fill layer at depths of 1-3 feet below ground surface and decrease to background levels within the underlying native reddish brown clayey till. Generally, soil concentrations of lead and PAHs exceed screening criteria sporadically throughout the parcel within the surficial historic fill layer to depths of 1 to 3 feet below ground surface. These results indicate that a removal action under CERCLA may be warranted to provide a long-term remedy and allow the property to be transferred. Based on an estimated surface area of 23,678 square feet across the parcel, and an average fill depth of 20 inches, 1,460 bank cubic yards of historic fill may be estimated across the parcel. Adding another foot across the parcel to address uncertainty in the estimate would add 876 bank cubic yards, for 2,336 bank cubic yards.

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Accessed 8/9/2021.

WDNR (2021) Arsenic in Drinking Water. https://dnr.wi.gov/files/pdf/pubs/DG/DG0062.pdf.
Accessed 1/15/2021.

Figures

Legend

- Parcel J Boundary
- Kaukauna Lock Locations

0 1,000 Feet

US Army Corps of Engineers Buffalo District U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS BUFFALO, NY	SITE LOCATION MAP	
Name: 20210108_ParcelJ_SiteLoc.mxd Drawn By: h5tdekmh Date Saved: 08 Jan 2021 Time Saved: 3:54:46 PM	KAUKAUNA POWER CANAL PARCEL J KAUKAUNA, WISCONSIN	FIGURE 1

Document Path: C:\Users\h5tdekmh\Documents\Kaukauna\ArcMap\20210108_ParcelJ_SiteLoc.mxd

Legend

- Parcel J Sample Area
- Parcel J Boundary
- Tax Parcel Boundary

US Army Corps of Engineers
Buffalo District

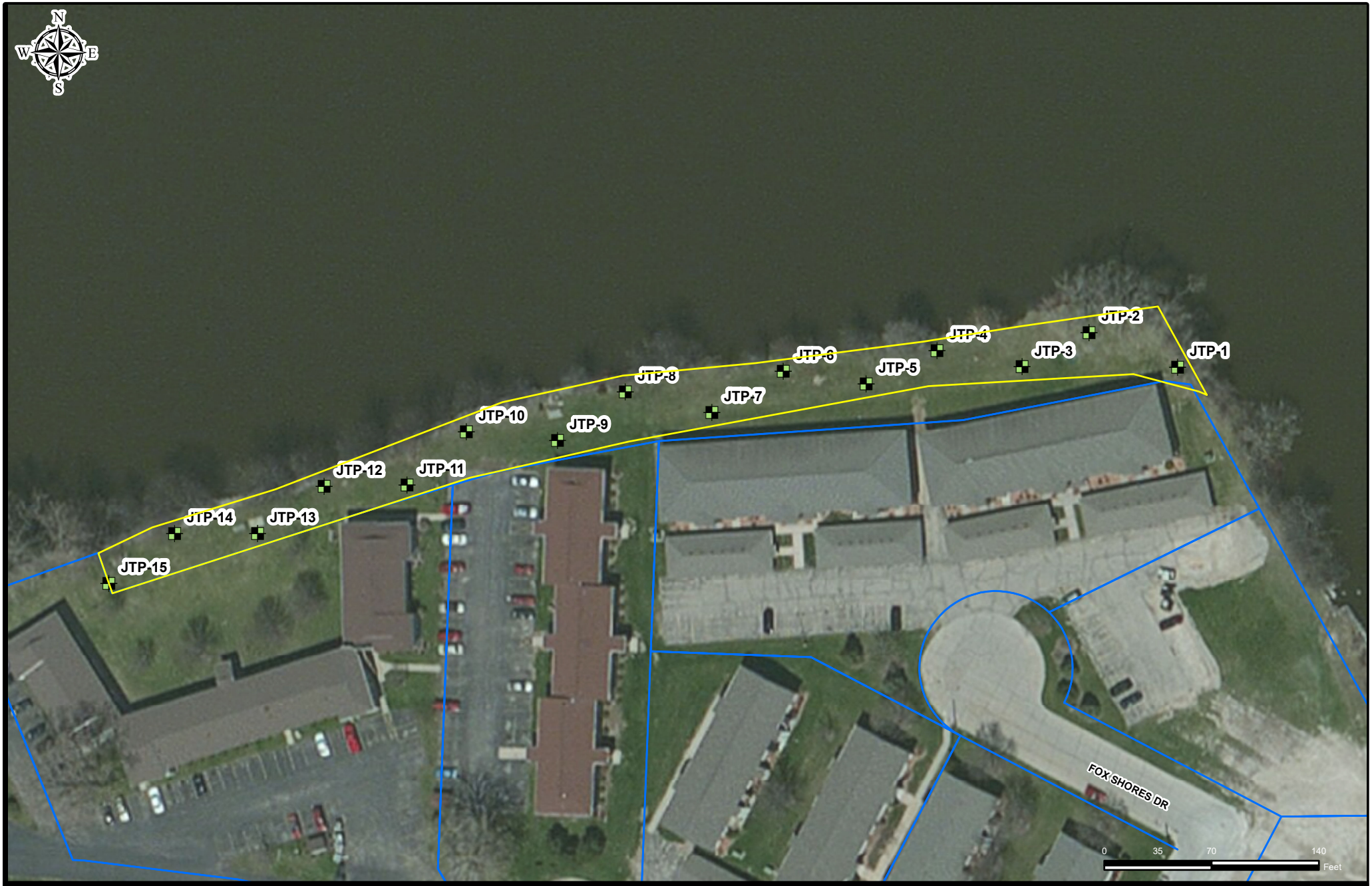
Drawn By: h5tdekmh
Date Saved: 03 Feb 2021
Time Saved: 8:17:37 AM

LOCATION OF PARCEL J NEAR KAUKAUNA POWER CANAL

KAUKAUNA POWER CANAL PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 2

Document Path: C:\Users\h5tdekmh\Documents\Kaukauna\ArcMap\20210108_ParcelJ_Boundary.mxd



Legend

- Proposed Test Pit Locations
- Parcel J Sample Area
- Tax Parcel Boundary

US Army Corps of Engineers
Buffalo District

Drawn By: h5tdekmh
Date Saved: 03 Feb 2021
Time Saved: 8:21:07 AM

PARCEL J PROPOSED TEST PIT LOCATIONS

KAUKAUNA POWER CANAL PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 3

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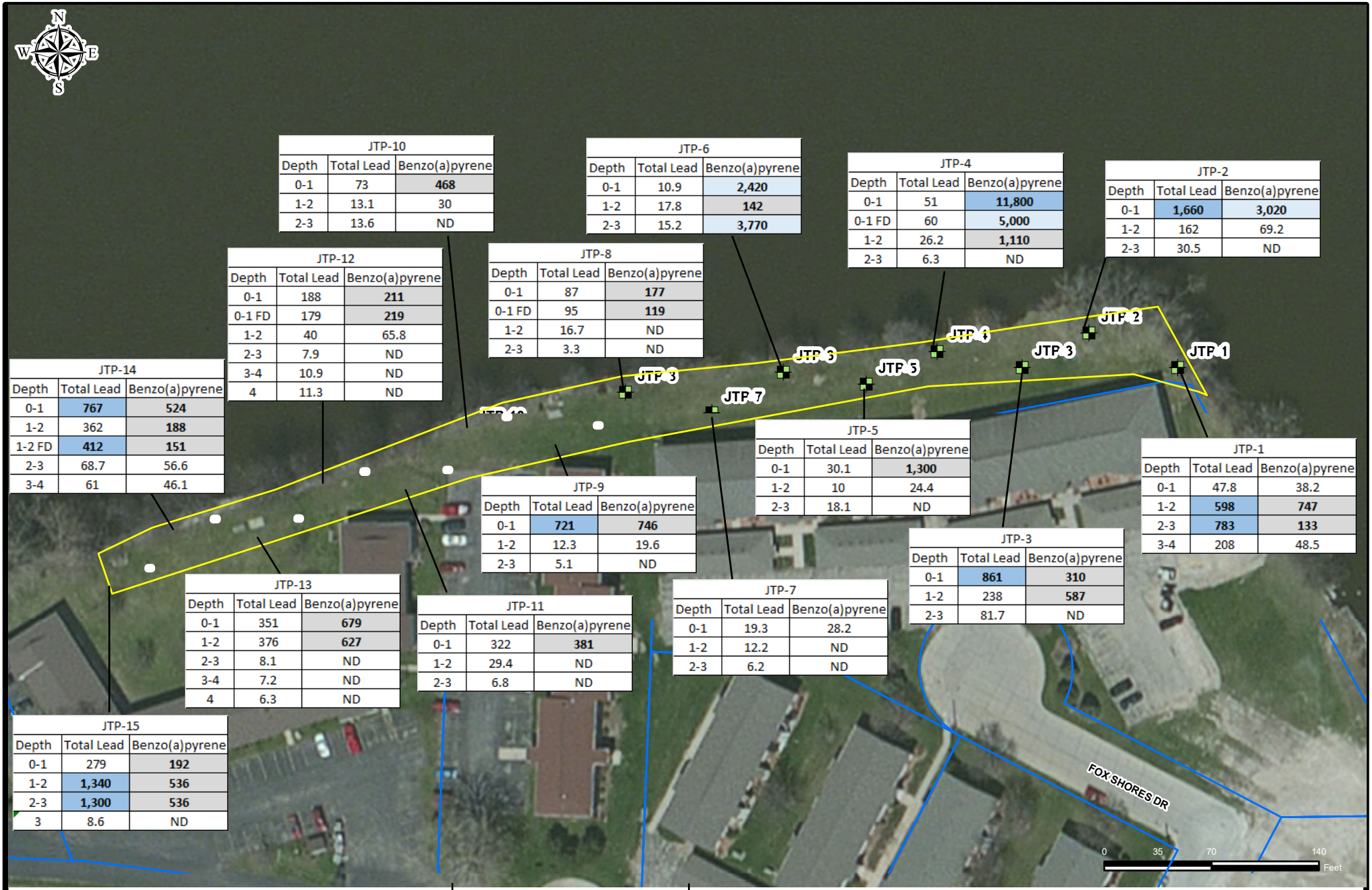

JTP-10		
Depth	Total Lead	Benzo(a)pyrene
0-1	73	**468**
1-2	13.1	30
2-3	13.6	ND

JTP-6		
Depth	Total Lead	Benzo(a)pyrene
0-1	10.9	**2,420**
1-2	17.8	**142**
2-3	15.2	**3,770**

JTP-4		
Depth	Total Lead	Benzo(a)pyrene
0-1	51	**11,800**
0-1 FD	60	**5,000**
1-2	26.2	**1,110**
2-3	6.3	ND

JTP-2		
Depth	Total Lead	Benzo(a)pyrene
0-1	**1,660**	**3,020**
1-2	162	69.2
2-3	30.5	ND

JTP-12		
Depth	Total Lead	Benzo(a)pyrene
0-1	188	**211**
0-1 FD	179	**219**
1-2	40	65.8
2-3	7.9	ND
3-4	10.9	ND
4	11.3	ND

JTP-8		
Depth	Total Lead	Benzo(a)pyrene
0-1	87	**177**
0-1 FD	95	**119**
1-2	16.7	ND
2-3	3.3	ND

JTP-14		
Depth	Total Lead	Benzo(a)pyrene
0-1	**767**	**524**
1-2	362	**188**
1-2 FD	**412**	**151**
2-3	68.7	56.6
3-4	61	46.1

JTP-5		
Depth	Total Lead	Benzo(a)pyrene
0-1	30.1	**1,300**
1-2	10	24.4
2-3	18.1	ND

JTP-1		
Depth	Total Lead	Benzo(a)pyrene
0-1	47.8	38.2
1-2	**598**	**747**
2-3	**783**	**133**
3-4	208	48.5

JTP-9		
Depth	Total Lead	Benzo(a)pyrene
0-1	**721**	**746**
1-2	12.3	19.6
2-3	5.1	ND

JTP-3		
Depth	Total Lead	Benzo(a)pyrene
0-1	**861**	**310**
1-2	238	**587**
2-3	81.7	ND

JTP-13		
Depth	Total Lead	Benzo(a)pyrene
0-1	351	**679**
1-2	376	**627**
2-3	8.1	ND
3-4	7.2	ND
4	6.3	ND

JTP-11		
Depth	Total Lead	Benzo(a)pyrene
0-1	322	**381**
1-2	29.4	ND
2-3	6.8	ND

JTP-7		
Depth	Total Lead	Benzo(a)pyrene
0-1	19.3	28.2
1-2	12.2	ND
2-3	6.2	ND

JTP-15		
Depth	Total Lead	Benzo(a)pyrene
0-1	279	**192**
1-2	**1,340**	**536**
2-3	**1,300**	**536**
3	8.6	ND

Legend

- 2021 Test Pit Results
- Parcel J Sample Area & Transect
- Tax Parcel Boundary

US Army Corps of Engineers
Buffalo District

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Date Saved: 13 Jul 2021
Time Saved: 1:03:54 PM

2021 TEST PIT LEAD (MG/KG) & BENZO(A)PYRENE (UG/KG) RESULTS PER DEPTH INTERVAL (FT.)

KAUKAUNA POWER CANAL PARCEL J
KAUKAUNA, WISCONSIN

FIGURE 4

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Tables

Table 1. Kaukauna Parcel J Soil RCRA Metals Concentrations (ALS 2021)

Metal (mg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2021)	Background Threshold Value	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2021)	JTP-1				JTP-2			JTP-3			JTP-4				JTP-5			JTP-6		
				light brown loam/fill	light brown loam/fill	light brown loam/fill	reddish brown clay with gravel	dark brown loam/fill	reddish brown clay/loam	reddish brown clay	light brown gravelly loam/fill	Black gravelly fill/coal	reddish brown gravelly clay	light brown gravelly loam/fill	light brown gravelly loam/fill	light brown sand and gravel	reddish brown gravelly clay	light brown gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	light brown gravelly loam/fill	light brown sand and gravel	reddish brown gravelly clay
				0-1	1-2	2-3	3-4	0-1	1-2	2-3	0-1	1-2	2-3	0-1	0-1 FD	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3
Silver	39		390	0.18 U	0.19 U	0.88 U	0.9 U	0.93 U	0.82 U	0.18 U	4.2	0.98 J	0.96 U	0.17 U	0.17 U	0.9 U	0.19 U	0.16 U	0.19 U	1.3 J	0.15 U	0.17 U	0.18 U
Arsenic	0.68	8	35	3	10	17	7 J	31	4.6 J	3	27	26	6 J	3	5	3.6 U	5	4	5	7 J	3	3	3
Barium	1,500	364	15,000	35	111	80	76	516	61	48	68	90	87	36	48	47	82	55	86	118	14	42	39
Cadmium	7.1	1	71	0.18 U	0.76	0.88 U	0.9 U	1.9 J	0.82 U	0.18 U	2.4 J	0.96 U	0.96 U	0.33 J	0.39 J	0.9 U	0.19 U	0.26 J	0.21 J	2 J	0.15 U	1.2	0.18 U
Chromium, Total		44		13	20	32	22	19	17	16	24	13	24	14	19	17	29	20	26	27	8	8	17
Mercury	1.1		11	0.065 UJ	0.22 J	0.24 J	0.093 J	0.74 J	0.075 J	0.068 UJ	0.21 J	0.25 J	0.27 J	0.095 J	0.08 J	0.069 UJ	0.071 UJ	0.068 UJ	0.07 UJ	0.076 UJ	0.061 UJ	0.062 UJ	0.067 UJ
Lead	400	52	400	48	598	783	208	1,660	162	31	861	238	82	51	60	26	6	30	10	18	11	18	15
Selenium	39		390	1.8 U	1.9 U	8.8 U	9 U	9.3 U	8.2 U	1.8 U	8.7 U	9.6 U	9.6 U	1.7 U	1.7 U	9 U	1.9 U	1.6 U	1.9 U	10.5 U	1.5 U	1.7 U	1.8 U

Metal (mg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2021)	Background Threshold Value	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2021)	JTP-7			JTP-8				JTP-9			JTP-10			JTP-11		
				light brown gravelly loam/fill	light brown sand and gravel	reddish brown clay	dark gray gravelly loam/fill	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown clay
				0-1	1-2	2-3	0-1	0-1 FD	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3
Silver	39		390	0.17 U	0.16 U	0.19 U	0.92 U	0.92 U	0.17 U	0.16 U	0.88 U	0.18 U	0.17 U	0.15 U	0.17 U	0.17 U	4.8	0.16 U	0.17 U
Arsenic	0.68	8	35	5	1.8 J	4	6.2 J	7.2 J	4	1.9 J	9 J	4	4	4	4	3	13	1.9 J	7
Barium	1,500	364	15,000	49	12	83	36	44	36	19	41	51	45	41	52	34	91	31	84
Cadmium	7.1	1	71	0.17 U	0.38 J	0.19 U	1.2 J	0.94 J	0.17 U	0.16 U	1.2 J	0.18 U	0.17 U	0.42 J	0.17 U	0.17 U	6.3	0.2 J	0.17 U
Chromium, Total		44		20	7	33	26	34	15.5 J	9	11	18	17	14	16	13	22	12	19
Mercury	1.1		11	0.068 UJ	0.066 UJ	0.072 UJ	0.11 J	0.19 J	0.065 UJ	0.066 UJ	0.34 J	0.07 UJ	0.066 UJ	0.07 J	0.082 J	0.07 UJ	0.079 J	0.066 UJ	0.071 UJ
Lead	400	52	400	19	12	6	87	95	17	3	721	12	5	73	13	14	322	29	7
Selenium	39		390	1.7 U	1.6 U	1.9 U	9.2 U	9.2 U	1.7 U	1.6 U	8.8 U	1.8 U	1.7 U	1.5 U	1.7 U	1.7 U	25.5 J	1.6 U	1.7 U

Metal (mg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2021)	Background Threshold Value	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2021)	JTP-12						JTP-13					JTP-14					JTP-15			
				dark brown gravelly loam/fill	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown clay	reddish brown clay	reddish brown clay	dark gray loam/fill	dark gray gravelly loam/fill	reddish brown clay with sand and gravel	reddish brown clay with sand and gravel	reddish brown clay with sand and gravel	dark gray sandy loam/fill	dark brown gravelly loam/fill	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown clay	dark brown loam/fill	dark gray loam/fill	dark gray gravelly loam/fill	reddish brown gravelly clay
				0-1	0-1 FD	1-2	2-3	3-4	4	0-1	1-2	2-3	3-4	4	0-1	1-2	1-2 FD	2-3	3-4	0-1	1-2	2-3	3
Silver	39		390	0.9 U	0.82 U	0.18 U	0.18 U	0.21 U	0.21 U	0.9 U	0.93 U	0.17 U	0.16 U	0.19 U	0.85 U	0.91 U	0.86 U	0.19 U	0.19 U	0.92 U	0.95 U	0.87 U	0.18 U
Arsenic	0.68	8	35	8.1 J	7 J	4	2 J	8	8	8.2 J	7.9 J	3	3	5	15	15	8.9 J	4	3	5.9 J	11	14	3
Barium	1,500	364	15,000	72	55	46	33	163	149	74	49	26	39	51	77	89	56	53	39	62	159	110	51
Cadmium	7.1	1	71	0.92 J	0.82 U	0.19 J	0.18 U	0.21 U	0.21 U	1.1 J	1.2 J	0.17 U	0.16 U	0.19 U	1.9 J	8	1.5 J	0.21 J	0.22 J	0.92 U	2.2 J	2.2 J	0.18 U
Chromium, Total		44		12	13	16	12	49	42	20	12	10	11	19	19	24	18	16	14	17	21	21	18
Mercury	1.1		11	0.097 J	0.086 J	0.07 UJ	0.069 UJ	0.081 UJ	0.085 UJ	0.49	0.21	0.071 U	0.07 U	0.071 U	0.57	0.33	0.38	0.077 U	0.13 J	0.48	4.8	2.8 J	0.072 U
Lead	400	52	400	188	179	40	8	11	11	351	376	8	7	6	767	362	412	69	61	279	1,340	1,300	9
Selenium	39		390	9 U	8.2 U	1.8 U	1.8 U	2.1 U	2.1 U	9 U	9.3 U	1.7 U	1.6 U	1.9 U	8.5 U	9.1 U	8.6 U	1.9 U	1.9 U	9.2 U	9.5 U	8.7 U	1.8 U

> USEPA Residential Direct Contact Regional Screening Level (May 2021)

> USEPA Residential Direct Contact Regional Screening Level (May 2021) and Background Threshold Value

> USEPA Residential Regional Removal Management Level (May 2021)

U: Not detected at the specified detection limit

J: Estimated value

Table 2. Kaukauna Parcel J Soil PAH Concentrations (ALS 2021)

PAH (µg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2021)	Milwaukee Undisturbed Soils 95% UCL (Siemering and Thiboldeaux 2020)	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2021)	JTP-1				JTP-2			JTP-3			JTP-4				JTP-5			JTP-6		
				light brown loam/fill	light brown loam/fill	light brown loam/fill	reddish brown clay with gravel	dark brown loam/fill	reddish brown clay/loam	reddish brown clay	light brown gravelly loam/fill	Black granular fill/coal	reddish brown gravelly clay	light brown gravelly loam/fill	light brown gravelly loam/fill	light brown sand and gravel	reddish brown gravelly clay	light brown gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	light brown gravelly loam/fill	light brown sand and gravel	reddish brown gravelly clay
				0-1	1-2	2-3	3-4	0-1	1-2	2-3	0-1	1-2	2-3	0-1	0-1 FD	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3
Acenaphthene	360,000	102	3,600,000	18.1 U	31.2 J	18.7 U	19.3 U	142	18.7 U	17.5 U	37.5 J	73 J	20 U	2,870	199	42 J	20 U	92.5 J	18.8 U	21 U	472	17.6 U	686
Acenaphthylene		70		18.1 U	69.3 J	18.7 U	19.3 U	438	18.7 U	17.5 U	18.6 U	19.8 U	20 U	651	697	177	20 U	156	18.8 U	21 U	395	22.8 J	404
Anthracene	1,800,000	321	18,000,000	18.1 U	151	44.3 J	19.3 U	945	22.1 J	17.5 U	251	328	20 U	4,060	1,300	282	20 U	361	18.8 U	21 U	1,350	37.1 J	2,920
Benzo(a)anthracene	1,100	1,860	110,000	21 J	761	135	38.8 J	3,410	88.7 J	17.5 U	303	877	20 U	13,300	4,510	990	20 U	1,230	21 J	21 U	2,300	116	4,480
Benzo(a)pyrene	110	2,060	11,000	38.2 J	747	133	48.5 J	3,020	69.2 J	17.5 U	310	587	20 U	11,800	5,000	1,110	20 U	1,300	24.4 J	21 U	2,420	142	3,770
Benzo(b)fluoranthene	1,100	2,860	110,000	25.6 J	570	229	71.3 J	4,420	150	17.5 U	377	1,150	20 U	6,840	4,320	787	20 U	1,000	20.4 J	21 U	1,910	112	2,940
Benzo(g,h,i)perylene		1,440		52.6 J	415	205	65.7 J	2,090	93.3 J	17.5 U	521	1,190	22.5 J	4,890	2,900	650	20 U	795	20.8 J	21 U	1,350	91.8 J	1,720
Benzo(k)fluoranthene	11,000	1,340	1,100,000	23.3 J	586	187	29.1 J	2,300	58.1 J	17.5 U	258	434	20 U	6,170	3,670	974	20 U	1,040	24.8 J	21 U	1,790	118	2,870
Chrysene	110,000	2,360	11,000,000	39.2 J	935	211	29.5 J	5,180	274	17.5 U	542	2,260	20 U	14,600	4,440	954	20 U	1,230	24.7 J	21 U	2,260	119	4,050
Dibenz(a,h)anthracene	110	411	11,000	18.1 U	103 J	42.8 J	19.3 U	720	27 J	17.5 U	65 J	340	20 U	1,300	714	148	20 U	188	18.8 U	21 U	320	26 J	537
Fluorene	240,000	98.2	2,400,000	18.1 U	39 J	18.7 U	19.3 U	234	18.7 U	17.5 U	33.9 J	120	20 U	2,810	385	74.5 J	20 U	128	18.8 U	21 U	672	17.6 U	2,580
Fluoranthene	240,000	4,220	2,400,000	29.2 J	1,240	225	57.9 J	5,450	83.5 J	17.5 U	548	381	22.6 J	25,300	11,300	2,200 J	25.2 J	2,490	35.2 J	29.5 J	6,310	235	12,200
Indeno(1,2,3-c,d)pyrene	1,100	1,270	110,000	26.3 J	387	172	55.9 J	2,050	44.8 J	17.5 U	275	779	20 U	4,580	3,030	662	20 U	805	19.7 J	21 U	1,450	97 J	1,940
Naphthalene	2,000	173	130,000	18.1 U	69.4 J	63.7 J	53.6 J	463	45.5 J	17.5 U	104 J	622	20 U	1,060	250	81.4 J	20 U	98.9 J	18.8 U	21 U	336	85.4 J	384
Phenanthrene		1,650		23.2 J	794	219	108 J	4,620	211	17.5 U	461	2,110	21.6 J	36,600	5,010	1,020	20 U	1,550	19.8 J	21 U	6,190	181	15,200
Pyrene	180,000	3,590	1,800,000	50.2 J	1,720	245	67.2 J	5,130	105 J	17.5 U	590	645	22.7 J	32,800	10,700	1,980 J	24.5 J	2,500	38.5 J	26 J	5,040	213	8,270

PAH (µg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2021)	Milwaukee Undisturbed Soils 95% UCL (Siemering and Thiboldeaux 2020)	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2021)	JTP-7			JTP-8				JTP-9			JTP-10			JTP-11		
				light brown gravelly loam/fill	light brown sand and gravel	reddish brown clay	dark gray gravelly loam/fill	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown gravelly clay	dark gray gravelly loam/fill	reddish brown gravelly clay	reddish brown clay
				0-1	1-2	2-3	0-1	0-1 FD	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3	0-1	1-2	2-3
Acenaphthene	360,000	102	3,600,000	17.6 U	17.5 U	19.2 U	18.8 U	18.3 U	17.9 U	18 U	17.9 U	18.8 U	18.3 U	17 U	19.3 U	19 U	18.4 U	17.5 U	18.3 U
Acenaphthylene		70		17.6 U	17.5 U	19.2 U	18.8 U	18.3 U	17.9 U	18 U	228	18.8 U	18.3 U	17 U	19.3 U	19 U	61.1 J	17.5 U	18.3 U
Anthracene	1,800,000	321	18,000,000	17.6 U	17.5 U	19.2 U	46.6 J	33.6 J	17.9 U	18 U	116	18.8 U	18.3 U	35.6 J	19.3 U	19 U	150	17.5 U	18.3 U
Benzo(a)anthracene	1,100	1,860	110,000	25.2 J	17.5 U	19.2 U	130	113	17.9 U	18 U	648	18.8 U	18.3 U	324	21 J	19 U	330	22.4 J	18.3 U
Benzo(a)pyrene	110	2,060	11,000	28.2 J	17.5 U	19.2 U	177	119	17.9 U	18 U	746	19.6 J	18.3 U	468	30 J	19 U	381	17.5 U	18.3 U
Benzo(b)fluoranthene	1,100	2,860	110,000	29.8 J	17.5 U	19.2 U	180	117	17.9 U	18 U	734	18.8 U	18.3 U	548	32.3 J	19 U	503	24.6 J	18.3 U
Benzo(g,h,i)perylene		1,440		24.2 J	17.5 U	19.2 U	166	117	17.9 U	18 U	538	18.8 U	18.3 U	399	23.7 J	19 U	394	27.2 J	18.3 U
Benzo(k)fluoranthene	11,000	1,340	1,100,000	24.9 J	17.5 U	19.2 U	139	86.1 J	17.9 U	18 U	704	18.8 U	18.3 U	433	20.3 J	19 U	384	24.7 J	18.3 U
Chrysene	110,000	2,360	11,000,000	33 J	17.5 U	19.2 U	160	135	17.9 U	18 U	885	18.8 U	18.3 U	485	28.9 J	19 U	714	28.8 J	18.3 U
Dibenz(a,h)anthracene	110	411	11,000	17.6 U	17.5 U	19.2 U	32.8 J	18.3 U	17.9 U	18 U	129	18.8 U	18.3 U	86.1 J	19.3 U	19 U	80.6 J	17.5 U	18.3 U
Fluorene	240,000	98.2	2,400,000	17.6 U	17.5 U	19.2 U	18.8 U	18.3 U	17.9 U	18 U	17.9 U	18.8 U	18.3 U	17 U	19.3 U	19 U	18.4 U	17.5 U	18.3 U
Fluoranthene	240,000	4,220	2,400,000	43.9 J	17.5 U	19.2 U	221	204	17.9 U	18 U	1,310	20.2 J	18.3 U	784	40.2 J	19 U	671	36.7 J	18.3 U
Indeno(1,2,3-c,d)pyrene	1,100	1,270	110,000	22.6 J	17.5 U	19.2 U	146	94.1 J	17.9 U	18 U	529	18.8 U	18.3 U	393	19.3 U	19 U	308	17.5 U	18.3 U
Naphthalene	2,000	173	130,000	18 J	17.5 U	19.2 U	108 J	138	17.9 U	18 U	147	18.8 U	18.3 U	76.3 J	19.3 U	19 U	306	24.5 J	18.3 U
Phenanthrene		1,650		32.7 J	17.5 U	24 J	502	449	17.9 U	18 U	891	18.8 U	18.3 U	363	27.3 J	19 U	695	42.5 J	18.3 U
Pyrene	180,000	3,590	1,800,000	41.3 J	17.5 U	19.2 U	255	226	17.9 U	18 U	1,220	20.1 J	18.3 U	629	34.1 J	19 U	681	36.7 J	18.3 U

PAH (µg/kg)	USEPA Residential Direct Contact Regional Screening Levels (TR=1E-06; THQ=0.1) (May 2021)	Milwaukee Undisturbed Soils 95% UCL (Siemering and Thiboldeaux 2020)	USEPA Residential Direct Contact Regional Removal Management Levels (TR=1E-04; THQ=1) (May 2021)	JTP-12						JTP-13					JTP-14					JTP-15			
				dark brown gravelly loam/fill	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown clay	reddish brown clay	reddish brown clay	dark gray loam/fill	dark gray gravelly loam/fill	reddish brown clay with sand and gravel	reddish brown clay with sand and gravel	reddish brown clay with sand and gravel	dark gray sandy loam/fill	dark brown gravelly loam/fill	dark brown gravelly loam/fill	reddish brown gravelly clay	reddish brown clay	dark brown loam/fill	dark gray loam/fill	dark gray gravelly loam fill	reddish brown gravelly clay
				0-1	0-1 FD	1-2	2-3	3-4	4	0-1	1-2	2-3	3-4	4	0-1	1-2	1-2 FD	2-3	3-4	0-1	1-2	2-3	3
Acenaphthene	360,000	102	3,600,000	18.4 U	18.4 U	18.5 U	19.2 U	22.4 U	22.5 U	59.7 J	84.3 J	18.5 U	18.6 U	19.5 U	18.5 U	18.3 U	19.1 U	19.6 U	20 U	19.9 U	34.3 J	18.4 U	19.1 U
Acenaphthylene		70		18.4 U	18.4 U	18.5 U	19.2 U	22.4 U	22.5 U	54.2 J	44.6 J	18.5 U	18.6 U	19.5 U	18.5 U	18.3 U	19.1 U	19.6 U	20 U	19.9 U	19.6 U	18.4 U	19.1 U
Anthracene	1,800,000	321	18,000,000	40.8 J	51.4 J	18.5 U	19.2 U	22.4 U	22.5 U	226	301	18.5 U	18.6 U	19.5 U	84.5 J	26.2 J	24.2 J	19.6 U	20 U	36 J	139	130	19.1 U
Benzo(a)anthracene	1,100	1,860	110,000	193	185	30.8 J	19.2 U	22.4 U	22.5 U	620	610	18.5 U	18.6 U	19.5 U	394	142	118	39.6 J	39.3 J	157	473	488	19.1 U
Benzo(a)pyrene	110	2,060	11,000	211	219	65.8 J	19.2 U	22.4 U	22.5 U	679	627	18.5 U	18.6 U	19.5 U	524	188	151	56.6 J	46.1 J	192	536	536	19.1 U
Benzo(b)fluoranthene	1,100	2,860	110,000	208	182	32 J	19.2 U	22.4 U	22.5 U	514	448	18.5 U	18.6 U	19.5 U	469	152	137	40.8 J	39.4 J	164	417	443	19.1 U
Benzo(g,h,i)perylene		1,440		132	129	37.8 J	19.2 U	22.4 U	22.5 U	358	338	18.5 U	18.6 U	19.5 U	351	117	94.2 J	34.4 J	28 J	106 J	334	319	19.1 U
Benzo(k)fluoranthene	11,000	1,340	1,100,000	144	144	50 J	19.2 U	22.4 U	22.5 U	533	494	18.5 U	18.6 U	19.5 U	360	147	114	48.4 J	28.6 J	141	390	429	19.1 U
Chrysene	110,000	2,360	11,000,000	230	225	55.4 J	19.2 U	22.4 U	22.5 U	729	671	18.5 U	18.6 U	19.5 U	502	153	179	44.5 J	40.6 J	180	559	531	19.1 U
Dibenz(a,h)anthracene	110	411	11,000	30.9 J	38.9 J	18.5 U	19.2 U	22.4 U	22.5 U	96.4 J	85.2 J	18.5 U	18.6 U	19.5 U	105 J	29.6 J	24.6 J	19.6 U	20 U	24.6 J	84.3 J	80.6 J	19.1 U
Fluorene	240,000	98.2	2,400,000	18.4 U	19.7 J	18.5 U	19.2 U	22.4 U	22.5 U	61 J	102 J	18.5 U	18.6 U	19.5 U	26 J	18.3 U	19.1 U	19.6 U	20 U	19.9 U	35.8 J	29.2 J	19.1 U
Fluoranthene	240,000	4,220	2,400,000	407	383	97.1 J	19.2 U	22.4 U	22.5 U	1,270	1,430	18.5 U	18.6 U	19.5 U	612	248	185	76.3 J	60.9 J	301	912	984	19.1 U
Indeno(1,2,3-c,d)pyrene	1,100	1,270	110,000	135	135	40.7 J	19.2 U	22.4 U	22.5 U	364	346	18.5 U	18.6 U	19.5 U	331	107 J	90.9 J	35.1 J	33.2 J	111 J	358	345	19.1 U
Naphthalene	2,000	173	130,000	136	149	28.5 J	19.2 U	22.4 U	22.5 U	250	207	18.5 U	18.6 U	19.5 U	464	79.9 J	111 J	40.1 J	76.3 J	72 J	273	281	19.1 U
Phenanthrene		1,650		312	436	50.9 J	19.2 U	22.4 U	22.5 U	1,120	1,440	18.5 U	18.6 U	19.5 U	822	191	217	81 J	77.5 J	206	856	737	19.1 U
Pyrene	180,000	3,590	1,800,000	370	339	85.7 J	19.2 U	22.4 U	22.5 U	1,160	1,240	18.5 U	18.6 U	19.5 U	560	219	182	67.7 J	56.6 J	262	852	872	19.1 U

> USEPA Residential Direct Contact Regional Screening Level (May 2021)
> USEPA Residential Direct Contact Regional Screening Level (May 2021) and Milwaukee undisturbed soil 95% UCL
> USEPA Residential Regional Removal Management Level (May 2021)

U: Not detected at the specified detection limit
J: Estimated value

Table 3. Kaukauna Parcel J Soil PCB Concentrations (ALS 2021)

PCB arcolor (mg/kg)	JTP-10	JTP-14	JTP-3
	reddish brown gravely clay	reddish brown gravely clay	light brown gravelly loam/fill
	1-2	2-3	0-1
PCB-1016	0.011 U	0.012 U	0.011 U
PCB-1221	0.011 U	0.012 U	0.011 U
PCB-1232	0.011 U	0.012 U	0.011 U
PCB-1242	0.011 U	0.012 U	0.011 U
PCB-1248	0.011 U	0.012 U	0.011 U
PCB-1254	0.011 U	0.012 U	0.011 U
PCB-1260	0.011 U	0.012 U	0.011 U

U: Not detected at the specified detection limit

Table 4. Kaukauna Parcel J Soil TCLP Metal Concentrations (ALS 2021)

Metal (mg/L)	Sample ID									Regulatory Level (mg/L)
	JTP 1 1-2	JTP 1 2-3	JTP 14 0-1	JTP 14 1-2	JTP 15 1-2	JTP 15 2-3	JTP 2 0-1	JTP 3 0-1	JTP 9 0-1	
Silver	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	0.0063 U	5.0
Arsenic	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	5.0
Barium	0.46	0.53	0.37	0.39	0.92	0.7	0.65	0.4	0.34	100.0
Cadmium	0.008 J	0.006 J	0.007 J	0.0055 J	0.011	0.01	0.027	0.01	0.0065 J	1.0
Chromium, Total	0.009 U	0.009 U	0.009 U	0.009 U	0.015 J	0.009 U	0.009 U	0.009 U	0.009 U	5.0
Mercury	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.00016 UJ	0.2
Lead	0.29	0.24	0.2	0.076	0.67	0.2	0.29	0.05	0.16	5.0
Selenium	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	1.0

U: Not detected at the specified detection limit

J: Estimated value

Appendix A

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-1**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**16:30**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	
LOGGER:	**A Lenox**	**EASTING:**	offset 10 feet to north
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Light brown gravelly loam/fill, dry, loose	JTP-1 0-1
2	Light brown gravelly loam/fill with pieces of coal, dry, loose	JTP-1 1-2
3	Light brown gravelly loam/fill with pices of coal, dry, loose	JTP-1 2-3
4	Reddish brown clay with gravel, dry, firm	JTP-1 3-4
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-2**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**16:15**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Dark brown loam/fill, dry, loose	JTP-2 0-1
2	Reddish brown clay loam, dry, firm	JTP-2 1-2
3	Reddish brown clay, dry, firm	JTP-2 2-3
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-3**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**16:00**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Light brown gravelly loam/fill, dry, loose	JTP-3 0-1
2	Black granular fill, coal pieces, dry, loose	JTP-3 1-2
3	Reddish brown gravelly clay, dry, firm	JTP-3 2-3
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-4**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**15:45**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Light brown gravelly loam/fill, dry, loose	JTP-4 0-1
2	Ligh brown sand and gravel, dry, loose	JTP-4 1-2
3	Reddish brown gravelly clay, dry, firm	JTP-4 2-3
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-5**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**15:30**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Light brown gravelly loam/fill, dry, loose	JTP-5 0-1
2	Reddish brown gravelly clay, dry, firm	JTP-5 1-2
3	Reddish brown gravelly clay, dry, firm	JTP-5 2-3
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-6**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**15:15**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Light brown gravelly loam/fill, dry, loose	JTP-6 0-1
2	Ligh brown sand and gravel, dry, loose	JTP-6 1-2
3	Reddish brown gravelly clay, dry, firm	JTP-6 2-3
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-7**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**15:15**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Light brown gravelly loam/fill, dry, loose	JTP-7 0-1
2	Light brown gravel with sand, dry, loose	JTP-7 1-2
3	Reddish brown clay, dry, firm	JTP-7 2-3
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-8**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**14:45**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	10.5 offset South
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Dark gray gravelly loam/fill, dry, loose	JTP-8 0-1
2	Reddish brown gravelly clay, dry, firm	JTP-8 1-2
3	Reddish brown gravelly clay, dry, firm	JTP-8 2-3
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-9**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**14:30**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Dark gray gravelly loam/fill, dry, loose	JTP-9 0-1
2	Reddish brown gravelly clay, dry, firm	JTP-9 1-2
3	Reddish brown gravelly clay, dry, firm	JTP-9 2-3
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-10**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**14:15**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	6.5' offset to south
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Dark brown gravelly loam/fill, dry, loose	JTP-10 0-1
2	Reddish brown gravelly clay, dry, firm	JTP-10 1-2
3	Reddish brown gravelly clay, dry, firm	JTP-10 2-3
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-11**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**14:00**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Dark gray loam/fill, dry, loose	JTP-11 0-1
2	Reddish brown gravelly clay, dry, firm	JTP-11 1-2
3	Reddish brown clay, dry, firm	JTP-11 2-3
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-12**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**13:37**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	4' offset south
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Dark brown gravelly loam/fill, dry, loose	JTP-12 0-1
2	Reddish brown gravelly clay, dry, firm	JTP-12 1-2
3	Reddish brown clay, dry, firm	JTP-12 2-3
4	Reddish brown clay, dry, firm	JTP-12 3-4
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Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-13**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**13:00**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Drak gray loam/fill, dry, loose	JTP-13 0-1
2	Dark gray gravelly loam/fill, dry, loose	JTP-13 1-2
3	Reddish brown clay with sand and gravel, dry, firm	JTP-13 2-3
4	Reddish brown clay with sand and gravel, dry, firm	JTP-13 3-4
5		
6		
7		
8		
9		
10		
11		

Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-14**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**12:30**
EQUIPMENT:	**Auger**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	11' offset south
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Dark gray sandy loam/fill, dry, loose	JTP-14 0-1
2	Dark brown gravelly loam/fill, dry, loose	JTP-14 1-2
3	Reddish brown gravelly clay, dry, firm	JTP-14 2-3
4	Reddish brown clay, dry, firm	JTP-14 3-4
5		
6		
7		
8		
9		
10		
11		

Remarks:

USACE - Buffalo District		**SOIL TEST PIT LOG**	
PROJECT:	**Kaukauna WI Parcel J**	**STATION ID:**	**JTP-15**
PROJECT NUMBER:		**SHEET:**	of
CLIENT:	**USACE LRC**	**DATE:**	**5/25/2021**
BORING CONTRACTOR:	**USACE LRC**	**START TIME:**	**10:00**
EQUIPMENT:	**Wacker Neuson EZ 28 Mini Excavator**	**END TIME:**	
DRILLER:	**C. Sowers**	**NORTHING:**	
LOGGER:	**A Lenox**	**EASTING:**	
		WATER DEPTH:	

DEPTH (FT)	SOIL DESCRIPTION (TYPE, PARTICLE SIZE, COLOR, MOISTURE, CONSISTENCY, OBSERVATION, ETC.)	COMMENTS (SAMPLE ID, QA/QC, ETC.)
1	Dark brown loam/fill, dry, loose	JTP-15 0-1
2	Dark gray loam/fill, dry, loose	JTP-15 1-2
3	Dark gray gravelly loam/fill, dry, firm	JTP-15 2-3
4	Refusal at 3' over reddish brown gravely clay	JTP-15 3
5		
6		
7		
8		
9		
10		
11		

Remarks:

From: Coval, Anna L CIV USARMY CELRC (USA)
To: Dailide, Ashley M CIV USARMY CELRC (USA); Johnson, Ryan A CIV USARMY CELRC (USA)
Cc: Hoxsie, Alex R CIV USARMY CELRC (USA)
Subject: RE: [Non-DoD Source] SHPO Review: 25-0128/OU - Kaukauna Parcel J- Lead Remediation Project
Date: Monday, February 10, 2025 3:55:12 PM

Hi Ashley,

Thank you for updating me. I believe that Ryan is doing the coordination for Parcel J. I added him to the email.

Thanks Again,
Anna Coval

312-846-5396

From: Dailide, Ashley M CIV USARMY CELRC (USA) <Ashley.M.Dailide@usace.army.mil>
Sent: Monday, February 10, 2025 3:51 PM
To: Coval, Anna L CIV USARMY CELRC (USA) <Anna.L.Coval@usace.army.mil>
Cc: Hoxsie, Alex R CIV USARMY CELRC (USA) <Alex.R.Hoxsie@usace.army.mil>
Subject: FW: [Non-DoD Source] SHPO Review: 25-0128/OU - Kaukauna Parcel J- Lead Remediation Project

Hi Anna,

Here's the SHPO concurrence for the Parcel J project. Do you know who was doing the NEPA for this? I want to make sure everyone gets what they need for compliance.

Thanks,
Ashley

From: tyler.howe@wisconsinhistory.org <tyler.howe@wisconsinhistory.org>
Sent: Monday, February 10, 2025 3:39 PM
To: Dailide, Ashley M CIV USARMY CELRC (USA) <Ashley.M.Dailide@usace.army.mil>
Subject: [Non-DoD Source] SHPO Review: 25-0128/OU - Kaukauna Parcel J- Lead Remediation Project

Good afternoon, Ms. Dailide:

We have completed our review of WHS #25-0128, Kaukauna Parcel J- Lead Remediation project and concur with your determination no historic properties eligible for, or included on, the National Register of Historic Preservation (NRHP) were encountered within the project's Area of Potential Effect (APE). Therefore, it is the opinion of the WI SHPO the proposed federal undertaking will have No Effect on historic properties.

It is the opinion of the WI SHPO you have fulfilled your section 106 of the National Historic Preservation Act (NHPA) consultation requirements with our office. If your plans change or cultural materials/human remains are found during the project, please halt all work and contact our office.

Please use this email as your official SHPO concurrence for NHPA requirements of the project. If you require a hard copy signed form, please contact me and I will provide you a signed copy as soon as possible.

Sincerely,

Tyler Howe

Tyler B. Howe, PhD
Compliance Section Manager
State Historic Preservation Office

Wisconsin Historical Society
816 State Street, Madison, WI 53706

tyler.howe@wisconsinhistory.org

Wisconsin Historical Society
Collecting, Preserving, and Sharing Stories Since 1846

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
Phone: (952) 858-0793

In Reply Refer To: 07/03/2024 16:27:18 UTC
Project code: 2024-0108708
Project Name: Kaukauna Parcel J Lead (Pb) Remediation

Subject: Consistency letter for 'Kaukauna Parcel J Lead (Pb) Remediation' for specified threatened and endangered species that may occur in your proposed project location consistent with the Minnesota-Wisconsin Endangered Species Determination Key (Minnesota-Wisconsin DKey).

Dear Ryan Johnson:

The U.S. Fish and Wildlife Service (Service) received on **July 03, 2024** your effect determination(s) for the 'Kaukauna Parcel J Lead (Pb) Remediation' (Action) using the Minnesota-Wisconsin DKey within the Information for Planning and Consultation (IPaC) system. You have submitted this key to satisfy requirements under Section 7(a)(2). The Service developed this system in accordance of with the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C 1531 et seq.).

Based on your answers and the assistance of the Service's Minnesota-Wisconsin DKey, you made the following effect determination(s) for the proposed Action:

Species	Listing Status	Determination
Monarch Butterfly (*Danaus plexippus*)	Candidate	No effect
Rusty Patched Bumble Bee (*Bombus affinis*)	Endangered	No effect
Whooping Crane (*Grus americana*)	Experimental Population, Non-Essential	No effect

Determination Information

Thank you for informing the Service of your "No Effect" determination(s). Your agency has met consultation requirements and no further consultation is required for the species you determined will not be affected by the Action.

Additional Information

Sufficient project details: Please provide sufficient project details on your project homepage in IPaC (Define Project, Project Description) to support your conclusions. Failure to disclose important aspects of your project that would influence the outcome of your effects

determinations may negate your determinations and invalidate this letter. If you have site-specific information that leads you to believe a different determination is more appropriate for your project than what the Dkey concludes, you can and should proceed based on the best available information.

Future project changes: The Service recommends that you contact the Minnesota-Wisconsin Ecological Services Field Office or re-evaluate the project in IPaC if: 1) the scope or location of the proposed Action is changed; 2) new information reveals that the action may affect listed species or designated critical habitat in a manner or to an extent not previously considered; 3) the Action is modified in a manner that causes effects to listed species or designated critical habitat; or 4) a new species is listed or critical habitat designated. If any of the above conditions occurs, additional consultation with the Service should take place before project changes are final or resources committed.

Species-specific information

Bald and Golden Eagles: Bald eagles, golden eagles, and their nests are protected under the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended, 16 U.S.C. 668a-d) (Eagle Act). The Eagle Act prohibits, except when authorized by an Eagle Act permit, the "taking" of bald and golden eagles and defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The Eagle Act's implementing regulations define disturb as "… to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

The following species and/or critical habitats may also occur in your project area and **are not** covered by this conclusion:

- Northern Long-eared Bat *Myotis septentrionalis* Endangered

Coordination with the Service is not complete if additional coordination is advised above for any species.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Kaukauna Parcel J Lead (Pb) Remediation

2. Description

The following description was provided for the project 'Kaukauna Parcel J Lead (Pb) Remediation':

> Planning phase - proposed removal and mitigation of contaminated fill.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.2811533,-88.27740578289941,14z

QUALIFICATION INTERVIEW

1. This determination key is intended to assist the user in evaluating the effects of their actions on Federally listed species in Minnesota and Wisconsin. It does not cover other prohibited activities under the Endangered Species Act (e.g., for wildlife: import/export, Interstate or foreign commerce, possession of illegally taken wildlife, etc.; for plants: import/export, reduce to possession, malicious destruction on Federal lands, commercial sale, etc.) or other statutes. Additionally, this key DOES NOT cover wind development, purposeful take (e.g., for research or surveys), communication towers that have guy wires or are over 450 feet in height, aerial or other large-scale application of any chemical (such as insecticide or herbicide), and approval of long-term permits or plans (e.g., FERC licenses, HCP's).

   Click **YES** to acknowledge that you must consider other prohibitions of the ESA or other statutes outside of this determination key.

   Yes
2. Is the action being funded, authorized, or carried out by a Federal agency?

   Yes
3. Are you the Federal agency or designated non-federal representative?

   Yes
4. Does the action involve the installation or operation of wind turbines?

   No
5. Does the action involve purposeful take of a listed animal?

   No
6. Does the action involve a new communications tower?

   No
7. Does the activity involve aerial or other large-scale application of ANY chemical, including pesticides (insecticide, herbicide, fungicide, rodenticide, etc)?

   No
8. Will your action permanently affect local hydrology?

   No
9. Will your action temporarily affect local hydrology?

   No
10. Will your project have any direct impacts to a stream or river (e.g., Horizontal Directional Drilling (HDD), hydrostatic testing, stream/road crossings, new stormwater outfall discharge, dams, other in-stream work, etc.)?

    No

11. Does your project have the potential to impact the riparian zone or indirectly impact a stream/river (e.g., cut and fill; horizontal directional drilling; construction; vegetation removal; pesticide or fertilizer application; discharge; runoff of sediment or pollutants; increase in erosion, etc.)?

    Note: Consider all potential effects of the action, including those that may happen later in time and outside and downstream of the immediate area involved in the action.

    Endangered Species Act regulation defines "effects of the action" to include all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (50 CFR 402.02).

    Yes

12. Will your action disturb the ground or existing vegetation?

    Note: This includes any off-road vehicle access, soil compaction (enough to collapse a rodent burrow), digging, seismic survey, directional drilling, heavy equipment, grading, trenching, placement of fill, pesticide application (herbicide, fungicide), vegetation management (including removal or maintenance using equipment or prescribed fire), cultivation, development, etc.

    Yes

13. Will your action include spraying insecticides?

    No

14. Does your action area occur entirely within an already developed area?

    Note: Already developed areas are already paved, covered by existing structures, manicured lawns, industrial sites, or cultivated cropland, AND do not contain trees that could be roosting habitat. Be aware that listed species may occur in areas with natural, or semi-natural, vegetation immediately adjacent to existing utilities (e.g. roadways, railways) or within utility rights-of-way such as overhead transmission line corridors, and can utilize suitable trees, bridges, or culverts for roosting even in urban dominated landscapes (so these are not considered "already developed areas" for the purposes of this question). If unsure, select NO..

    Yes

15. Does the action have potential indirect effects to listed species or the habitats they depend on (e.g., water discharge into adjacent habitat or waterbody, changes in groundwater elevation, introduction of an exotic plant species)?

    No

16. [Hidden Semantic] Does the action area intersect the monarch butterfly species list area?

    Automatically answered

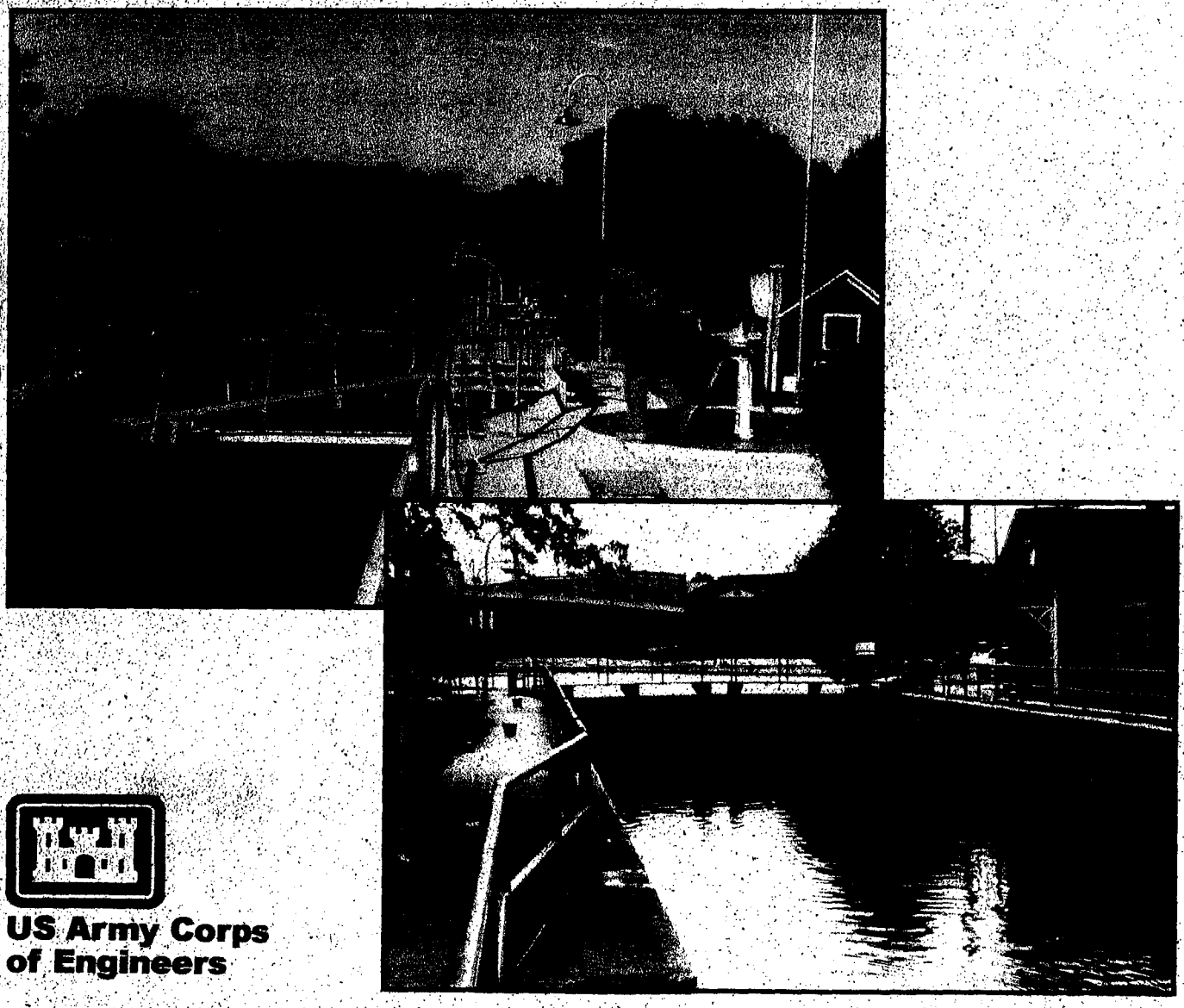
    Yes

IPAC USER CONTACT INFORMATION

Agency:	Army Corps of Engineers
Name:	Ryan Johnson
Address:	231 South LaSalle Street
Address Line 2:	Suite 1500
City:	Chicago
State:	IL
Zip:	60604
Email	ryan.a.johnson@usace.army.mil
Phone:	3127182856

Appendix D

Memorandum Of Agreement Between The Department Of The Army And The State Of Wisconsin For The Transfer Of Locks and Appurtenant Features Of The Federal Fox River Project, Wisconsin



US Army Corps of Engineers

MEMORANDUM OF AGREEMENT BETWEEN THE DEPARTMENT OF THE ARMY AND THE STATE OF WISCONSIN FOR THE TRANSFER OF LOCKS AND APPURTENANT FEATURES OF THE FEDERAL FOX RIVER PROJECT, WISCONSIN

This Memorandum of Agreement (MOA) is entered into this 11th day of September, 2000, by and between the Department of the Army (hereinafter "the Government") represented by the Assistant Secretary of the Army (Civil Works), and the State of Wisconsin, (hereinafter "the State"), represented by the Governor and the Secretary, Department of Natural Resources.

WITNESSETH, THAT:

WHEREAS, Section 332 of the Water Resource Development Act of 1992, Public Law 102-580, authorizes the Government to transfer to the State the locks and appurtenant features of the navigation portion of the Fox River System, Wisconsin, extending from Green Bay, Wisconsin to Lake Winnebago, Wisconsin, subject to the execution of an agreement that specifies the terms and conditions of the transfer;

WHEREAS, the Government desires to transfer, and the State desires to accept, the locks and appurtenant features of the navigation portion of the Fox River System, Wisconsin described in Section 332 of the Water Resources Development Act of 1992, Public Law 102-580;

WHEREAS, the Government and the State have reached agreement on the following terms and conditions for such transfer as hereinafter set forth; and

WHEREAS, the Government and the State have the full authority and capability to perform as hereinafter set forth in accordance with the terms of this MOA.

NOW, THEREFORE, the Government and the State agree as follows:

ARTICLE I. GENERAL PROVISIONS

A. Subject to the terms of this MOA, the Government agrees to transfer, and the State agrees to accept, by quitclaim deed, the real property (land, locks and appurtenant features) substantially identified in Exhibit A (attached).

B. Subject to the availability of funds and based on the Environmental Baseline Studies to be completed pursuant to paragraph C.2. of this Article, the Government agrees to complete any necessary remediation action required by the Comprehensive Environmental Response,

Compensation and Liability Act (CERCLA) and to provide the applicable warranties and covenants required by section 120(h) of CERCLA.

C. The parties agree that the transfer of the real property covered by this MOA is subject to the following:

1. Completion of historical and cultural resources investigations by the Detroit District of the U.S. Army Corps of Engineers (District);
2. Completion of Environmental Baseline Studies by the District, in accordance with American Society for Testing and Materials Standard D 600-8-96;
3. Compliance with environmental laws and regulations, including the National Environmental Policy Act of 1969, as amended; and
4. Compliance with all other applicable laws and regulations.

D. Subject to receiving funds appropriated by the Congress, the Government agrees to provide to the State, at the time of transfer, a lump-sum payment equal to the cost to place the real property that is transferred in a long-term inoperable condition (hereinafter "full closure cost"). The parties agree that this lump-sum payment shall be $9,932,000, adjusted by the District for changes in the Engineer News Record construction cost index between November 1999 and the most recent date for which the index value is available at the time of the payment.

E. Subject to receiving funds appropriated by the Congress, and as further provided in this paragraph, the Government agrees to provide to the State, on or after the date of transfer, payment(s) in a total amount of up to 50 percent of the economically justified increment of the repair and rehabilitation cost above the full closure cost. Not more than once a year, for up to ten years after the date of transfer, the State will certify as to the amount of additional non-Federal funds not less than $100,000 that it has available for obligation, since any previous certification, for the repair and rehabilitation of the real property transferred pursuant to this MOA. As soon thereafter as practicable, the Government agrees to provide to the State an amount equal to that certified amount. The parties agree that the total payment(s) provided by the Government pursuant to this paragraph shall not exceed $5,505,900, adjusted by the District for changes in the Engineer News Record cost index between November 1999 and the most recent date for which the index is available at the time of the payment(s), except that the parties further agree that the total payment(s) shall be reduced by 50 percent of any repair and rehabilitation costs incurred by the Government, as determined by the District, between the dates of execution of this MOA and the transfer of the real property.

F. The State agrees to accept and use funds provided pursuant to Paragraphs D. and E. of this Article for the expeditious repair and rehabilitation of the real property transferred pursuant to this MOA. In addition, the State agrees to use additional funds in an amount not less than those funds provided by the Government pursuant to Paragraph E. of this Article for the expeditious repair and rehabilitation of the real property transferred pursuant to this MOA.

G. The Government agrees to transfer, and the State agrees to accept, the personal property (lock parts) listed in Exhibit B (attached) at the time of the transfer of the real property covered by Paragraph A. of this Article.

H. Subject to the availability of funds, the Government and the State shall conduct, during the Government's annual dam safety inspection, a joint inspection of the locks to be transferred for the purpose of identifying those features in need of immediate maintenance to prevent further deterioration of the locks. Subject to the availability of funds and prior to the transfer of the real property, the Government may, in its sole discretion, perform maintenance on the locks.

I. The State will be responsible for operation, maintenance, repair, replacement and rehabilitation of the transferred real property after the date of the transfer. All such work by the State shall be performed in accordance with all applicable State and Federal laws and regulations, including, but not limited to, the National Historic Preservation Act.

J. The State agrees to maintain the Rapide Croche Lock as a sea lamprey barrier.

K. The Government agrees to forward all original or copies of records, plans, photos and other documents in its possession, which relate to the history or maintenance of the real property, to the State within two years of the transfer of the locks.

L. Following the date of transfer, operation and maintenance of all Federal features of the Fox River System, Wisconsin, other than the real property transferred, shall continue to be a Federal responsibility.

ARTICLE II. OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, or any resident commissioner shall be admitted to any share or part of this MOA, or to any benefit that may arise therefrom.

ARTICLE III. AMENDMENT AND TERMINATION

A. This MOA may be amended by written agreement of both parties.

B. Either party may terminate this MOA prior to the transfer of any funds and/or property interest by written notice.

IN WITNESS HEREOF, the parties thereto have executed this MOA which shall become effective upon the date it is signed by the Government.

DEPARTMENT OF THE ARMY

Joseph W. Westphal
Assistant Secretary of the Army
(Civil Works)

Date: September 11, 2000

STATE OF WISCONSIN

Tommy G. Thompson
Governor
State of Wisconsin

Date: September 11, 2000

George E. Meyer
Secretary, Department of Natural Resources
State of Wisconsin

Date: Sept. 11, 2000

NOTE:

FOR REPORT VOLUME PURPOSES, EXHIBIT "A" (DRAWINGS) FOR THE MOA ARE NOT ATTACHED.

EXHIBIT "B" OF THE *REPORT AND RECOMMEDATION OF EXCESS* CONTAINS THE UPDATED DRAWINGS DELINEATING THE PROPERTY BEING TRANSFRRED TO THE STATE OF WISCONSIN.

Lock Parts Inventory

	Part	Pieces
1.	Turnbuckles for Gate Hold	21
2.	Large Stem Gears for Bottom of Locks – 14"	35
3.	Gate Lifting Pins – For Lifting Steel Gates	4
4.	Large Gears for Valve Stem Bottom – 19"	6
5.	Spar Rollers	24
6.	Valve Stem Gears Top – 5" – Round	13
7.	Turnbuckles for Gate Strap	6
8.	Top gate Valve Arm Gear with Notch – 10"	11
9.	Horizontal Spar Rollers	8
10.	Valve Stem Collars	6
11.	Tripod Spar Gears, Vertical	8
12.	Valve Bearing Box Covers	5
13.	Top Valve Opening Gears – 7"	10
14.	Top Valve Opening Gears – 8-1/2"	3
15.	Top Valve Opening Gears – 17"	1
16.	Lower valve Paddle End Gear with Hub – 10"	6
17.	Spar Flat Notched Plate – 24" Long	17
18.	Valve Opening Arm Flat Notched Plate – 25-1/2"	10
19.	Valve Opening Arm Flat Notched Plate – 20"	3
20.	Lock Gate Timber Casting – 22" x 12" x 4-1/2"	3
21.	Gate Valve Arm Hold Down Slide Pins	8
22.	Gate Pin Shoe Holder Bottom	1
23.	Lock Gate Hold Down Arms – 2 Pieces per Set (Some Unthreaded)	26
24.	Boat Spikes (100# Kegs)	13
25.	Wood Gate Valve Bolts with Valves	6
26.	Valve Opening Handles for Lower Valves	17
27.	Round Wheels for Upper Opening Valves – 25-1/2"	4
28.	Large Winches for Steel Lock Gates – 5" Jaw	2
29.	Wall Boxes for Valve Stems	36
30.	Under Wood Gate Shoe Pin	3
31.	Tripod Legs	24
32.	Upper Valve Gear and Shaft Hold Down Plates	9
33.	Tripod Leg Assembly Plates	4
34.	Gate Turn Back Strap - ¾" x 4" Random Lengths	15
35.	4" x 4" T-Iron – 12'	2
36.	Spars	9
37.	Tripod Gear Stem Assembly	7
38.	Tripod Base	8
39.	Spar Bracket for Wood Gate	1
40.	Bottom Wood Gate Casting	1
41.	Valve Upper Gear on Gear – 17"	8
42.	Valve Operations Stem – 1-1/4" x 40"	4
43.	Wood Gate Top Threaded Yoke	1
44.	Top Cove Plates for Upper Casting	3