Environmental Assessment

City of Plattsmouth Water Supply System

FEMA-4420-DR-NE

Cass and Sarpy Counties, Nebraska

April 2021

U.S. Department of Homeland Security
Federal Emergency Management Agency, Region VII
11224 Holmes Road
Kansas City, MO 64131

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List of Commonly Used Acronyms and Abbreviations

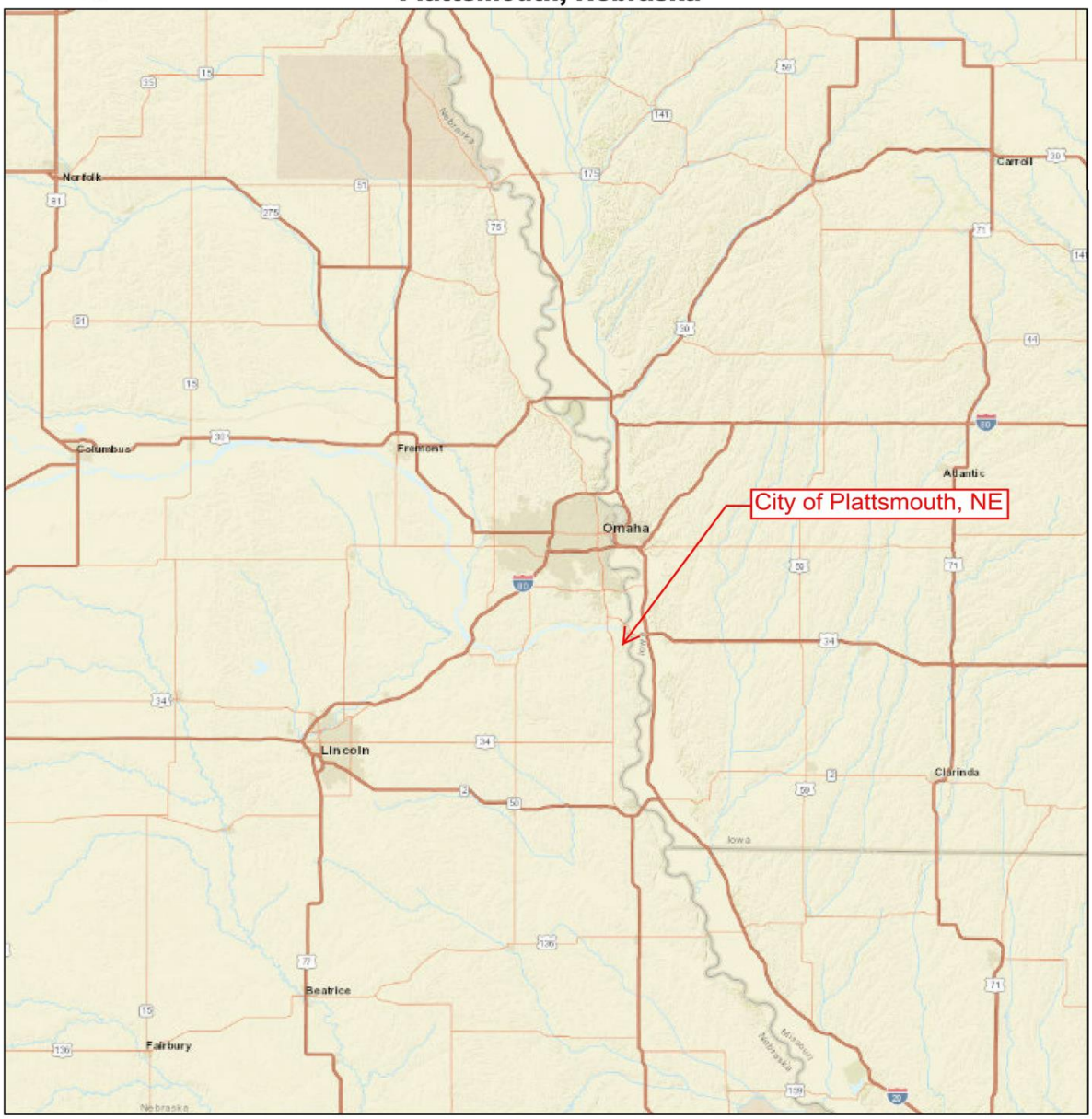
BMPS Best Management Practices
CAA Clean Air Act
CBRA Coastal Barrier Resources Act
CEQ Council on Environmental Quality
CFR Code of Federal Regulations
CWA Clean Water Act
CZMA Coastal Zone Management Act
DHS Department of Homeland Security
EA Environmental Assessment
EHP Environmental and Historic Preservation
EIS Environmental Impact Statement
EJ EO12898 Environmental Justice
E.O. Executive Order
ESA Endangered Species Act
FEMA Federal Emergency Management Agency
FMA Flood Mitigation Assistance
FPPA Farmland Protection Policy Act
FWCA Fish and Wildlife Coordination Act
MBTA Migratory Bird Treaty Act
NDEE Nebraska Department of Environment and Energy
NDHHS Nebraska Department of Health and Human Services
NGPC Nebraska Game and Parks Commission
NEPA National Environmental Policy Act
NHPA National Historic Preservation Act
PA Proposed Action
PAP Public Assistance Program
ROW – Right-of-Way
RTWL – Raw Water Transmission Line
SHPO State Historic Preservation Office
SWCS - Sewage and Wastewater Conveyance System
USFWS - United States Fish and Wildlife Service
WSRA Wild and Scenic Rivers Act
WSS – Water Supply System
WTP – Water Treatment Plant
WWTP – Wastewater Treatment Plant

1.0 INTRODUCTION

1.1 Introduction to the Proposed Action:

The City of Plattsmouth, located in Cass County, Nebraska (Figure 1), has applied through the Federal Emergency Management Agency (FEMA), an agency of the U.S. Department of Homeland Security (DHS), Public Assistance Program (PAP) Section 428 Alternate Project Grant Program for funding assistance under the Presidentially Declared Disaster 4420D to relocate or modify the potable Water Supply System (WSS) that serves the City of Plattsmouth. The City has also applied to the Nebraska Department of Environment and Energy (NDEE) for financial assistance under the Clean Water State Revolving Fund (CWSRF) to assist with funding a portion of this relocation project. For the purposes of this document the WSS includes a water treatment plant (WTP) and attendant features such as chemical storage tanks, maintenance shop, backwater lagoon, parking and office. The WSS also includes water wells, and raw and/or potable watermains.

Figure 1
General Location Map
Water Supply Relocation Project
Plattsmouth, Nebraska



January 21, 2021

DISCLAIMER: This map is not intended for conveyances, nor is it a legal survey. The information is presented on a best-efforts basis, and should not be relied upon for making financial, survey, legal or other commitments.

1:1,722,854

0 75,000 150,000 300,000 ft

0 23,500 47,000 94,000 m

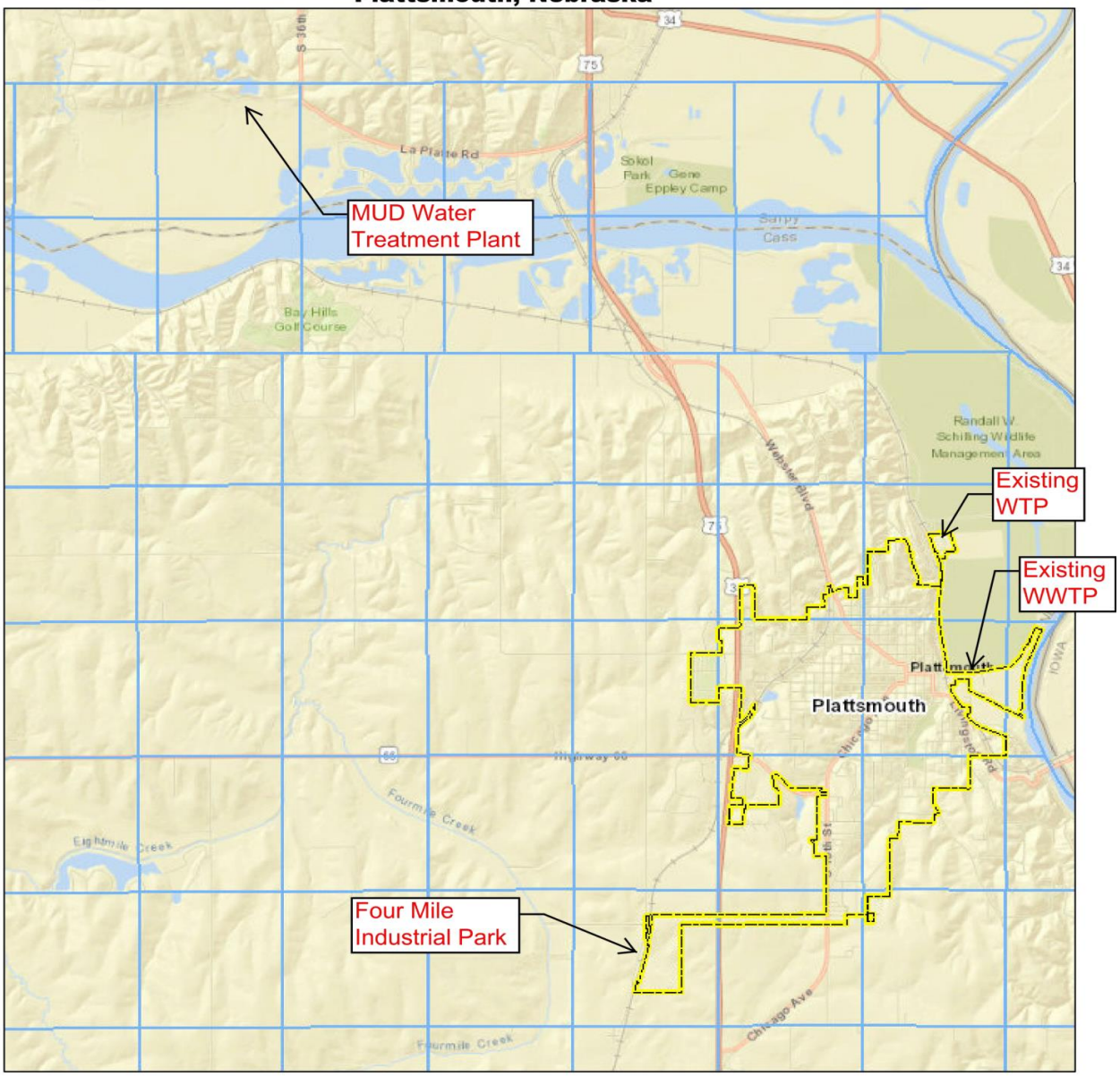
N

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Cass County gWorks

The existing WSS was inundated with contaminants and debris caused by major flooding of the Platte and Missouri Rivers in the Spring of 2019 (Flood Event 4420DR). During this flood event, waters overtopped the Water Treatment Plant (WTP) access road and entered the WTP causing severe damage to main treatment and process equipment, as well as other structures on the site. In addition, the high flood waters and ice caused major damage to all five of the City's water supply wells and wellhouses. Access to the WTP and wellfield was restricted for several months with more than four feet of water covering the access road. The WTP and wells were non-operational as a result of the flood event for a period of five months.

Figure 2
Existing Water and Waste Water Infrastructure
Water Supply Relocation Project
Plattsmouth, Nebraska



January 21, 2021

DISCLAIMER: This map is not intended for conveyances, nor is it a legal survey. The information is presented on a best-efforts basis, and should not be relied upon for making financial, survey, legal or other commitments.

Legend

City Limits

Sections

N

1:82,963

0 3,750 7,500 15,000 ft

0 1,125 2,250 4,500 m

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Cass County gWorks

The existing WTP was constructed in 1972, above the 100-year floodplain of that time, without any means for flood protection. The location of the existing WTP is 41.025736, -95.882761 (SE¼ NE¼ S26 T3N R13E). Over the past 48 years, the flood levels experienced at the site have significantly increased. Forty-three of the top forty-four historic crests on the Missouri River at Plattsmouth have occurred since the facility went into operation; and twenty-three of those river crests have exceeded the Missouri River Flood Stage (NWS Advanced Hydrologic Prediction Services, Missouri River at Plattsmouth). The WTP is operating at a diminished capacity and the costs of repairs far exceed the long-term costs and benefits of relocating the WTP outside of the floodplain.

The WSS is proposed to be modified to include the ability to receive drinking water from the Metropolitan Utility District (MUD) and dispense water to the City's existing water distribution system (Figure 3). The MUD water treatment plant is located along 36th Street in southern Sarpy County, Nebraska, 41.071329, -95.972490 (sec 29, township 13N, range 13E). The proposed project, also referred to as the Proposed Action in this document, would involve the construction of approximately 7.5 miles of new watermain to provide potable water to the City of Plattsmouth. A detailed project description is provided in section 3:2.

The City of Plattsmouth has population of approximately 6,000 individuals, consisting of predominantly middle-class English-speaking households, with pockets of lower income and minority households throughout. Plattsmouth is located at the north eastern region of Cass County in southeastern Nebraska. The City is located at the confluence of the Platte and Missouri Rivers, approximately 15 miles south of the City of Omaha and approximately 23 miles north of Nebraska City.

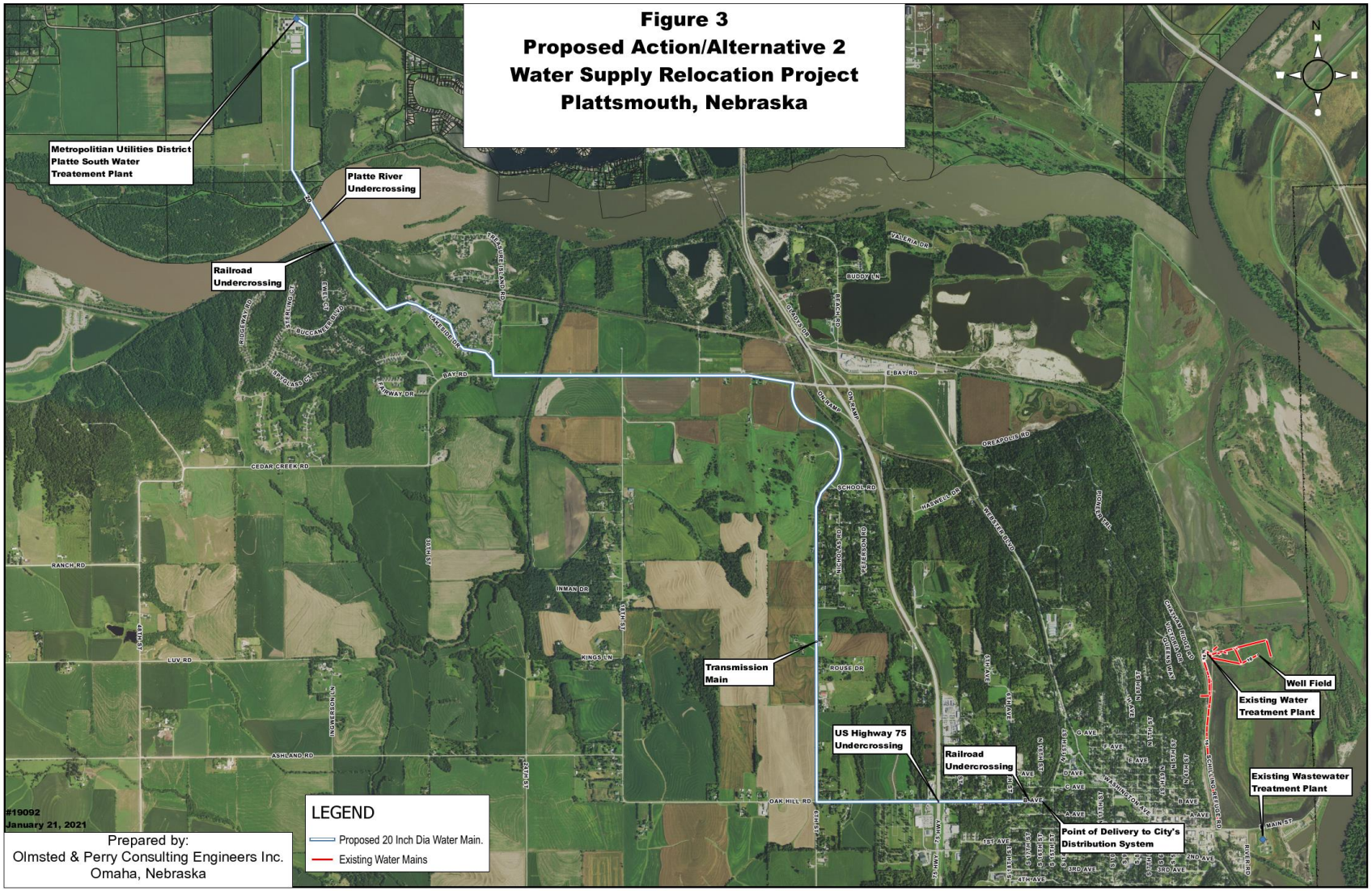


Figure 3
Proposed Action/Alternative 2
Water Supply Relocation Project
Plattsmouth, Nebraska
Metropolitan Utilities District Platte South Water Treatement Plant
Platte River Undercrossing
Railroad Undercrossing
Transmission Main
US Highway 75 Undercrossing
Railroad Undercrossing
Point of Delivery to City's Distribution System
Existing Wastewater Treatment Plant
Existing Water Treatment Plant
Well Field
N
LEGEND
Proposed 20 Inch Dia Water Main.
Existing Water Mains
#19092
January 21, 2021
Prepared by:
Olmsted & Perry Consulting Engineers Inc.
Omaha, Nebraska

1.2 Federal Decision to be Made

FEMA is the federal decision-maker concerning this Proposed Action and controls the federal funds that would be used for its implementation, this is a federal Proposed Action. The purpose of this EA is to inform decision-makers of the potential environmental effects of the Proposed Action (PA) and its considered alternatives, prior to making a federal decision to move forward with any alternative. In this manner, federal decision-makers can make a fully informed decision, aware of the potential environmental effects of their Proposed Action. Overall, the purpose of this EA is to:

- Document the NEPA process;
- Inform decision-makers of the possible environmental effects of the Proposed Action and its considered alternatives, as well as methods to reduce these effects;
- Allow for regulatory agency and tribal input into the decision-making process; and
- Allow for informed decision-making by the federal government.

This decision-making includes identifying the actions that the City of Plattsmouth as recipient of FEMA funding will commit to undertake to minimize environmental effects, as required under the NEPA, CEQ Regulations, and FEMA Directive 108-1 and instructions 108-1-1 for Environmental Planning and Historic Preservation.

The decision to be made is whether, having taken potential physical, environmental, cultural, and socioeconomic effects into account, FEMA will implement the Proposed Action and, as appropriate, fund mitigation measures to reduce effects on resources. Based upon the analysis, no potentially significant adverse impacts have been identified. FEMA will ultimately decide if the action is funded and constructed.

1.3 Environmental Decision Document

FEMA as the federal action agency for the Proposed Action, will document their decision in a Finding of No Significant Impact (FONSI), if appropriate. FEMA will carefully consider comments received from the consulting agencies, tribes, and the public. In accordance with FEMA Directive 108 and FEMA Instruction 108-1-1, this EA is being prepared pursuant to Section 102 of the National Environmental Policy Act (NEPA) of 1969 as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ) 40 Code of Federal Regulations (CFR) Parts 1500-1508, and FEMA's regulations implementing NEPA (44 CFR Part 10). The purpose of this EA is to analyze the potential environmental impacts of the Plattsmouth Water Supply System Relocation project. FEMA will use the findings in this EA to determine whether to prepare and Environmental Impact Statement (EIS) or FONSI for the project.

2.0 PURPOSE AND NEED

2.1 Purpose

The DHS has identified that safe drinking water is a prerequisite for protecting health and all human activity; and that properly treated water is vital for preventing disease and protecting the environment. Ensuring a consistent and continuous public drinking water supply is essential to modern life and the Nation's economy. Disruption of a drinking water supply service can cause loss of life, economic impacts, and severe public health issues, as well as environmental impacts. The DHS considers public water supply systems as Critical Infrastructure which are integral to daily life.

The U.S. Environmental Protection Agency (EPA) and the Nebraska Department of Health and Human Services set standards for safe drinking water and regulate the treatment and distribution of potable water through community water supply systems. Properly working water supply systems are important to protecting the health and safety of residents, and to insure the economic vitality and public confidence in the Nation's drinking water. The EPA has several programs to ensure that water treatment plants and their supply systems are operating in a manner that protects the heath of those who use it and the environment. Many of these programs have been delegated to the States with oversight by the EPA, as is the case in Nebraska.

The purpose of the Proposed Action is to relocate or modify the existing WSS serving the City of Plattsmouth to eliminate the environmental and public health risks caused by floodwaters which render the existing water treatment plant incapable of operating properly and contaminating the five public water supply wells. FEMA considers the relocation of this WSS a critical action, as does the EPA, NDEE, and Nebraska Department of Health and Human Services (NDHHS). The WSS is located in the floodplain of the Missouri River south of the point where the Platte River enters the Missouri River. The WSS has been subject to repetitive damages from flooding and is at risk from future natural disasters and flooding. The most recent damages occurred from flood waters of March 2019 when the Missouri River overtopped all five municipal wellhouses and inundated the Water Treatment Plant rendering the WSS inoperable for several months. Disruption of a WSS can cause loss of life, as well as economic and environmental impacts, and can have severe public health consequences.

2.2 Need

The frequency of flooding on the Missouri and Platte Rivers is not expected to change. The increase in impervious surface due to suburban sprawl in the watershed has resulted in a significant increase in stormwater runoff; which when combined with increasing intensity of storms, leave the WSS at risk of future flooding from natural disasters. The WSS location within the floodplain is no longer sustainable. Each time the WTP is flooded, the public drinking water supply is compromised from the exposure to contaminants. In addition, the wells are frequently

damaged from debris and ice and are inaccessible for repairs, unless by boat or highwater vehicles. The overall WSS for the City needs to be modified to eliminate the risk of flooding and associated health and environmental hazards.

Current estimates show that repairs of the Plattsmouth WSS from the 4420DR flood disaster exceed 50% of the cost of replacement. Currently the plant is operating under diminished capacity with two of the five wells currently in service. To date, the costs associated with previous flooding have placed a financial and health related burden (repeated disruptions of service and boil water advisories) on the community for decades. This, along with the estimated costs of repairs associated with the 4420DR, makes continuing to operate the WWS at this location not financially feasible.

Properly treated potable water is vital for preventing disease, protecting the environment and sustaining the economic viability of communities. A safe and reliable drinking water supply is a prerequisite for protecting public health and all human activity, including industrial and manufacturing processes that sustain our economy.

Through the Public Assistance Section 428 Alternate Project Grant Program, managed by FEMA, the City of Plattsmouth has an opportunity to relocate the Plattsmouth WSS out of the floodplain. The Proposed Action would minimize flood risk to this critical piece of public infrastructure and minimize the associated public health and environmental risks. This action would strengthen the resiliency of the public infrastructure of a small community within the larger Missouri River Valley region and facilitate a critical move towards preventing public health and safety concerns, protecting the natural and human environment, and supporting our nation's economic vitality. The action would also assist the community in meeting its responsibilities under the Safe Drinking Water Act and other regulations that protect the quality of life in our communities and our environment.

3.0 ALTERNATIVES

This chapter has five parts: No Action Alternative, Proposed Action which includes a detailed project description, alternatives considered, screening criteria, and identification of alternatives eliminated from further consideration.

3.1 Alternative 1- No Action Alternative

Under the No Action Alternative, the Plattsmouth WSS would not be relocated. The existing WTP and wells would be repaired in place and would continue to be susceptible to risks of flooding and the pollutant loading. This critical piece of infrastructure would be susceptible to reoccurring flood damages and operational insufficiencies, leaving the public at risk of disease. Public health and safety concerns would reoccur after flood events, as would the water quality and general environmental concerns resulting from the flooding of the WSS. The public drinking water supply

in this community would not be reliable if left at its current location. The purpose of the project to prevent public health and safety concerns, protect the natural and human environment, and eliminate flood risks to critical public infrastructure would not be met by this alternative.

Even though the no action alternative would not meet the purpose and need of the project, this alternative was retained to provide a comparative baseline, against which to analyze the effects of the Proposed Action, as required under Council on Environmental Quality (CEQ) Regulations (40 CFR Part 1502.14).

3.2 Alternative 2 - *Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

The Proposed Action involves the abandonment of the existing WTP and associated wells, and construction of a new watermain to transport potable water from a water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth (Figure 3). MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth as well as their existing customers.

The work associated with this project involves the construction of approximately 7.5 miles of 20-inch diameter potable watermain from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road in, Sarpy County, NE (41.071329, -95.972490). The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County, Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter watermain begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the watermain would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2,000 feet by jack and bore technologies. The watermain construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches Buccaneer Boulevard to the south. The watermain will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The watermain will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the watermain would involve a 70-foot-wide work ROW throughout the route, in addition to staging areas. The majority of the watermain ROW is located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for the majority of the work. However, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction.

The estimated cost for construction of this alternative using local unit costs from recent project and adjusted costs from cost guides such as RS Mean is estimated at $27,059,692 dollars. The Proposed Action would meet the purpose and need of the project by relocating the public water supply out of the floodplain of the Missouri river. The existing WTP and the municipal wells would be closed and secured in place.

Dismantling and demolition of the existing infrastructure is not being considered as part of this project. The city will be undertaking this work under separate action. The city will install security fencing to keep the public away from this infrastructure until it is fully dismantled, and the site reclaimed.

This alternative meets the purpose and need of the project by providing a reliable, sustainable, and safe drinking water supply to Plattsmouth and eliminating the health and environmental hazards associated with flooding of a critical piece of community infrastructure. Consideration of the impacts associated with this alternative are reviewed and considered in this EA document.

3.3 Alternative 3 - Relocation of the Plattsmouth Water Treatment Plant (WTP) and Wellhead Protections

Alternative 3 involves the construction of a 3.04 million gallon per day (MGPD) lime softening WTP at a city-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River (41.025031, -95.816630) will remain in place. However, wellhead protection measures will be constructed to limit the risks of flood damages. Figure 4 shows the overall review area for this alternative and Figure 5 provides a site plan for the new WTP at the Fourmile Industrial Park. Additional details are provided in Appendix A of this document.

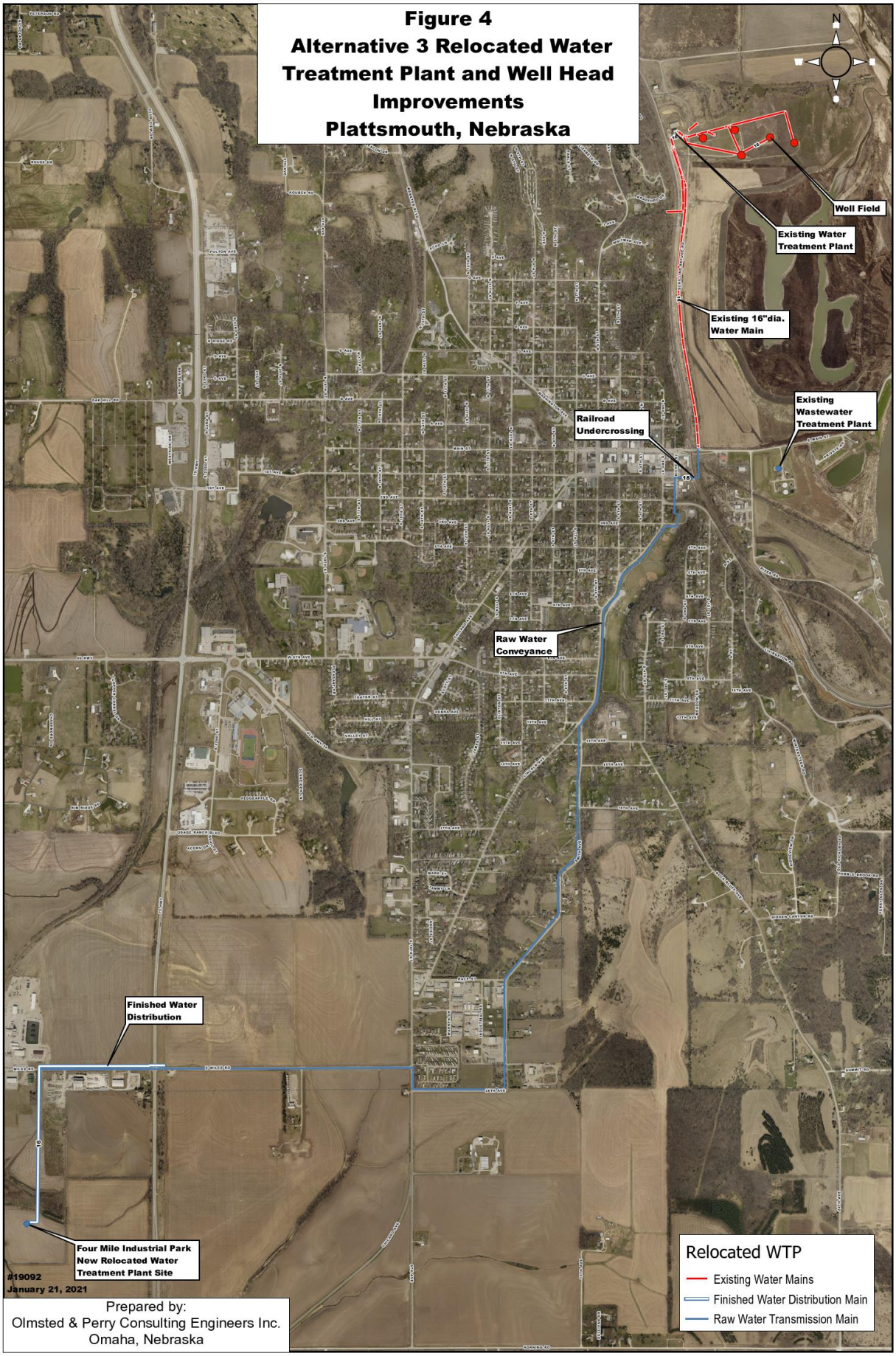
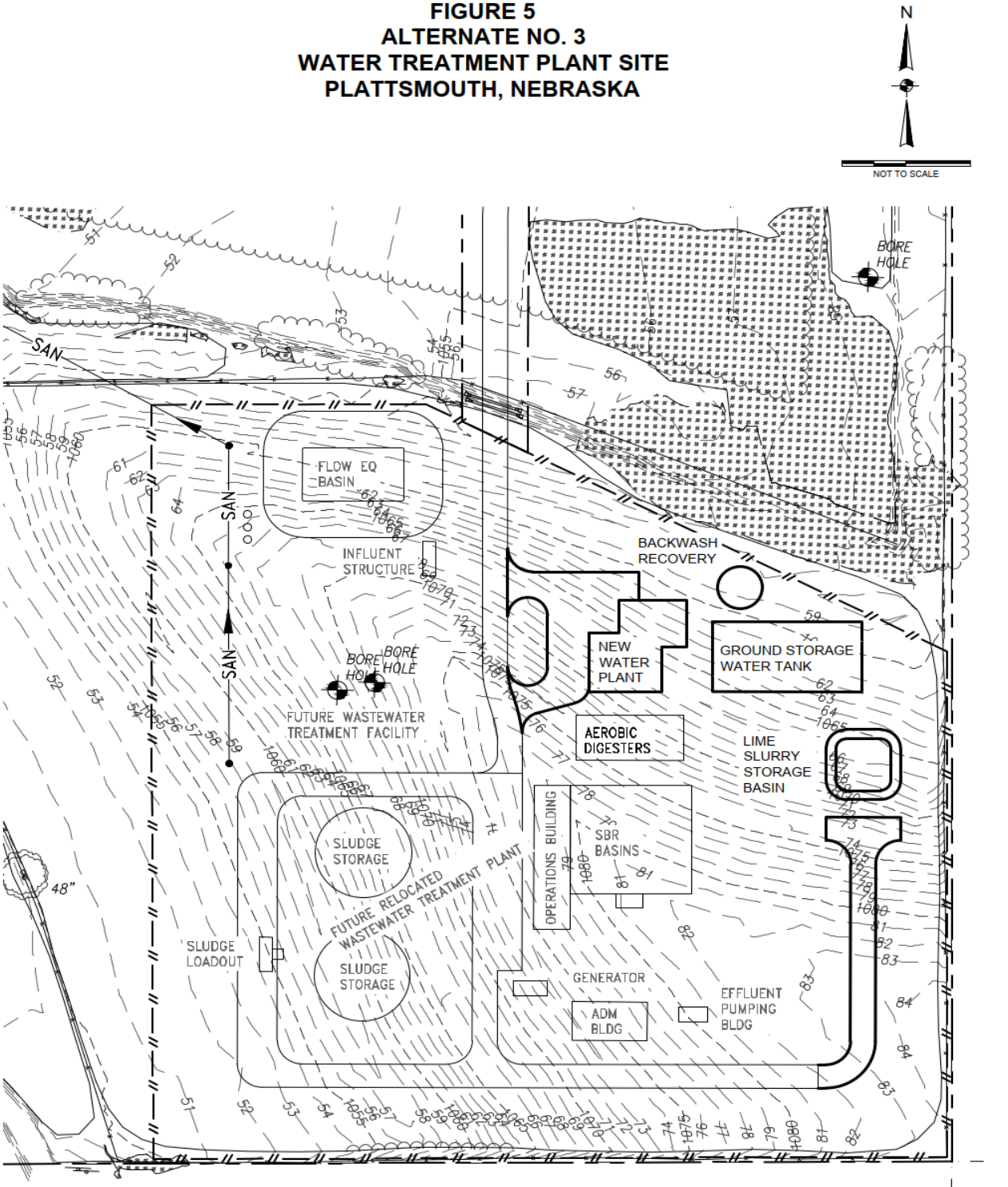


Figure 4
Alternative 3 Relocated Water Treatment Plant and Well Head Improvements
Plattsmouth, Nebraska
N
Well Field
Existing Water Treatment Plant
Existing 16"dia. Water Main
Existing Wastewater Treatment Plant
Railroad Undercrossing
Raw Water Conveyance
Finished Water Distribution
Four Mile Industrial Park New Relocated Water Treatment Plant Site
#19092
January 21, 2021
Prepared by:
Olmsted & Perry Consulting Engineers Inc.
Omaha, Nebraska
Relocated WTP
Existing Water Mains
Finished Water Distribution Main
Raw Water Transmission Main

FIGURE 5
ALTERNATE NO. 3
WATER TREATMENT PLANT SITE
PLATTSMOUTH, NEBRASKA



#19092-01
JANUARY 31, 2021

The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clearwell, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filter back wash tank, and lime sludge storage pond and associated control structures. The new plant would occupy approximately four acres of land.

All treatment processes will be designed to the latest requirements associated with the 10 recommended state standards for Standard for Water Works and NDHHS, as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The existing WTP would be abandoned under this alternative. Dismantling and demolition of facility is not being considered as part of this project. The city will be undertaking this work under a sperate action. The city will install security fencing to keep the public away from this facility until it is fully dismantled, and the site reclaimed.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away.

To bring raw water to the new water treatment facility, approximately four miles of 16-inch diameter raw water transmission line (RWTL) will be constructed along existing road ROW throughout the City. This could disturb a maximum of 18 acres of soil. However, the majority of this work would occur within existing roadbed or utility ROW. The existing 16-inch diameter watermain along Schilling Road will be used as part of the RWTL system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The RWTL would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main Street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street. The RWTL will cross the City-owned lot and the railroad tracks to the south; then cross Livingston Street to the north end of Rylander Park. The RWTL will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with S. Chicago Avenue where the line will follow S. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant is would be constructed.

The RWTL ROW is also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

The City's five existing wells will continue to be utilized as the source of raw water for this alternative. To protect the wells from future flood damage, the existing well house structures will be removed, and new pre-fabricated buildings placed on 12'x12' steel raised platforms will be constructed to a height of 14-16' above ground surface. Each well casing will be extended two feet above the 500-year flood elevation. This modification is shown in Figure 6 below and would bring the wells into compliance with the Standards for Water Works and FEMA implementing regulations associated with Executive Order (EO) 11988, Floodplain Management. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house and isolate the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to with 5 feet of the new platform height. Approximately 14,000 SF of area would be graded for each of the five wells, 1.6 acres total. The proposed work could displace a maximum of 13 acre-feet of water during a major flood event. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

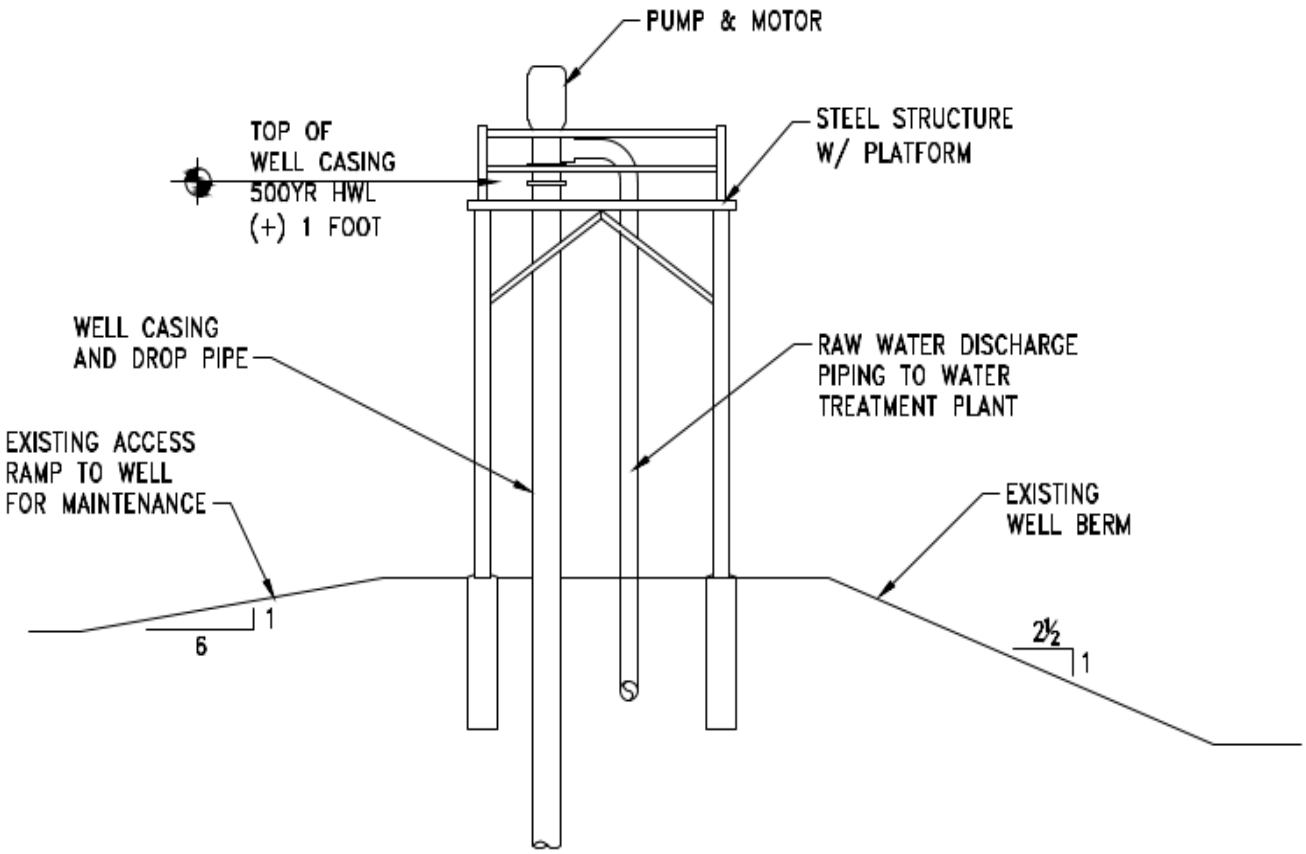


FIGURE 6

TYPICAL ELEVATED WELL PLATFORM STRUCTURE
NO SCALE

It is estimated that the construction costs for Alternative 3, including the construction of a new water treatment facility, installation of the RWTL and potable watermain, as well as changes to the wells total approximately $40,566,971. Long term maintenance was not assessed in this calculation but would be higher given the extent of the water supply and treatment infrastructure that will remain the City's responsibility.

This alternative meets the purpose and need of the project by relocating the WTP out of the floodplain and providing flood protection for each well head. This alternative would also provide

a reliable, sustainable, and safe drinking water supply to Plattsmouth and eliminate the health and environmental hazards associated with flooding. Consideration of the environmental impacts associated with this alternative are reviewed and considered in this EA document.

3.4 Alternatives Considered and Dismissed

The Proposed Action involves the utilizing an existing MUD regional water supply to serve the needs of the City of Plattsmouth. The costs of construction, the costs of repairs and maintenance from flooding of the existing plant and wells, the burdens on the community, and the availability of public land outside of the floodplain for building a water treatment plant were factors in the identification of alternatives. Acquisition of new lands for the project is not financially feasible, nor is it allowed under the grant funding program being applied for due to FEMA obligations under EO 11988 as discussed below. In addition, overall costs, plant operations and maintenance, environmental factors, and community character were considered, as well as the consideration of the overall purpose and need for the project. This section discusses alternatives considered and dismissed.

3.4.1 Screening Criteria

Alternatives were screened based on whether they met the project purpose and needs. The purpose of the Proposed Action is to relocate the existing WSS to a site outside the floodplain to eliminate environmental and public health risks caused by floodwaters rendering the plant incapable of operating properly. An alternate source of potable water for the community is needed.

Other City-owned lands were considered for the proposed project. Position in the landscape and within a community is very important for siting public infrastructure. In addition, public water supply wells need access to an adequate and consistent ground water supply. No other City-owned land outside of the floodplain could accommodate the water treatment plant or the necessary water supply wells beyond the site noted in Alternative 3. Acquisition of new lands for the WSS are not financially feasible for the community.

Alternatives that retain the WTP within the floodplain were dismissed due to FEMA implementing regulations associated with Executive Order (EO) 11988, Floodplain Management, that prohibit FEMA from funding construction in a 100-year floodplain (or 500-year floodplain for critical actions, a status the WTP falls under) unless there are no practicable alternatives. EO 11988 specifically prohibits Federal agencies from funding construction in a 100-year floodplain (or 500-year floodplain for critical actions) unless there are no practicable alternatives. 44 CFR Part 9 provides FEMA implementing regulations to meet these EO 11988 obligations. The City of Plattsmouth, the Applicant, has identified a practicable alternative site they already own (eliminating available real estate issues as a limitation) to construct a replacement WTP, thus prohibiting FEMA from significant Federal investment supporting reconstructing the WTP in its current location in the floodplain.

The WTP can be relocated from its current location to a site outside of the floodplain, but the wells remain at risk of flooding and contamination, with limited access during high water events. The risks and environmental hazards associated with flooding must be fully addressed to protect public health and safety, and to provide for economic stability in this community and the region.

Factors considered in analyzing the alternatives were limited. These factors include: the risk of flooding, availability of publicly owned land that could accommodate a new water treatment plant, as well costs of the alternatives, long term maintenance and environmental factors.

3.4.2 No Action Alternative

The no action alternative is not feasible because the City cannot afford to construct a new plant on its own and they cannot afford to continually repair and/or reconstruct the plant at its current location. Funding of such actions would bankrupt the City of Plattsmouth and place an unreasonable burden on its residents and the citizens of Nebraska. The no action alternative would not address the ongoing environmental risks to the community, the Missouri River, and the citizens that utilize the Missouri River as described below. This action does not meet the purpose and need of the project to relocate the WSS of outside of the floodplain and reduce the risks of flooding that result in operational deficiencies during flood events and the environmental and public health risks associated with operational deficiencies.

3.4.3 Repairing and Reconstructing the WTP

Alternatives involving repairing or reconstruction of the plant at its current location, with and without additional mitigative flood protection measures, were considered and dismissed. Reconstruction of the plant and any temporary flood protection berm surrounding it has been undertaken after numerous flood events in the past. Future flooding can be expected to continue and may be more severe as a result of increases in suburban sprawl in the watershed, along with the increasing intensity of storms. The infrastructure is over 40 years old and reoccurring damages from flooding have left the plant more vulnerable to complete shutdowns from flood events and periods of shutdowns. Regardless of incorporation of additional flood protection measures, alternatives that retain the WTP in the floodplain do not meet the project need of relocating the facility from its current location to a site that is outside of the floodplain to eliminate the risk of flooding and the environmental hazards associated with its present location. These alternatives were dismissed because they do not meet the project need.

Fully repairing the existing WTP, is not a feasible alternative due to the condition of existing infrastructure and ongoing flooding concerns. Almost two years after the 2019 flood event the existing WTP repairs are at approximately 70% completion since the 2019 flood event. The plant was constructed in 1972 without any means for flood protection. This aging facility is nearing its productive life. Reconstruction of the plant has been undertaken after numerous flood events in the past. Future flooding can be expected to continue and is anticipated to become increasingly severe as a result of climate changes.

Reconstructing the WTP at this location was also considered and dismissed as not being practical due to the flooding that can be expected to continue. All new structures would have to be built above the flood record, to comply with Executive Order (EO) 11988, Floodplain Management. Any loss of flood water storage at this location could increase flooding in other areas of the City or downstream communities, while also potentially effecting areas of the nearby Federal Levee Systems along both rivers.

In summary, repair and reconstruction alternatives retain the WTP within the floodplain and therefore do not meet the project purpose and need. These alternatives do not comply with FEMA implementing regulations associated with Executive Order (EO) 11988, Floodplain Management, that prohibit FEMA from funding construction of a critical facility in a 500-year floodplain unless there are no practicable alternatives.

3.4.4 Relocating the Municipal Wells

Relocating the municipal wells was also briefly considered as an alternative to elevation of the existing wells as presented as a component of Alternative 3. The siting of municipal water wells is a difficult undertaking and the construction of new wells would be very costly. The quality of the water obtained from any new wells would be similar to that which the existing wells provide, and a new water treatment plant would still be required. The costs do not support relocating the wells. Therefore, this alternative component was dismissed.

4.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

4.1 Resource Areas Eliminated from Consideration

The following resource areas were considered but eliminated from analysis for the reasons described.

- Magnusson-Stevens Fishery Conservation and Management Act (MSA) – There is no documented Essential Fish Habitat in Nebraska that this law would apply to. A map is available at this site https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper

- Wild and Scenic Rivers Act: - There are no Wild and Scenic Rivers located with the project site or within close proximity to the project area. The nearest components of the National Wild and Scenic River System are The Niobrara River, located approximately 165 miles northwest of the project area and a section of the Missouri River near Vermillion, Nebraska, which is approximately 130 miles north of the project area. Information and mapping of national Wild and Scenic Reivers systems can be found at https://www.rivers.gov/map.php

- Coastal Resources - There are no coastal zones or coastal resources within the project site or within proximity to the project area. The nearest coastal area is approximately 443 miles mile northeast of the project area along the shores of the Lake Michigan near Chicago, Illinois. Information regarding coastal management can be found at https://coast.noaa.gov/.

4.2 Physical Resources

For the purposes of this analysis physical resources include geology, soils, seismicity, air quality, and climate change. No significant impacts to physical resources are expected, as discussed below.

4.2.1 Geology, Soils and Seismicity

Geology

The geology of the region consists of floodplain and stream-channel alluvial deposits adjacent to the Missouri River which overlie Late Pennsylvanian aged limestone, shale, and siltstone of the Shawnee Group. The overlying Quaternary deposits are approximately 200 feet thick. There are no karst features or acid rock concerns is this region.

Soils

The soil types present across the project site are described below in Table 4.2.1. A review of the Natural Resource Conservation Service list of Hydric soils for Cass and Sarpy Counties Nebraska identifies Colo Silt Loam, Nodaway Silt Loam , Zook Silty Clay, Smithland -Kenridge Silty Clay Loam, Hanie Silt Loam, Onawa Silty Clay, Sarpy Loamy Fine Sand and Judson Silt Loam as hydric soils. Colo-Nodaway Complex is located on a portion of the WTP site. Hanie Silt Loam, Sarpy-Haynie complex and Onaway Silty Clay are located in the Wellhead area. The remaining hydric soils are located in low-lying areas along the watermain and RTWL ROWs. The majority of this ROW would involve existing roadbed or road shoulders where soils have previous disturbances. Some of the hydric soils along the ROW will not be significantly disturbed due to use of directly bore technologies near streams and rivers. No other hydric soils are mapped within the project area.

Table 4.2.1. Soil Types

Location	Soil Type	Soil Description	Prime Farmland or Farmland of state or local importance?[1]
Relocated WTP and Watermain ROW	7230 & 7231 – Judson silt loam, 0 to 6 percent slopes	Deep, gently sloping, well-drained soil formed in silty sediment eroded mostly from dark colored soils. Located on foot slopes.	Prime farmland
Watermain ROW	7773 – Colo Nodaway complex, 0 to 2 percent slopes	Deep, nearly level, poorly drained and moderately well drained soils on bottom lands along drainageways in the uplands.	No
Relocated WTP – and Watermain ROW	8020 & 8025 – Marshall silty clay loam, 2 to 11 percent slopes	Deep, gently to strongly sloping, well-drained soil formed in loess on wide ridgetops and upland side slopes.	Prime farmland of statewide importance
Watermain ROW	7770 – Colo silty clay loam, 0 to 2 percent slopes	Deep, nearly level, somewhat poorly drained soil formed in alluvium on bottom lands.	Not prime farmland unless drained
MUD Platte South WTP	8035 – Marshall-Contrary silty clay loam, 2 to 7 percent slopes	Deep, gently sloping, well-drained soil formed in loess on uplands.	Prime farmland
Watermain ROW	8007 - Ida silt loam, 17 to 30 percent slopes	Steep, deep, somewhat excessively drained soil on upland slopes and narrow ridgetops.	No
Watermain ROW	8433 – Cass Wann fine sandy loam, 0 to 1 percent slopes	Deep, nearly level (except for ridges and sides of shallow channels), well-drained soils on bottom lands in the Platte and Elkhorn River Valleys.	Prime farmland
Wellhead Area	7741 – Haynie silt loam, 0 to 2 percent slopes, occasionally flooded	Deep, nearly level, moderately well drained soil on bottom lands along major rivers.	Prime farmland
Wellhead Area and Watermain ROW	7880 – Onawa silty clay, 0 to 2 percent slopes	Deep, nearly level, somewhat poorly drained soil on bottom lands along major rivers.	Not prime farmland unless drained
Watermain ROW	8422 Cass-Novina complex	Deep, nearly level, well drained soils on bottom lands in the Platte and Elkhorn River Valleys.	Prime farmland
Watermain ROW	8071, 8073 & 8079 – Monona silt loam, 6 to 30 percent slopes	Deep, steep, somewhat excessively drained soil formed in loess on upland side slopes.	No
Watermain ROW	6460 – Inglewood Novina complex	Occasionally flooded	No

[1] *USDA-NRCS SDA Prime and other Important Farmlands*

Location	Soil Type	Soil Description	Prime Farmland or Farmland of state or local importance?[1]
Watermain ROW	7750 – Nodaway silt loam	Very Deep, moderately well drained soil formed in alluvium Occasionally Flooded.	No
Wellhead area and Watermain ROW	7087 Sarpy-Haynie complex, 0 to 3 percent slopes	Deep, nearly level and very gently sloping, excessively drained and moderately well drained soils on bottom lands along major rivers.	No
Watermain ROW	8092 Monona-Ida silt loam 11-17 percent slopes	Deep, moderately steep, well-drained soil on upland side slopes and narrow ridgetops.	No
Watermain ROW	7099 Zook silty clay loam, 0 to 2 percent slopes	Deep, nearly level, poorly drained soil on bottom lands, generally back from the stream channel.	Not prime farmland unless drained
Wellhead Area	7087 Sarpy- Hanie complex, 0 to 3 percent slopes	Deep, nearly level and very gently sloping, excessively drained and moderately well drained soils on bottom lands along major rivers.	No
Relocated WTP and Access Road, Outfall at Fourmile Creek and SWCS ROW	7812 – Smithland-Kenridge silty clay loam	Deep, gently sloping, well-drained soil formed in silty - occasionally flooded.	Prime farmland
Watermain ROW	7050 Kennebec silt loam, 0 to 2 percent slopes	Deep, nearly level, moderately well drained soil on bottom lands.	Prime farmland

Seismology

According to the USGS, earthquakes are least common within areas of the central and eastern United States. The most recent chance-of-damage map from the USGS, dated 2018 and developed using the National Seismic Hazard Model, depicts Sarpy County and Cass County as having a less than 4% chance of damaging earthquake shaking in 100 years.

4.2.1.1 Alternative 1 - No Action

Geology, soils, and seismological conditions will not be impacted by the No Action Alternative as no construction activities would occur.

4.2.1.2 Alternative 2 - *Proposed Action ,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

No significant impacts to geology, soils and seismological conditions are expected from the Proposed Action. Bedrock is deep in this area and is not anticipated to be encountered within excavation or trench boring depths that are necessary for the installation of approximately 7.5 miles of new watermain; therefore no impacts to geology are anticipated.

Construction of a 20" diameter transmission main is proposed from the MUD Platte South WTP to the existing 18" diameter watermain on Webster Avenue in Plattsmouth. The total length of the proposed transmission main is approximately 40,650 feet or 7.5 miles (Olmsted & Perry, 2020). This would disturb up to 31 acres of land with slopes ranging from flat to 11%.

Short-term impacts from this alternative could include; loss of a minor amount soil during trench excavation and backfill due to wind and water erosion, during construction of the watermain. Sediment and erosion from stormwater runoff could occur at certain areas along ROW. These impacts could occur for less than 9 months during the construction process and will be mitigated by utilizing proper short-term erosion and sediment controls. The construction activities are not anticipated to have any significant or permanent negative impacts to geological, soil, or seismological conditions.

4.2.1.3 Alternative 3 - Relocation of the WTP and Flood Protection for Existing Wells

No significant impacts to geology, soils and seismological conditions are expected from this alternative. Approximately four acres of land would be disturbed at the purposed WTP site . The soil types at the proposed WTP relocation site have slopes ranging from flat to 11%. There is potential for short-term negative impacts due to erosion from stormwater runoff conditions at the WTP relocation site. These potential negative impacts could occur for less than 9 months during the construction process and will be mitigated by utilizing proper short-term and long- term erosion and sediment controls.

Work associated with the installation of the RWTL and the potable water supply main would occur within existing road ROWs. No permanent impacts to geological, soil, or seismological conditions are anticipated from this work. There is potential for short-term negative impacts due to erosion to approximately 14 acres of land from this alternative. Sediment and erosion from stormwater runoff could occur at certain areas along ROW. However, these will be mitigated by utilizing proper erosion and sediment controls during construction and permanently stabilizing the site.

In addition, 1.5 acres of land would be affected by the proposed wellhead protection work associated within the five municipal wells that currently serve the City of Plattsmouth. Given the small size of the work area associated with this activity, no significant impacts to geology, soils and seismological conditions are expected.

4.2.1.4 Mitigation

Erosion and sediment controls are recommended during construction activities, such as silt fencing or geogrid slope stabilization. The City of Plattsmouth and/or their designated contractors are responsible for obtaining necessary permits for the construction phases, such as grading permits and authorization under National Pollutant Discharge Elimination System (NPDES) Construction Stormwater permits. An erosion and sediment control plan will be developed and implemented to ensure that temporary impacts from construction do not occur during construction

activities. All exposed soils at the sites will be permanently stabilized at the completion of construction to prevent long term soil erosion.

The proposed development of the transmission mains and/or WTP structures will be designed to meet appropriate engineering standards related to erosion control, slope stabilization, sediment control, drainage, and stormwater runoff.

If the Plattsmouth WTP is relocated within the Fourmile Industrial Park (Alternative 3), a long-term stormwater management plan will be developed for the site as part of the final design process to ensure that long term impacts from excess runoff do not occur at the site, in accordance with NDEE regulations.

4.2.2 Prime Farmland

- The Farmland Protection Policy Act (FPPA) is intended to minimize the impact of federally-funded projects on unnecessary and irreversible conversion of farmland to non-agricultural uses. For the purposes of FPPA, "farmland" includes prime farmland, unique farmland, and land of statewide or local importance as categorized by the Natural Resources Conservation Service (NRCS) division of the U.S. Department of Agriculture (USDA). FPPA excludes projects on land already in urban development, used for water storage, and construction within an existing right-of-way purchased on or before August 4, 1984. Areas of prime farmland existing on the WTP site are identified in Table 4.2.1 above.

4.2.2.1 Alternative 1 - No Action:

Farmland, as defined for FPPA, will not be impacted by the No Action Alternative as no construction activities would occur.

4.2.2.2 Alternative 2 - *Proposed Action,* Relocation of the WWTP with a New Outfall at Fourmile Creek:

The primary soil types present at the MUD Platte South WTP are designated as "prime farmland" by the USDA. This location is developed with existing WTP structures and a large wellfield. The area is not currently utilized for farming and has been placed in public service for the water supply series. Since no construction is anticipated within the existing WTP and the land is currently not being used as such, no impact to farmland is anticipated. Approximately 2,100 feet of the proposed watermain ROW, located south of the Platte river is situated within an existing utility corridor that runs adjacent to a private golf course. This area is not currently utilized for farming and the Proposed Action would not preclude it from being used for farming in the future. The remaining length of the 7.5-mile watermain ROW would be located along existing road shoulder or with existing roadbeds.

Due to the extent of urbanization in the Plattsmouth area, the water storage functions of the existing MUD facility and use of primarily existing ROW for the proposed work, the project meets

the FPPA exclusions. FPPA compliance is fulfilled and completion of the FCIR Form AD-1006 or Form NRCS-CPA-106 is not necessary for this action due to the qualifying exemptions.

4.2.2.3 Alternative 3 - WTP Relocation and Well head protection Measures

Approximately three acres of land at the proposed WTP relocation site at the Fourmile Industrial Park has a soil type designated by the USDA as "prime farmland" or "farmland of statewide importance". This area is currently used to grow crops.

A Farmland Conversion Impact Rating was submitted to the NRCS for comment on June 11, 2020, as part of consultation for the relocation of the Plattsmouth Wastewater Treatment Plant project, regarding a larger tract of land, including the entire Fourmile Industrial Park. Mr. Neil Dominy reviewed the submitted information and responded in an email on June 15, 2020, with the following statement: "It has been determined that a Farmland Conversion Impact Rating form (AD-1006) will not be needed on this project since the project site is within the City limits of Plattsmouth, NE. Thus, NRCS has determined that your project was found to be cleared of FPPA significant concerns". A copy of this email correspondence is provided in Appendix F-4a.

Due to the extent of urbanization in the Plattsmouth area and use of primarily existing ROW for the proposed work, the project meets the FPPA exclusions. FPPA compliance is fulfilled and completion of the FCIR Form AD-1006 or Form NRCS-CPA-106 is not necessary for this action due to the qualifying exemptions.

4.2.3 Air Quality

The 1990 Clean Air Act, its amendments, and NEPA require that air quality impacts be addressed in the preparation of environmental documents. The U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for six "criteria" pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2) and lead (Pb), and define the allowable concentrations that may be reached but not exceeded in a given time period to protect human health (primary standard) and welfare (secondary standard) with a reasonable margin of safety.

Primary and secondary standards for NAAQS have been established for most of the criteria pollutants. The EPA is authorized to designate those locations that have not met the NAAQS as non-attainment and to classify these non-attainment areas according to their degree of severity. Attainment pertains to the compliance/violation of any of the NAAQS for the six criteria pollutants mentioned above. Each year, states are required to submit an annual monitoring network plan to EPA. The network plans provide for the creation and maintenance of monitoring stations, in accordance with EPA monitoring requirements specified in 40 CFR Part 58.

No counties in Nebraska are currently listed on the EPA's list of Current Nonattainment Counties for All Criteria Pollutants https://www3.epa.gov/airquality/greenbook/ancl.html, which is current as of August 31, 2020.

4.2.3.1 Alternative 1 - No Action

Air quality will not be impacted by the No Action Alternative as no construction activities would occur.

4.2.3.2 Alternative 2 - *Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

No significant impacts to air quality are expected from the Proposed Action. The MUD has stated that there is adequate capacity to accommodate the Proposed Action and no changes in the currently authorized operation, pumps or capacity are expected at the MUD plant as a result of this action. It is assumed that the existing equipment may need to operate more frequently; however, the emissions associated with this existing equipment will be de-minimus and within the limits of existing air permits. No modifications to the environmental permits currently held by the facility are expected.

Under this alternative, no additional emissions generating equipment associated with the operation of the MUD Platte South WTP is anticipated to be required, no long-term significant impact to air quality is anticipated. The MUD Platte South WTP holds a minor air permit for emissions from its wellfield engines. A construction-related air permit was also issued for the construction of new wellfield engines in 2016. If additional wellfield engines are required to meet increased demand for treated water at some time in the future, the MUD will obtain the required permits and authorization from the NDEE.

The Tier II Report for reporting year 2019, obtained from the NDEE, indicates that the following gaseous compounds are stored at the MUD plant above the reporting threshold: carbon dioxide in stored a cryogenic pressure vessel, and chlorine gas stored in cylinders in the chlorine room of the treatment building. Additional carbon dioxide and chlorine gas may be required to increase treatment efficiency and meet the additional potable water needs of the community. However, the increased storage of these gaseous compounds would not significantly increase air emissions.

The Proposed Action will include short-term construction activities, including soil excavation which may result in dust production. Additionally, operation of construction equipment and personal vehicles would temporarily elevate vehicle emissions of criteria pollutants such as NO_2 and CO. However, the increase is anticipated to be minor and short-term, and air quality levels are anticipated to return to pre-construction levels following completion of construction activities.

4.2.3.3 Alternative 3 - Relocation of the WTP and Flood Protection for Existing Wells

No significant impacts to air quality are expected from this alternative. The proposed relocated WTP will include a 3.04 million gallon per day (MGD) lime softening facility, a single cascade tray aerator for removing gases from the raw water well and oxidation of dissolved iron, and a re-carbonation system that includes a six-ton carbon dioxide tank with feed diffuser as stated in the "FEMA Section 428 Alternative Procedures for Public Assistance Program Scope of Work and

Cost Estimates for the Water Treatment Facilities Relocation, Plattsmouth Nebraska" (Olmsted & Perry March 4, 2020). The facility will also include chemical storage and feed systems for lime, coagulant, chlorine gas, and fluoride.

Air emissions at the relocated plant are anticipated to be minor and comparable to those at the existing Plattsmouth WTP due to modernization. It is expected that a new water treatment plant would have updated processing and chemical storage equipment and the potential emissions would be lower than those of the former plant. The existing plant is not currently required to have an air permit; therefore, no air permit is anticipated for the operations of a new WTP at this location. The proposed WTP is under review by the NDEE and if found to be necessary, an air permit will be issued with the appropriate emission standards.

The relocation of the WTP will result in odors related to treatment processes, such as aeration and chlorination. The relocated WTP will be located in an industrial park with no permanent residents within a quarter mile, therefore the receptors of the odors will generally be limited to plant workers and visitors.

Marginally increased air quality impacts compared to baseline conditions may be anticipated due to vehicle emissions associated with longer commutes traveled by plant workers, since the WTP will be relocated approximately 3.5 miles from the current WTP. Any negative effects to air quality from such additional vehicle travel are negligible because the of the short distance that would be traveled by the two WTP workers.

Additionally, short-term construction activities associated with this alternative may result in minor, short-term impacts to air quality due to dust production and temporarily elevated emissions from construction equipment and vehicles.

4.2.3.4 Mitigation

Construction activities will minimize dust and particulate emissions through best management practices such as watering work site or other measures. Construction workers must adhere to safety requirements and utilize proper personal protective equipment (PPE) such as masks to limit exposure to dust and disturbed soil as required.

For Alternative 3 (relocation of the existing Plattsmouth WTP to Fourmile Industrial Park), air quality permits are not anticipated to be necessary for WTP operations unless otherwise notified by NDEE.

4.2.4 Climate Change and Resiliency

Climate change encompasses changes in precipitation, sea level, temperature and other climatic variables including natural cycles and the climatic changes attributed to human actions on the environment. The 2019 Draft NEPA Guidance on Consideration of Greenhouse Gas Emissions, developed by the CEQ, uses the EPA-defined threshold for mandatory greenhouse gas (GHG)

emission reporting of 25,000 metric tons per year as a level where a quantitative analysis is required for NEPA documents. By EPA estimates, this is equivalent to GHG emissions from approximately 4,600 passenger vehicles per year. The majority of GHG emissions result from industrial and automobile non-point sources. The primary GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3).

Temperatures in the Greater Omaha area reach an average low of 12°F in January and an average high of 88°F in July. Between 1895 and 2018, Nebraska's temperature increased by 1.6°F. Climate models predict an additional temperature increase of 2°F to 5°F by 2050.

Average monthly precipitation in the Greater Omaha area ranges between 6 days per month in winter months and 12 days per month in May, with average precipitation amounts between 0.79 and 4.45 inches per month. A 15% to 35% increase in heavy precipitation days in Nebraska is expected by 2050. This increase in the frequently of storm and intensity of storm events contributes to flooding of the Missouri River, that can be expected to contribute to increased flooding of the existing Water Treatment Plant and wellheads more frequently in the future.

4.2.4.1 Alternative 1 - No Action

Under the No Action Alternative, no additional construction or vehicle emissions are anticipated since no activities would occur; therefore, no impact is anticipated.

4.2.4.2 Alternative 2 - *Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

No impact to climate change is expected from this action. GHG emissions at the MUD Platte South WTP are not anticipated because no operating changes in the plant will occur. The plant will not exceed the EPA emission reporting threshold of 25,000 metric tons per year. Temporary GHG emissions would occur due to construction equipment running during the construction of the water line.

Under the Proposed Action the Plattsmouth water supply would be protected from increases in flooding that can be expected to occur from climate change. The Proposed Action will provide greater climate resiliency to a critical piece of public infrastructure.

4.2.4.3 Alternative 3 - Relocation of the WTP and Flood Protection for Existing Wells

No impact to climate change is expected from this alternative. Operations at the WTP will include a re-carbonation system that includes six liquid carbon dioxide tanks with feed diffusers, which is a potential source of CO_2. CO_2 emissions are anticipated to be comparable or less than those that are generated at the current WTP due to modernization of the equipment and increased treatment efficiency. Due to the increase in efficiency and modernization, GHG emissions at the relocated WTP are not anticipated to exceed the EPA emission reporting threshold of 25,000 metric tons per year.

Overall, the alternative is expected to have a minor decrease in GHG emissions that could have a minimal positive affect on climate change when compared to baseline conditions.

Under this action the WTP would be relocated out of the flood plain and the existing wells protected from floodwaters. This would provide long-term protection of the water supply system. Increases in flooding can be expected to occur from climate change and suspensions of the water services from flooding and degradation of water quality are not expected under this alternative. However, future long-term conditions within the floodplain are unpredictable and some risks of service interruptions or degradation of water quality may occur over time as a result of climate change.

4.2.4.4 Mitigation

The use of BMPs including limiting the idling of construction equipment when possible and maintaining all equipment engines to ensure they burn cleanly will be integrated into construction plans to minimize temporary GHG emission during construction.

4.3 Water Resources

Water resources include water quality and physical characteristics of surface waters which include ponds, streams, rivers, wetlands, and drainages and groundwater. No significant impacts to water resources are expected to occur as discussed below.

4.3.1 Water Quality

The Plattsmouth WTP and its wellfield, consisting of five municipal wells, are located in the floodplain of the Missouri River, just south of its confluence with the Platte River. The WTP and wellfield are subject to reoccurring flooding, resulting in limited access to the wells and the WTP, limited operations of the WTP, and the release of water treatment chemicals and other pollutants into the Missouri River as flood waters inundate the plant.

The existing WTP discharges its wastewater to an existing septic tank and drain field at the site. The backwash water is discharged to the backwash storage tank which discharges to solids settling in a sludge lagoon located at the site. The MUD Platte South WTP has two wastewater outfalls: Outfall 001 which discharges to Zwiebel Creek, Section LP1-10400 of the Lower Platte Basin, and Outfall 002 which discharges to Missouri River Section MT1-10000 of the Missouri Tributaries River Basin.

The Clean Water Act (CWA) 33.USC Section 1251 et seq, regulates the discharges of pollutants into Waters of the United States, including wetlands and regulates quality standards for surface waters. Wetlands provide water quality improvement functions through the capture and up-take of pollutants from the waters flow through them. The NPDES permit program controls discharges of pollutants to waterways. The EPA oversees the States, many of which have assumed the

regulatory responsibilities of NPDES, setting water quality standards and issuing permits for discharges of pollutants into surface water.

The NDEE, in cooperation with the EPA, and in accordance with Section 303d of the CWA, has developed water quality standards that designate the beneficial uses of surface waters and water quality standards (Title 117 – Nebraska Surface Water Quality Standards). The NDEE applies these standards through Title 119 – Rules and Regulations Pertaining to the Issuance of Permits Under the National Pollution Discharge Elimination System and Title 120 Procedures Pursuant to Section 401 of the CWA, 33 USC section 1251 et seq., for Certification by the Department Requiring a Federal License or Permit which may result in a Discharge.

The Missouri River at Plattsmouth has been assessed with beneficial uses for aquatic life, public drinking water, industry, recreation, aesthetics and endangered and threatened species habitat. The NDEE has assessed the Missouri River at Plattsmouth as "Impaired" (I) with E -Coli bacteria being one of the main pollutants (NDEE 2018 Surface Water Quality Integrated Report). Groundwater resources are directly related to the flows of the Missouri River. The Missouri River and the aquifers that it influences are used as drinking water by communities throughout the area and downstream. The City of Plattsmouth utilizes the aquifer under the Missouri river for its drinking water source.

The Platte River South has been assessed with beneficial uses for aquatic life, public drinking water, industry, recreation, aesthetics and endangered and threatened species habitat. The NDEE has assessed the Platte River South as "Impaired: (I) with Selenium, and with "Hazard Index Compounds" listed as pollutants of concern. Fish consumption advisory is also listed as an impairment on this section of the Platte River. The aquifer below the Platte river is utilized as a drinking water source by the MUD for the Platte South WTP. Surface water is not used for drinking water downstream of the MUD Platte South WTP site.

4.3.1.1 Alternative 1 - No Action

The WTP is currently operational; however, long term compliance issues due to flooding of the plant and wellfield, along with operational deficiencies resulting from flood damages have resulted in boil water advisories, non-potable water issues and pollutant loading to the Missouri River.

The No Action alternative will continue to have the potential to release pollutants into the Missouri River, as well as not providing clean and reliable clean drinking water to the community. The No Action alternative would not address water quality concerns for the Missouri River, or the communities need for safe drinking water.

4.3.1.2 Alternative 2 – *Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

No significant impacts to water quality are expected from the Proposed Action.

No long-term negative impacts to water quality are expected from this alternative. Long-term positive impacts to water quality are anticipated due to the elimination of future risks of pollutant loading of the Missouri River and its floodplain from the flooding of the existing WTP. Chemicals used for the water treatment processes, along with the sludge basin, would be removed from the floodplain and would no longer be at risk for release into Missouri River during flood events. This would have a positive impact on the water quality. In addition, the water quality of the community's public water supply would be reliable and consistent which is a positive impact to water quality.

A minor increase in wastewater discharges may occur at the MUD South Plant due to the increase in treatment for the City of Plattsmouth; however, the facility has permitting capacity and no additional permitting is required by the NDEE. Any minor increase in discharge will meet water quality discharge standards for this facility and would not result in any significant impacts to the Zwieble Creek or the Platte River.

Short-term impacts to the quality of the surface waters within the work areas may occur during construction of the new watermain from earthwork and construction equipment. These potential impacts include sediment loading from excavating and grading, as well as the possible exposure of fuels and chemicals used by construction equipment and directional drilling practices. BMPs will be utilized during construction to avoid and minimize these potential impacts. The project sponsor will be required to obtain a Construction Stormwater Permit for the project, which is part of the NDEE surface water quality protection program for non-point source discharge under the NPDES water quality protection program. No significant impacts to water quality are expected to occur from the Proposed Action.

4.3.1.3 Alternative 3 – Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

No significant impacts are expected to occur from this alternative. The work would relocate the WTP out of the floodplain of the Missouri River, thereby eliminating the risk of flooding and all of the associated negative long-term and short-term impacts to water quality. The alternative would facilitate the construction of a new modernized WTP which would result in minor but long-term improvements to water quality of the Missouri River. The risk of flooding and operational deficiencies will be eliminated by the relocation of the plant, and concerns regarding potential suspension of water service will be eliminated by relocating the plant out of the floodplain.

The wellhead improvements proposed under this alternative will provide protection from contaminated flood waters from entering the wells during flood event. Previous issues regarding potential degermation of water quality would be significantly eliminated by this action during flood events. However, if an unprecedented storm event does occur at some time in the future where flood waters rise to a point where they can enter the wellheads, the WTP will be capable of treating the water prior to its distribution to the community. The quality of the community's water supply

would be reliable and consistent which is also addressed in the public health and safety section of this document.

The proposed WTP would be located adjacent to the proposed wastewater treatment plant (WWTP) for Plattsmouth. Any wastewater discharge from the new WTP would be directed to the WWTP for treatment. A perennial stream is located adjacent to the proposed plant site and short-term impacts to the water quality may occur from sediment during construction. Appropriate erosion and sediment controls will be utilized to limit impacts to water quality of this tributary.

Alternative 3 would also involve the installation of the RWTL, a watermain connection line and protections to the five wellheads. Temporary impacts to the quality of the surface waters within these work areas may occur during construction of this infrastructure from earth work and construction equipment. These potential impacts include sediment loading from excavating and grading, as well as the possible exposure of fuels and chemicals used by construction equipment and directional drilling practices.

Overall, no significant impacts to water quality are expected to occur from this alternative.

4.3.1.4 Mitigation

The Proposed Action would have a positive impact to water quality by relocating the plant outside of the floodplain. No mitigation is proposed beyond using Best Management Practices (BMP) to ensure that erosion and sedimentation do not occur and to utilize directional bore technologies for crossing streams and other resources areas of importance along the watermain ROWs.

BMPs will be utilized during construction to avoid and minimize these potential temporary impacts. The project sponsor will be required to obtain a Construction Stormwater Permit for the project, which is part of the NDEE surface water quality protection program for non-point source discharge under the NPDES water quality protection program.

4.3.2 Surface Water

The existing WTP is located within the floodplain of the Missouri River just downstream of the confluence with the Platte River. Both rivers are dynamic waterways carrying significant loads of sand and silt sediments. The WTP has a long history of reoccurring flooding. Forty-three of the top 44 historic crests on the Missouri River at Plattsmouth have occurred since the water treatment went into operation (Olmsted & Perry Consulting Engineers Inc., 2020). Levees have been constructed along the Platte and Missouri Rivers to confine their flows and manage flooding and erosion.

The municipal wells that supply Plattsmouth's water are frequently inundated with flood waters, leaving access to the wells limited to boats only. The WTP is also inundated with flood waters during significant flood events such as the Flood of 2019 which left the plant in operable for months. Access to the plant can be limited from flooding its access road.

The area proposed for the new water supply connection to the MUD South Water Treatment Plant and the alternate Water Treatment Plant site are located within the Lower Platte River Sub-basin, which is a part of the Lower Platte Basin, encompassing approximately 3,400 square miles. The basin extends from Columbus, Nebraska downstream to Plattsmouth, at the confluence of the Platte and Missouri Rivers.

The surface waters, located within the Proposed Action ROW, were delineated in September of 2020 by Terracon Consultants. The details of this delineation and the wetlands and waterways are provided in the Aquatic Resources Report dated October 20, 2020, included in Appendix B. The main surface waterbodies along this ROW include Zwieble Creek, the Platte River, and Fourmile Creek. A total of potential 3.81 acres of wetlands and other lower-order waterways were also identified on along this route.

The US Army Corps of Engineers (USACE) regulates the discharge of fill material into Waters of the United States (WOUS) under Section 404 of the Clean Water Act (CWA) (33 CFR, Part 320-330). Nebraska Department Environment and Energy (NEE) reviews these discharges, to ensure that they meet state and federal water quality standards under Nebraska Administrative Code, Title 117 and Section 401 of the CWA (40 CFR, Part 121).

A delineation of surface waters was completed on the site of the new WTP in August 2015, and a copy of the delineation report is provided in Appendix B. The delineation was revisited in the fall of 2020, within the area proposed for the new WTP site work within the Fourmile Industrial Park. This addendum to the original report is also provided in Appendix B. No changes in the original wetland delineation for the site were found and no wetlands were identified within the proposed WTP Site. An unnamed perennial tributary is located adjacent to the WTP site. This tributary flows in a westerly direction across Mynard Road to Fourmile Creek, which flows to Eightmile Creek, a tributary of the Platte River.

The surface waters located within the RWTL review area were delineated on May 29, 2020. A copy of the delineation report is included Appendix B. These surface waters include intermittent and perennial streams and several small adjacent wetland areas all located along the roadway shoulders along the proposed RWTL ROW. The Aquatic Resource Report dated July 7, 2020, describing these surface waters and the delineation process is located in Appendix B. No surface waters were identified within the 0.5-mile watermain work area that is part of Alternative 3.

4.3.2.1 Alternative 1 - No Action

The No Action alternative would not directly impact surface water. However, the Missouri River is anticipated to continue to have high crests and inundate the WTP, which would result in potential pollutant loading of the waterway. In addition, long term challenges with managing these flood waters could involve installing a flood protection levee around the WTP, which could cause erosion and sedimentation issues from changes in flow conditions in the floodplain, as well as

flooding of other areas downstream. These potential future indirect impacts to the waterway are minor but worth noting.

4.3.2.2 Alternative 2 - *Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

Impacts to surface waters from this alternative would be short-term from the installation of a 20-inch diameter watermain underneath rivers, streambeds and drainages. The Platte River and other major streams would be crossed utilizing directional bore technologies. This method may be used for other tributaries as well.

The construction of the watermain could involve temporary impacts associated with temporary dewatering of the three minor order streams, and excavation and back filling of trenches within the stream bed and banks. A total of 130 linear feet (LF) of stream may be impacted by this trenching work. Construction activities, if located adjacent to waterbodies, may have the potential to temporarily degrade water quality or physically alter surface waters due to soil erosion and sediment loading during construction.

In addition, established woody vegetation may be removed from areas near streams along the ROW for this alternative. This riparian vegetation will not likely be restored, as the ROW would be regularly maintained to eliminate woody vegetation. This could lead to increased erosion of the stream banks.

The stream crossings would be constructed to maintain existing flows within these surface waters and all areas would be restored to preconstruction contours and conditions as required the USACE. A Clean Water Act (CWA) Permit would be required from the USACE to accomplish this work.

Overall, no significant impacts to these resources are expected to occur from the Proposed Action provided the USACE permit conditions are complied with and appropriate BMPs are utilized during construction to limit erosion and sedimentation.

4.3.2.3 Alternative 3 – Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

No significant impacts are expected to occur from this alternative. The relocation of the WTP would result in temporary impacts to streams and drainages located along the ROW for RWTL. No surface waters would be impacted at the proposed WTP site, or at the Five Wellheads and along the ROW for the water supply connection. No permanent impacts to surface waters would occur for this alternative.

The temporary impacts to surface waters for this alternative would include; dewatering, trench and back fill excavation, and possible erosion and sedimentation of no more than five waterways (1,100 LF). In addition, established woody vegetation located along surface waters may be

removed from several areas of the ROW for this alternative which may result in thermal impacts from warming of the surface water and increased erosion and sedimentation bank erosion or turbid overland runoff This riparian vegetation will not likely be restored, as the ROW would be regularly maintained to eliminate woody vegetation. This could lead to increased erosion of the stream banks.

Where possible, directional bore technologies and BMPs for stream crossings will be utilized to minimize impacts to surface waters. In addition, a Clean Water Act Permit would be required from the USACE to accomplish this work. Overall, no significant impacts to these resources are expected to occur provided the USACE permit conditions are complied with and appropriate BMPs are utilized during construction to limit erosion and sedimentation.

4.3.2.4 Mitigation

No mitigation would be required for the No Action alternative. However, additional floodwater protections for the WTP may be necessary to protect the plant and wellheads in the future.

The Proposed Action and alternative three would require USACE permits which have specific conditions to avoid, minimize and mitigate impacts to surface waters, including wetlands.

The water line routes are primarily located along maintained road and utility corridors. Many of the streams are culverted. Impacts to streams and wetlands can be avoided by constructing the RWTL within the exiting roadway fill or boring under streams or wetlands. Engineering and design decisions will determine if and where these construction methods can be utilized. In cases where the RWTL route is parallel to streams, the line could be placed on the opposite side of the ROW to leave as much distance between the stream and trench construction as possible. In addition, trench stabilization techniques will be used to ensure that the stream does not jump to the utility trench over time.

In areas where woody vegetation is present along the bank, where practicable a setback distance will be incorporated to limit the removal of trees and other woody vegetation for a distance of at least 50 feet along either side of the creek for the purpose of maintaining and establishing riparian buffers to protect surface waters.

A construction stormwater permit would be necessary during construction which would minimize potential surface water impacts resulting from construction which will require that BMPs be utilized to prevent erosion and sedimentation of surface waters. In addition, this permit will require that the site is permanently stabilized after construction.

4.3.3 Wetlands

Executive Order (EO) 11990, Protection of Wetlands, and Section 404 of the CWA (44 CFR Part 9) define wetlands as those areas that are inundated by surface or ground water with a frequency to sufficient to support, and that under normal circumstances, support a prevalence of vegetation

typically adapted for life in saturated soil conditions. The three parameters that define a wetland are hydric soil, hydrophytic vegetation, and hydrology, as outlined in the Federal Manual for Delineation Jurisdictional Wetlands (USACE, 1987) and the August 2010 Midwest Regional Supplement to the Corps of Engineers (1987) Wetland Delineation Manual Midwest Region (USACE, 2010). Wetlands provide many functions such as habitat for wildlife, recharging groundwater, improving water quality, and floodwater storage. The State of Nebraska does not have any wetland protection laws or regulations at this time.

Three wetland delineations were completed as part of this environmental review. The October 20, 2020 Aquatic Resource Report discusses wetland and waterways delineated along the Watermain ROW for the Proposed Action located between the MUD and Plattsmouth. The Wetland delineation completed in July 2020 delineated the RWTL ROW associated with Alternative 3. This report was completed as part of the Plattsmouth Wastewater Treatment Plant (WWTP) Relocation project's environmental review. The proposed RWTL under Alternative 3 would be located in this same area as the Sewage and Wastewater Conveyance System (SWCS) for the WWTP. The proposed WTP site under Alternative 3 was delineated in August 2015 and revisited in September of 2020 to confirm its findings. Copies of the delineation reports and addendums are included Appendix B. Copies of the USFWS National Wetland Inventory maps are provided in these reports.

The wetland delineation completed on the watermain ROW described in the Proposed Action (Alt 2) found a total of approximately 3.81 acres of potential wetlands within the ROW. Several roadside wetlands and drainages were found south of the Platte River in the proposed watermain ROW. The majority of these wetlands are regularly mowed and would be considered somewhat disturbed. Riparian wetlands were also delineated along northern side of the Platte River. These wetlands are quite established with mature woody vegetation with an invasive herbaceous plant dominated understory. This area is regularly flooded. The Aquatic Resource Report dated October 20, 2020, (Appendix B) describes the surface waters and wetlands, as well as the delineation process. Several small adjacent wetland areas were identified along the roadway shoulders in association with the RWTL and water supply line for Alternative Three. These wetlands are somewhat degraded due to regularly mowing and maintenance activities.

The delineation for the proposed WTP site (Alternative Three) was submitted to the USACE as part of the permit application for the WWTP relocation project. The WTP site wetland delineation was revisited in 2020 to confirm the wetland boundaries. No wetlands were identified in the proposed WTP Site.

No wetlands are shown on the NWI map for the wellhead protection area (Alt 3).

4.3.3.1 Alternative 1 - No Action

The No Action alternative would have no wetland impacts. No construction activities would occur and therefore no ground disturbance. During periods when the WTP is inundated with flood

waters, it is expected that pollutants will become a drift in the floodwaters and deposited in floodplain wetlands downstream of the site. Pollutant loading of wetlands impacts the functions that they provide in the environment.

4.3.3.2 Alternative 2 - *Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

No significant impacts to wetlands are expected from the Proposed Action.

The construction of the proposed watermain could result in temporary impacts to approximately 0.9 acres or less of wetlands along the watermain ROW. The temporary impacts to wetlands may involve; trench and back fill excavation, and possible erosion and sedimentation of the wetlands. No forested wetlands are expected to be impacted by the Proposed Action. Mature riparian wetlands located along the Platte River will be avoided by utilizing directional bore technology to install the water line in that area.

For utility lines constructed in wetlands, the USACE NWP 12 for utility line work may be applicable for the Proposed Action provided the project sponsor complies with all permit conditions, including avoidance minimization and mitigation of the wetland impacts. This NWP also requires that the wetland be restored to preconstruction contours and conditions after construction. If the NWP is not applicable, other USACE permits will be obtained and permit conditions complied with.

Overall no significant impacts to wetlands are expected to occur from the Proposed Action and no permanent impacts to wetlands would occur.

4.3.3.3 Alternative 3– Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections:

The construction of the proposed watermain under this alternative may result in temporary impacts to approximately 0.03 acres of wetlands along the RWTL work area. No forested wetlands are expected to be impacted by the project as they are along the outer edge of the proposed ROW for the RWTL. In addition, no permanent wetland impacts are expected for the water supply line or wellhead protections work proposed under this alternative.

The temporary impacts associated with this work involve construction activities associated with installing the RWTL under wetlands using directional boring. The temporary impacts to wetlands may involve; trench and back fill excavation, and possible erosion and sedimentation of the wetlands.

For utility lines constructed in wetlands, the USACE, NWP 12 for utility line work, may be applicable for the Alternative 3 provided the project sponsor complies with all permit conditions, including avoidance minimization and mitigation of the wetland impacts. This NWP also requires that the wetland be restored to preconstruction contours and conditions after construction. If the

NWP is not applicable, other USACE permits will be obtained and permit conditions complied with.

No permanent wetland impacts are proposed by this alternative. No significant impacts are expected to occur from this alternative.

4.3.3.4 Mitigation

Wetland impacts will be avoided where possibly by relocating work areas to opposite sides of the ROW or by the use of directional boring technologies. Wetlands that would be temporarily disturbed will be returned to pre-construction contours following construction and reseeded with native seed mix.

All conditions of the USACE permits related to wetland disturbances will be incorporated into the construction plans, including appropriate BMPs for erosion and sediment controls to ensure that indirect impacts from construction would be avoided.

4.3.4 Floodplains

EO 11988, Floodplain Management, requires federal agencies to minimize occupancy and modifications to floodplains. This EO prohibits federal agencies from funding projects in the 100-year floodplain, or funding critical facility projects within the 500-year floodplain, unless there are no practicable alternatives. FEMA's regulation from complying to EO 11988 are found in 44 C.F.R. Part 9. The Department of Natural Resources (DNR) and the Cass and Sarpy County Zoning Departments are responsible for the implementation of floodplain protection permits in Nebraska.

FEMA delineates floodplains in Flood Insurance Rate Maps (FIRMs). Floodplains are classified based upon potential flood hazards, with special flood hazard areas containing the highest level of potential flood. Areas within the 100-year floodplain are areas that would be inundated by a 1-percent annual-change flood (i.e., would have a 1-percent chance of flooding every year). Areas in Zone AE have a 1-percent chance of flooding every year with an established base flood elevation (BFE). The current floodplain maps available for the study area include panel 31025CO255D effect 11/26/2010, 31025C0120D effective 11/26/2010, 31153C0215G revised 12/2/2005 and 31153C0205G revised 12/2/2005. These maps are provided in Appendix A, Exhibits C1-C4. Figure 7 below also shows the floodplains within the review areas.

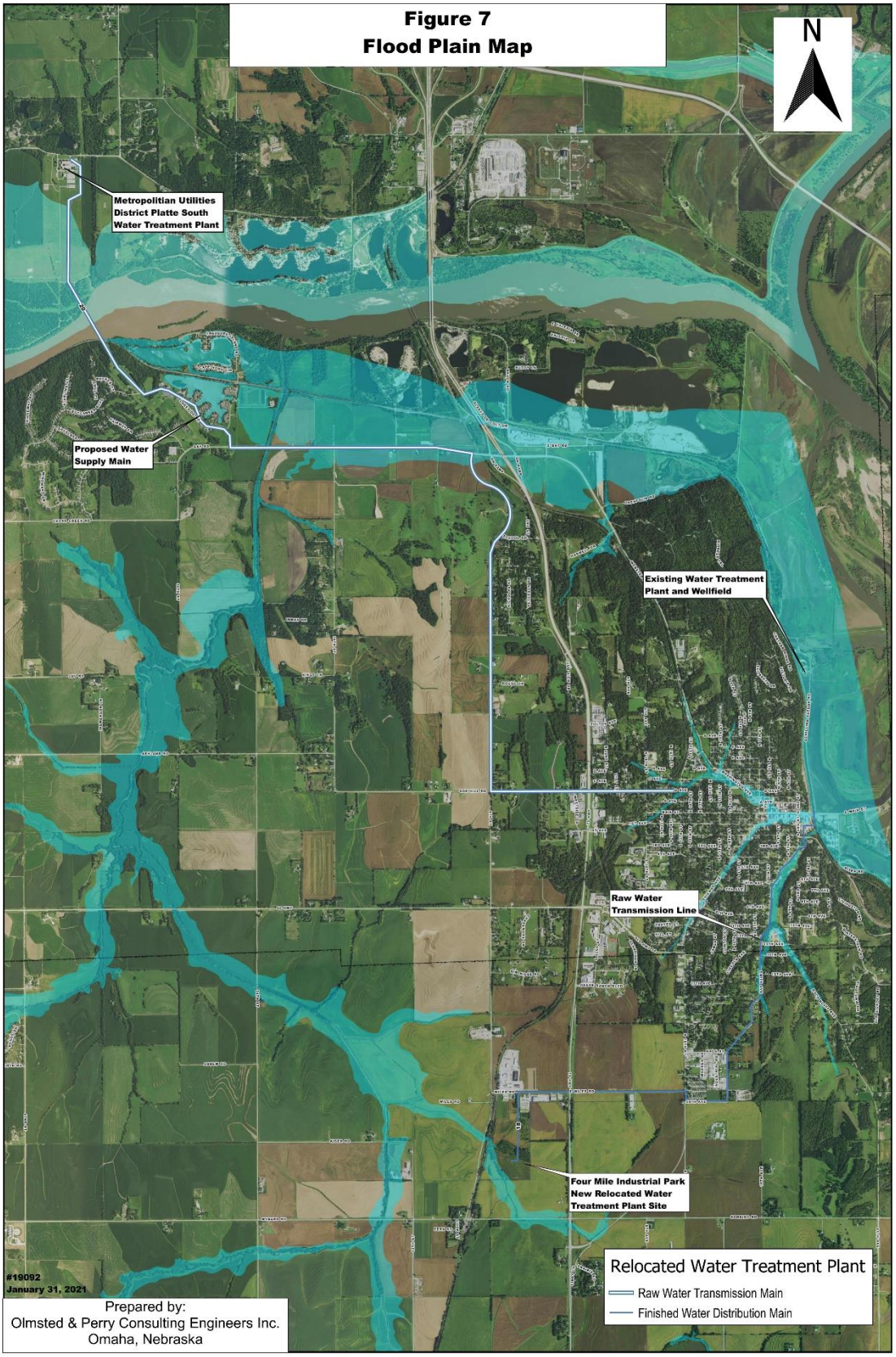


Figure 7
Flood Plain Map
N
Metropolitan Utilities District Platte South Water Treatment Plant
Proposed Water Supply Main
Existing Water Treatment Plant and Wellfield
Raw Water Transmission Line
Four Mile Industrial Park New Relocated Water Treatment Plant Site
Relocated Water Treatment Plant
Raw Water Transmission Main
Finished Water Distribution Main
#19092
January 31, 2021
Prepared by:
Olmsted & Perry Consulting Engineers Inc.
Omaha, Nebraska

The existing WTP, wellfield and a small portion of the proposed RWTL of Alternative 3 are located in the Flood Zone AE Floodplain of the Missouri River. The WTP was constructed in 1972. Since this time, flood levels have continued to increase. The Missouri River has crested 43 times since the WTP was constructed and 23 of those times it has exceeded flood stage (Olmsted & Perry Consulting Engineers Inc. 2020).

Floodplain maps along the Platte River indicate that a portion of the proposed watermain ROW under the Proposed Action (Alternative 2) is located in the floodplain. This floodplain involves naturalized and managed floodplains at the MUD site along northern side of the Platte River. No floodplain is mapped within the watermain ROW south of the MUD plant.

Floodplain maps indicate that a Zone A floodplain is mapped along the unnamed tributary that flows west from the proposed WTP site at Fourmile Industrial Park (Alt 3). No floodplains are mapped within the work areas, for the Proposed Action or alternatives, beyond those mentioned above.

4.3.4.1 Alternative 1 - No Action

The existing WTP and municipal wellfield are located in Flood Zone AE on the Missouri River, which has a 1-percent annual chance of flooding. The Base Flood Elevation (BFE) is 966 feet, which is above the elevation of the WTP (USGS, Plattsmouth NE, 1994). The WSS would remain at risk of flooding during a 100-year or larger event. Impacts to the waterway and floodplain from pollutants, debris movement, and future repairs or temporary protection measures would occur to the floodplain from this alternative.

Under this alternative, future activities to ensure the safety and usability of the WSS could include construction of permanent flood control levees or berms around the WSS and access roads. These structures would displace floodwaters, and potentially affect other properties downstream of the site during flood events. Displacement of floodwaters within this section of the Missouri River Basin, if future protection measures were performed, could be seen as having a significant effect to floodplains near the site and downstream; however, under the No-Action Alternative there would be no direct impact to floodplains at this time.

4.3.4.2 Alternative 2 - *Proposed Action* , Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

The Proposed Action would involve construction of a 20-inch diameter watermain within the floodplain of the Platte River. The watermain will be buried below existing ground surface and below the bed of the Platte therefore, no impacts to the floodplain or its floodwater storage capacity would occur.

The Proposed Action would provide some minor beneficial impacts to the floodplain of the Missouri River by abandoning the existing water treatment plant operations and the five municipal

water wells in place. These structures are located in the floodplain and would no longer be operational.

The removal of the existing WTP and well heads is not part of this action and will be reviewed under a separate action prior to the work being accomplished. However, the abandoned plant and wellhead infrastructure will be inspected and maintained so that any debris or loose equipment that can become adrift in floodwaters is removed or secured in place.

It is important to note that temporary sandbag measures that were used to maintain access to the WTP would no longer be needed. Floodwaters would be allowed to overtop the access road and the plant area, increasing flood storage capacity within the floodplain. This may seem minimal; however, any improvement to flood storage capacity along the floodplain of this dynamic river system is a step towards preventing flooding in downstream communities.

Overall, the Proposed Action will have no significant impacts to the floodplain. FEMA conducted a floodplain analysis for the project, see Appendix B.

4.3.4.3 Alternative 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

Under Alternative 3 the proposed WTP would not be located in a floodplain and the existing WTP would be abandoned and left in place. Removal of the abandoned WTP or reclamation of the WTP plant site is not part of this action and will be reviewed under a separate action prior to the work being accomplished. However, the abandoned plant and well head infrastructure will be inspected and maintained so that any debris or loose equipment that can become adrift in floodwaters is removed or secured in place until such time as the abandoned WTP is removed or reclaimed. A minor positive benefit to the floodplain would occur from abandoning the existing plant and allowing flood waters to overtake the area. The existing access to the wellheads would be remain in place, and access to the wellheads during flood event can be accomplished by boat.

Under this alternative no impacts to the floodplain would occur as a result of construction of the new WTP since no construction activities associated with the new relocated WTP will occur within the floodplain. Appropriate long-term stormwater management practices will be incorporated into the engineering plans to manage any increase in stormwater leaving the site after construction.

The wellhead protections proposed under this alternative would be constructed in the floodplain of the Missouri River. This work involves the construction of five elevated small buildings, that will protect the wellheads from flood waters inundating the wells. Each building would have a 200 square foot concrete slab footprint. The wellhead casings would be extended by 3-feet, above flood elevations to avoid floodwaters from entering the wells. A minor amount of floodwater may be displaced by these small buildings but no significant impact to the floodplain is anticipated. During significant flood events, the loss of flood water storage would be compensated for by eliminating the need for temporary sandbag berms needed to ensure access to the existing WTP.

The majority of the proposed RWTL ROW is not located within a floodplain with the exception of the small section between South 1st Street and Schilling Road in Plattsmouth. The RWTL will be buried underground therefore no impacts to the floodplain or flood storage capacity would occur.

Relocating the WTP outside of the floodplain and improving the flood protections around the wellheads will eliminate the need to maintain vehicle access to the WTP or wells during floods. The wellhead areas will be available by boat, but the wellhead protections proposed will be reduce the need for access.

This alternative would have a minor adverse effect on floodplain in the immediate area associated with the wellhead protections; however, the impact would not be significant. FEMA conducted a floodplain analysis for the project, see Appendix B.

4.3.4.4 Mitigation

A floodplain development permit will be required for the wellhead protection buildings from the permitting authority Cass County Zoning Department. The buildings will be constructed in accordance with the floodplain permit requirements. A Floodplain Permit from Sarpy and Cass County will be required for the temporary construction activities associated with the watermain and RWTL construction work that would occur in the floodplain.

Under Alternatives 2 and 3, to ensure that debris or equipment from the abandoned WTP or Wellheads does not become a drift in floodwater, this infrastructure will be inspected and any debris or loose equipment or building components will be removed or secured in place to prevent additional hazards during flood events.

4.3.5 Groundwater

Groundwater in the region is directly influenced by the major rivers and tributaries that flow across the landscape. Municipalities, rural homeowners, and businesses, including agricultural producers utilize groundwater resources throughout the region. Groundwater use is monitored by the Nebraska Department of Natural Resources (NDNR) and Lower Platte South Natural Resource District (LPSNRD).

The existing 3.05 million gallons/day (MGD) water supply needs for the City of Plattsmouth are supplied by groundwater resources along the Missouri River floodplain. The existing MUD South Water Treatment plant is authorized to provide 60 MGD which is supplied by groundwater resources along the Platte River floodplain. The average daily production in 2017 was 48 MGD at the MUD south plant.

4.3.5.1 Alternative 1 - No Action

Under the no action alternative there will be no change to groundwater resources. No impacts to groundwater resources would occur from this alternative.

4.3.5.2 Alternative 2 - *Proposed Action* , Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

The Proposed Action would result in abandoning the existing wells that are drawing approximately three MGD of groundwater from the aquifer below the Missouri River Floodplain and replacing it with the water supply from the MUD South well field along the Platte River. The MUD South WTP has been authorized for 60 MGD capacity and has stated that there is adequate capacity for the 3 MGD that is required for the Plattsmouth. Based upon the availability of groundwater, no significant impact to groundwater is anticipated.

The Proposed Action involves directional drilling in the vicinity of a larger municipal well field at the MUD South WTP site. The wellfield is located west of the proposed watermain. Impacts to a well may occur from boring activities if the bore head intercepts the well casings. Well locations will be clearly identified prior to the onset of drilling so that impacts to the wells or groundwater resources will be avoided by the directional bore activities that will occur. In addition, the drilling equipment utilized at the site will have self-contained drilling fluid technology to ensure that groundwater resources are protected.

Overall, significant impacts to groundwater resources are not expected from this project.

4.3.5.3 Alternative 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

Alternative three is not anticipated to impact groundwater resources. The existing wells will operate within their currently approved capacity. No expanded capacity is proposed under this alternative. No impacts to groundwater resources area expected to occur.

4.4 Biological Resources

4.4.1 Vegetation

Vegetation describes the plant life of an area based on soil conditions, geography, and climate patterns. Vegetation communities are a collection of flora species within a specific geographical area. Vegetation communities can greatly influence wildlife species by providing habitat, food, and travel corridors, and provide other important functions like soil stabilization, soil temperature and moisture control and soil enhancement, as well as aesthetics, food production, and wind buffering.

Sarpy and Cass Counties occur within the Central Tallgrass Prairie Ecoregion, which covers eastern Nebraska. This ecoregion consists mostly of tallgrass species and other mid and shortgrass species. Several forb species are also present making it one of the most diverse grassland ecosystems in the region. It has rich Mollisol soils usually greater than one meter deep. Fire, drought, and grazing at one time heavily influenced this ecosystem and helped prevent woody species from invading (S. Menard and J. Drake, 2016). The majority of this landscape was converted to agricultural land in the 19th century and continues in that use today. In addition,

some suburban development associated with the larger cities of Sarpy and Douglas Counties to the north have occurred.

The project area consists primarily of developed land with agricultural cropland, roadways, residential and commercial lawns, railroad corridors, and industrial properties. Wooded riparian habitat exists along both banks of the Platte River. The municipal wetland fields for the MUD South Water Treatment Plant are located along the northern bank. A railroad line is located along the southern riverbank with a steep wooded slope located just south of the railroad line.

A review of the site was completed during the delineations of the aquatic resources processes in 2015 and 2020. The Delineation and Aquatic Resource Reports are provided Appendix B. The delineations describe wetlands and other aquatic resources on the project site as well as general descriptions of the surrounding landscapes.

The wetlands within the review area contain a variety of plants and grasses commonly seen in the region and some typical trees and shrubs. Several mature riparian wetlands were identified along the north bank of the Platte River hosting large Cottonwoods and Silver Maples. In addition, several treed areas are located along the waterline ROW, near stream corridors. Other areas are mowed parkland, maintained lawns and road shoulders, and agricultural land in crop production.

Invasive Species

Invasive species were not generally observed within the project area. However, Smooth Brome and Reed Canary Grass were found in some areas and it is highly likely that other opportunistic or invasive species exist given the disturbed condition of the landscape throughout the project area.

EO 13112 (Invasive Species) was created to prevent the introduction of invasive species and to provide for their control. The Federal government cannot fund or authorize actions that may promote the introduction or spread of invasive species. Nebraska has ten state-listed noxious weeds. Table 4.4 -1 lists the invasive species known in the Tallgrass Prairie Ecoregion.

Table 4.4 - 1 Invasive Species Known in the Tallgrass Prairie Ecoregion

Common Name	Scientific Name
Canada thistle	*Cirsium arvense*
Japanese & Giant Knotweed	*Fallopia japonica, F. sachalinesis*
Leafy Spurge	*Euphorbia esula*
Musk Thistle	*Carduus nutans*
Phragmites Common Reed	*Phragmites australis*
Plumeless Thistle	*Carduus acanthoides*
Purple Loosestrife	*Lythrum salicaria, L. virgatum*
Saltcedar	*Tamarix ramosissima*
Sericea Lespedesa	*Lespedeza cuneate*
Smooth Brome Grass	*Bromus inermis*
Spotted & Diffuse Knapweed	*Centaurea biebersteinii, C. diffusa*

Source: UNL 2020

Reed Canary Grass *(Phalaris Arundinace*) is not listed as an invasive species for Nebraska; however, it is considered a somewhat aggressive and invasive wetland species throughout the United States. This species is found in emergent marsh wetlands in the region. Smooth Brome Grass is widespread in Nebraska, particularly along field edges and road shoulders. It is used in some grazing seed mixes in the region and noted as being widespread throughout Nebraska. The control of these invasive plant species along the right of ways is a challenge for Nebraska and other Midwestern states.

4.4.1.1 Alternative 1 - No Action

Under the No Action alternative there would be no ground disturbance. Therefore, no impacts to vegetation would occur.

4.4.1.2 Alternative 2 – *Proposed Action* , Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

Alternative 2, the Proposed Action, would have no significant impacts on vegetation resources. This work would involve the construction of a 20-inch diameter watermain ROW through trench excavation or directional bore technology. Approximately 950 feet of the proposed 70 foot-wide watermain ROW is treed and most of that area is located along the Platte River. In these areas, directional bore technology would be utilized to minimize disturbance. It is estimated that approximately 0.003 acre of trees and approximately 0.002 acre of woody hedgerow may be lost by this alternative. Trees and shrubs removed from riparian areas could result in a loss of natural erosion and sediment control functions, as well as wildlife habitat and water quality benefits in those riparian areas. These impacts would not be considered significant due to the size of the impact and the amount of similar habitat in the region.

The impacts to vegetation from much of the waterline involves temporary disturbances to grassed field fringes and roadsides, manicured lawns, and agricultural cropland. These impacts would temporary, and the site would be restored to preconstruction conditions with topsoil being replaced and the disturbed area seeded with native seed mixtures free from invasive and nuisance plant species.

Construction activities can make areas more susceptible to the spread of invasive species which could have an adverse effect on vegetation within the proposed project site area. Generally, all soils used for site construction would be taken from the surrounding landscape where possible. Soils that are brought into the site could have invasive plant seeds within them resulting in the spread of invasive and nuisance species within area. However, the potential for this to occur can be mitigated by the use of a “borrow area” site inspection and the use of native seed mixes during site restoration.

Overall, no significant impacts to vegetation are expected to occur from the Proposed Action.

4.4.1.3 Alternative 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

No significant impacts to vegetation are expected from this alternative as discussed below.

Approximately three acres of agricultural field would be permanently impacted by the construction of a new WTP at a location adjacent to the proposed WWTP. Access to the work site is provided by means of a road that would be constructed as part of the Plattsmouth Wastewater Treatment Plant Construction project, reviewed earlier in 2020 by FEMA.

The proposed WTP site and surrounding areas are primarily in agricultural production with several industrial businesses located nearby. Ongoing disturbances include, erosion and sedimentation, and agricultural fertilizer and pesticide use. The proposed WTP site would develop this agricultural land for industrial use which would eliminate the indirect impacts to the vegetative community from agricultural chemicals.

Under this alternative, temporary impacts to grassed areas, manicured lawns and agricultural fields along road shoulders would occur from the construction of the RWTL, bringing raw water from the existing wells to the new WTP site, and from the watermain construction work. It is estimated that approximately 0.01 acre of woody hedgerow may be lost under this alternative. In addition, the proposed work associated with the wellhead protections would involve minor disturbances to 1.5 acres of land surrounding the five municipal wells that supply Plattsmouth. These areas are regularly mowed, limiting vegetative growth. In addition, flooding of the wellhead areas create ongoing disturbances to soils and the seed bank held within it.

Construction work can make areas more susceptible to the spread of invasive species which could adversely affect vegetation within the proposed project areas for this alternative. Generally,

all soils used for site construction would be taken from the surrounding landscape where possible. However, soils that are brought into the site could have invasive plant seeds within them resulting in the introduction and/or spread of invasive and non-native species into the area. However, these impacts can be mitigated by the use of BMPs and native seed mixes during site restoration. Overall, no significant impacts to vegetation are expected to occur with this alternative.

4.4.1.4 Mitigation

During construction, temporary erosion control measures would be used to eliminate soil erosion and the spread of invasive species. Topsoil excavated from trench excavation would be stockpiled for use after construction allowing the vegetation to regenerate to preconstruction conditions. All disturbed areas will be reseeded with native seed mix immediately after construction is completed. All seed mixes will be free of invasive plant seeds. Soil brought onto the site will be from areas that are free of invasive plants.

Riparian areas with woody vegetation will be avoided where possible through the use of directional boring technologies.

4.4.2 Fish, Wildlife and Avian Species

Large and small game species, small mammals, fish, reptiles, bird species and insects are expected to occasionally occupy work areas. Woodlands and naturalized riparian areas would provide the highest quality wildlife habitat for the widest variety of wildlife including, nesting habitat for migratory birds. Landscaped urban areas, as well as agricultural fields and roadsides also provide habitat for wildlife although, the quality of this type of habitat is somewhat degraded and more limited for wildlife use.

Bald eagles are protected at the federal government level under the Bald and Golden Eagle Protection Act (BGEPA) of 1940. Under the BGEPA, a “take” includes, to pursue, shoot, poison, wound, kill, capture, trap, collect, molest, or disturb so that in interferes with normal breeding, feeding, or shelter habits causing injury, death or nest abandonment. Golden Eagle nests and habitat do not occur within or near the study area. Bald eagles are known to nest in mature trees in areas along the Missouri and Platte Rivers, as described in the NGPC Environmental Review Report/CERT dated 8/19/2020 for the project. A copy of this report is provided in Appendix C. No records of Bald Eagle nests are known to exist within the townships of the study area as confirmed by phone consultation with Shannon Sjolie of the NGPC on December 9, 2020 (Appendix F-1d). However, the site is within the geographic range of nesting Bald Eagles; therefore, the following measures will be undertaken as a protection measure to insure the protection of the Bald Eagles:

> *Prior to commencement of construction activities, sub-grantee will determine if an eagle’s nest is located in the vicinity of the construction zone. If an eagle’s nest is visible from or identified within 660 feet (200 meters) of the construction zone, a permit may be required. If this is the case, the sub-grantee must contact FEMA and consult with the US Fish and Wildlife Service (USFWS) before work begins.*

The Migratory Bird Treaty Act (MBTA) found at 916 U.S.C. 703-711 currently regulates intentional impacts to migratory bird species. The MBTA was recently clarified to inform the public that a take of migratory birds resulting from an activity is not prohibited when the underlying purpose of the activity is to not take birds. An example of an intentional take of a bird that would be regulated under the MBTA is when a colorful migratory bird is hunted for its feathers or sold on the market as an exotic pet. Incidental or accidental destruction of a migratory bird from tree clearing activities associated with construction work would not be considered a take, as the purpose of the work is to construct something not to use the bird for some other reason. Migratory birds can be expected to occupy the study area at different times of the year. The following species of migratory birds are listed for the review area by the USFWS;

- Bald Eagle, *Haliaeetus Lucocephalus*, Breeds Oct. 15th to August 31st
- Red-headed Woodpecker, *Melanerpes erythrocephalus*, Breeds May 10th to Sept. 10th
- Wood Thrush, *Hylocichla mustelina*, Breeds May 10th to August 31st.

These species general nest in woodlands or within large trees along open water bodies during migration.

4.4.2.1 Alternative 1 - No Action

The No Action alternative would have no impacts to wildlife as no work is proposed. Temporary affects to aquatic wildlife and those species dependent on aquatic life for foraging could occur due to chemicals stored at facility being released into the Missouri River when the WTP is flooded. This could continue the trend of degrading the aquatic habitat and terrestrial habitat in, and along the river and its floodplains. Temporary impacts from exposure to chemicals, although not common, can have long term cumulative effects on wildlife species in the area.

4.4.2.2 Alternative 2 – *Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

No significant impacts to wildlife are expected from this alternative. The Proposed Action would abandon the existing WTP and eliminate the impacts associated with the flooding of the WTP and the associated release of chemicals. This would provide long-term benefits to wildlife that inhabit the Missouri River and its floodplain.

Areas along the Platte River may contain nesting habitat for large raptors, including bald eagles; but the work proposed in this area will be temporary and the removal of mature trees will be limited. However, noise, dust, and other disturbances could impact nesting Bald Eagles during construction along the Platte River.

The three species of migratory birds were identified in the NGPC Environmental Review Report for the project dated 8/19/20 (Appendix C):

- the Bald Eagle, dependent on lager trees near open water for nesting and foraging,
- the Wood Thrush, an interior forest species, and
- the Redheaded Woodpecker, preferring open forests that contain dead or dying trees and sparse undergrowth.

However, impacts to the Wood Thrush, Bald Eagle, and Redheaded Woodpecker are unlikely for this alternative. The size and number of trees removed for this project will be minimal and there is habitat available on adjacent lands to accommodate these species and their needs. The Wood Thrush is an interior forest species and is unlikely to be present due to a lack of suitable interior forest habitat. Forested habitat is located along the north side of the Platte River and several wooded hedgerows are crossed by the watermain ROW. These areas are dominated by River Cottonwood, Poplar, Soft Maples, Mulberry, Oak and Ash trees. The Redheaded Woodpecker preferers open forests that contain dead or dying trees and sparse undergrowth. This habitat could be located throughout the site in developed areas and rural areas.

The riparian areas along the Platte River offer the most valuable habitat for wildlife. It is part of a larger wildlife corridor along the river, which may be preferred by these species for foraging or nesting, including Bald Eagles. Tree clearing along the ROW will be limited, and given the amount of habitat in surrounding areas, the project will have no significant impact on migratory breeding birds. Tree removal would not occur during the breeding seasons for the wood thrush and redheaded woodpecker due to a seasonal restriction on tree removal being implemented for the protection of the Northern long-eared bat, a federally listed threatened species.

Small warm water fish may be found within the streams along the proposed watermain ROW. These streams are somewhat degraded due to the pollutant loading from stormwater runoff from roads, neighborhoods and farmland. In addition, regular mowing and manicuring of the landscape, including some riparian areas, has diminished the value that the riparian areas provide to fish and wildlife.

The larger rivers and creeks within the watermain ROW will be crossed by directional boring technology. Therefore, no impacts to the bed or banks of the stream will occur which could affect aquatic wildlife. In smaller tributaries and wetlands, temporary impacts may occur from trench excavation and dewatering. These impacts would be minimal and temporary with a proposed trench width of approximately 30 ft. Impacts to fish and other aquatic life within the streams and wetlands would be minimal.

The Proposed Action will have a minor impact on wildlife due to construction noise and dust, disruption habitat or food sources from construction, and even some loss of individuals from clearing and excavation activities. These impacts would be minor due to the lack of high-quality habitat in the project area. Overall, no significant impact on the wildlife of the area will occur by the Proposed Action.

4.4.2.3 Alternative 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections:

The new WTP proposed under this alternative would be constructed in an actively managed farmland located in an industrial and agricultural area of the community. A narrow wooded riparian area is located just north of the proposed WTP site. This riparian area has some higher value habitat for wildlife. However, no impacts to the riparian corridor would occur. A single road crossing, being constructed for the relocation of the Plattsmouth Wastewater Treatment Plant will provide access to the plant site and provide the ROW for the water line.

The proposed RWTL would be situated within existing roadbed or road shoulder throughout the City of Plattsmouth. The work will have a minor impact on wildlife due to construction noise and dust, disruption of habitat or food sources from construction and even some loss of individuals from clearing and grading activities. The ROW will be restored to preconstruction contours and seeded after construction.

Migratory birds may be present during the removal of trees at other areas along the ROW and some nesting birds may be lost. The three species of migratory birds were identified in the NGPC Environmental Review Report for the project dated 8/19/20 (Appendix C):

- the Bald Eagle, dependent on lager trees near open water for nesting and foraging,
- the Wood Thrush, an interior forest species, and
- the Redheaded Woodpecker, preferring open forests that contain dead or dying trees and sparse undergrowth.

The size and number of trees removed for this project will be minimal and there is habitat available on adjacent lands to accommodate these species and their needs. Tree removal would not occur during the breeding seasons for the wood thrush and redheaded woodpecker due to a seasonal restriction on tree removal being implemented for the protection of the Northern long-eared bat, a federally listed threatened species.

The Bald Eagle is not expected to occur within this area due to the lack of large trees or lack of large open water bodies within 660 feet of the work areas. There are no known Bald Eagle nests within the work areas for this alternative as confirmed by Shannon Sjolie of NGPC by email on December 9, 2020 (Appendix F-1d).

The Wood thrush is an interior forest species. There is no interior forest habitat within the project site. The only area of continuous wooded land is at the proposed WTP access road's wetland and stream crossing location. This area has a fairly narrow swath of young woodland dominated by young poplars, soft maples, and green ash trees. This is not considered an established forest habitat.

The Redheaded Woodpecker preferers open forests that contain dead or dying trees and sparse undergrowth. This habitat does not exist at the WTP site, however, some developed areas along the SFM ROW may contain trees preferred by this species for foraging or nesting. Nests for this species are located within cavities of dead trees or tree limbs of live trees at varying heights, tree clearing along developed areas of the ROW will be limited. Therefore, this alternative will have minimal, if any, impacts to migratory breeding birds.

The wellhead protections proposed under this alternative would involve work within the Missouri River floodplain where the existing five municipal wells are located. The work area consists of grassed land that is regularly mowed. This area does not provide any unique or important wildlife habitat. Removal of trees is not proposed for this area. Therefore, no impacts to migratory birds are likely to occur from this work.

The Proposed Action will have minor and temporary impacts on wildlife due to construction noise and dust, disruption of habitat or food sources from construction and potentially some loss of individuals from clearing and excavation activities. However, no significant impacts to the wildlife of the area will occur by the work associated with Alternative Three. A survey protocol, established by wildlife agencies, can be incorporated into project plans to ensure nesting Bald Eagles or other species of concern are not present during construction.

4.4.2.4 Mitigation

To protect wildlife resources within the work areas, the following measures should be taken where possible:

- Construction sites will be restored to preconstruction contours and reseeded where possible at the earliest possible time to restore native vegetation and wildlife habitat.
- Disturbances to streams and wooded riparian areas will be avoided where possible and limited to the minimum disturbance necessary to minimize wildlife impacts.
- Prior to commencement of construction activities, the project sponsor will determine if an eagle's nest is located within the vicinity of the construction zone. If an eagle's nest is visible from or identified within 660 feet (200 meters) of the construction zone, a permit may be required. If this is the case, the sub-grantee must contact FEMA and consult with the US Fish and Wildlife Service (USFWS) before work begins. Failure to do so may jeopardize federal funding.
- In an effort to encourage the establishment of native plants within the project area, the project sponsor will consider incorporating the use of a native Tall Grass Prairie and Pollinator seed mixes where feasible along the work sites. Planting and maintenance of this area will be undertaken in accordance with Pheasants Forever, https://nebraskapf.com/habitat/nebraska-grass-seed-program/.

4.4.3 Threatened and Endangered Species and Critical Habitat

This section identifies special status species known to occur or likely to occur within the project area and critical habitats. Included in this are federal and state-listed species. An endangered species is in danger of extinction throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future. Federally listed species are designated under the Endangered Species Act (ESA) of 1973. Section 7(a)(2) of the ESA of 1973, 50 CFR Part 402, as amended. Each federal agency must address how its action may jeopardize the continued existence of any federally listed endangered or threatened species and no such action can result in the destruction or adverse modification of habitat of such species that is determined to be critical. Section 7(a)(1) of the Endangered Species Act obligates federal agencies to utilize their authorities to further the purposes of the Endangered Species Act by carrying out conservation programs for the benefit of endangered and threatened species. FEMA is responsible for consulting with the USFWS to ensure that Section 7 of the ESA is complied with.

State-listed species are those given separate or additional protection and/or consideration at the state level and are designated by the Nebraska Game and Parks Commission (NGPC) and include those protected under ESA as described in the Nebraska Nongame and Endangered Species Conservation Act (NESCA) (Nebraska Rev, Statue Chapter 37 Sections 801-806). NGPC provides guidance and consultation on projects that may affect state protected species as well as other planning and educational initiatives.

Terracon conducted a Threatened & Endangered (T&E) Species review for the Proposed Action and alternatives. The information provided by the state and federal agencies regarding T&E species is provided on a county-wide basis. The project is located in Cass and Sarpy Counties of Nebraska; therefore, the species lists provided are acceptable for the entire review area included in the Proposed Action and alternatives.

Four federally listed threatened or endangered species and nine state-listed species are listed as “may occur” in the project area as discussed below. The species lists were compiled from the most recent lists published by USFWS and NGPC as shown in Table 4.4.3 below. Site inspections were conducted during wetland delineations to assess the potential for high quality wildlife habitat for these species at the site. Detailed species-specific assessments were not completed within the review area.

Terracon, on behalf of the City of Plattsmouth, initiated informal consultation with the USFWS and NGPC by letters in August 2020 (Appendix C). Earlier consultation also occurred as part of the Plattsmouth WWTP Relocation Project; whereas, Alterative 3 of this environmental review would occur in the same review areas completed for the WWTP.

Based on this correspondence and the NGPC report dated October 18, 2020 (Appendix C), Terracon scientists recommended that, due to the possibility of habitat for the Northern Long-eared Bat (NLEB) within the project area, no tree removal will be undertaken between the dates

of June 1 - July 31, protecting the species during its roosting season. The NGPC stated the proposed project "may affect, not likely to adversely affect" the Northern Long-eared Bat (NLEB), with the inclusion of a restriction on tree clearing from June 1 – July 31. The NGPC further stated that the project will have "no adverse effect" on all of the state listed endangered and threatened species.

By correspondence dated November 23, 2020, Mr. Scott Larson, USFWS Field Supervisor, stated that they have no objection to the proposed project, Appendix F-1c. On December 18, 2020, FEMA initiated informal consultation and requested USFWS concurrence with their effect determinations for the federally listed species for Alternatives 2 and 3. On February 26, 2021 USFWS responded concurring with FEMA's effect determinations (Appendix F-1a). The project is exempt from federal take prohibitions as per the NLEB 4(d) Rule, however, USFWS has identified the presence of a known hibernacula with confirmed presence of the federally threatened NLEB within a five-mile radius of the project. To conserve the species during both the maternity roosting and hibernacula swarming seasons, the USFWS recommends that tree cutting only occur from December 1 – March 1. This conservation recommendation is discretionary for this project and it will be applied to the extent possible.

Table 4.4-3 Federally and State Listed T&E Species Listed in the Project Area

Common Name	Scientific Name	Listing
Plants		
American Ginseng	*Panax quinquefolius*	ST
Western Prairie Fringe Orchid	*Platanthera Praeclara*	FT and ST
Birds		
Interior Least Tern	*Sternula antillarum athalassos*	SE
Piping Plover	*Charadrius melodus*	FT and ST
Fish		
Lake Sturgeon	*Acipenser fulvescens*	ST
Pallid Sturgeon	*Scaphirhynchus albus*	FE and SE
Sturgeon Chub	*Macrhybopsis gelida*	SE
Mammals		
River Otter	*Lontra canadensis*	ST
Southern Flying Squirrel	*Glaucomys volans*	ST
Northern Long-Eared Bat (NLEB)	*Myotis septentrionalis*	FT, ST

FE = Federally-endangered; FT = Federally-threatened
SE = State-endangered; ST = State threatened

Plants

American Ginseng (*Panex quinquefolius*)

American ginseng grows only in rich, cool, moist, possibly older-growth deciduous forest, such as those found along the Missouri River in eastern Nebraska. Within the Missouri River bluff forests, this plant is found especially on the mid and lower slopes (NGPC,

2020c). This habitat does not exist within the study area. The steep slope along the south side of the Platte River does not exhibit the conditions necessary for the preferred habitat of this species.

Western Prairie Fringe Orchid (*Platanthera praeclara*)
The Western prairie fringed orchid can be found in the Tallgrass prairie landscape of the region. They occur in wet prairies and meadows. The Western prairie fringed orchid can also be found in the sandy soils of sub-irrigated meadows in the Sandhills (USFWS, 2020d). There are wetlands located within the study areas, however, the majority are not considered naturalized landscapes or pristine wet prairie or wet meadow suitable to support this species. The mature riparian woodlands along the Platte River within the study area are dominated by invasive and opportunistic herbaceous species such as Reed Canary Grass and Japanese Hops. Disturbances in this area include, regular floods, and groundwater withdrawals from a series of large municipal wells located at the site. These disturbances effect the makeup of herbaceous vegetation within the area. Due to this, wet meadows or wet prairie, habitat is not supported at this location. Therefore, it is unlikely that this species is present at the site or within the study area.

Birds
Interior Least Tern (*Sternula antilarum athalassos*)
During the breeding season, Least Terns typically nest and raise young on dry riverine sandbars in wide, braided rivers, and along the shores of reservoirs and lakes. They can also be found nesting on sand and gravel piles at mining operations near rivers (USFWS, 2020b). Although areas of the proposed ROW are located near the Platte River, and along former mined areas, these areas have reestablished vegetative cover, either naturally or through landscaping activities. Over the past 25 years, most of the old mine areas have been developed into residential properties, however habitat for this species is present along the Missouri River. FEMA determined that the proposed alternative (Alternative 2) May Effect but is Not Likely to Adversely Affect the Interior Least Tern, however, the USFWS delisted this species by Final Rule issued on January 13, 2021. This species is state listed.

Piping Plover (*Charadrius medlodus*)
Piping Plover prefer riverine sandbars, gravel beaches, alkali areas of wetlands, and flat sandy beaches with little vegetation. Typical habitat is composed of sand islands within the Platte River. Designated Piping Plover critical habitat is located within the Platte River where there are sandbars. There is no critical habitat located within the project area per the USFWS IPAC report. However, a portion of the site involves a crossing under the Platte River and its riparian areas utilizing directional bore technologies. No work is proposed within the river or along its immediate banks.

There is a possibility of Piping Plovers occurring along the Platte and Missouri River near the project alternatives. FEMA determined that the proposed alternative (Alternative 2) May Effect but is Not Likely to Adversely Affect the Piping Plover.

Fish

Lake Sturgeon (*Acipenser fulvescens*)

The Lake Sturgeon are found in large bodies of open water. Occasionally, one can be found within some of main northern tributaries of the Mississippi and St Lawrence Rivers (NGPC, 2020a). There is habitat along the Missouri and Platte Rivers however, no work is proposed within these rivers.

Pallid Sturgeon (*Scaphirhynchus albus*)

Pallid Sturgeon tend to select main channel habitats within the Mississippi River and main channel areas of the Missouri River system where islands or sand bars exist, including the Platte and Missouri Rivers (USFWS, 2020c). No work is proposed in the Missouri or Platte Rivers. FEMA has determined that the proposed alternative (Alternative 2) May Effect but is Not Likely to Adversely Affect the Pallid Sturgeon.

Sturgeon Chub (*Macrhybopsis gelida*)

The Sturgeon Chub is a small minnow that prefers habitats with highly turbid waters, such as the Missouri River and lower portions of the Platte River (NGPC, 2020b). Habitat is found along the Missouri and Platte Rivers however no work is proposed within these rivers. A determination of “No Adverse Effect” applies to the aquatic wildlife species listed above. This determination was concurred with by the NGPC in the CERT Reports prepared for the project, provided that conservation measures, protecting waterways, are implemented (see Appendix C).

Mammals

Northern Long-Eared Bat (*Myotis septentrionalis*)

This mammal’s winter habitat exists in caves and mines with constant temperatures, high humidity, and no air currents. Summer roosting habitat for this species is located underneath loose bark, in cavities, or in deep crevices of both live trees and snags (USFWS, 2020). There are trees in the area that may be removed. Most of these trees within the study are immature; however, some may have peeling bark, or cavities that may be suitable habitat for this species. The primary threat to this species is white nose syndrome (WNS). This species is federally listed with a 4(d) rule that only prohibits take within the WNS zone when it (1) occur within 0.25 miles (0.4 km) of a known northern long-eared bat hibernacula; or (2) when known occupied maternity roost trees, or any other trees within a 150-foot (45-meter) radius from the known occupied maternity trees, are cut during the pup season (June 1 through July 31). No known hibernacula are present within 0.25 miles of the project action area and no maternity roosts are present. The effects of Alternatives 2 and 3 are exempt from take prohibitions under the NLEB 4(d)

Rule. FEMA has determined that both alternatives May Affect but are Not Likely to Adversely Affect the NLEB.

USFWS issued a 4(d) rule consistency letters for the build alternatives on December 22, 2020 and further concurrence on February 26, 2021 (Appendix F-1a). USFWS recommends that tree cutting only occur from December 1 – March 1. This conservation recommendation is discretionary for this project and it will be applied as possible.

River Otter (*Lontra canadensis*)
River Otters are found along streams and rivers that flow through Nebraska's tallgrass, mixed grass, and shortgrass prairies. They also are found in the Sandhills around streams, lakes, ponds, marshes and swamps. They may den in hollow logs, underground space among roots, overhangs, beaver lodges or dens, and other animal burrows (NGPC, 2020d). Their habitat range includes the Platte River. No work is proposed within the Platte River or immediately along the riverbanks. A determination of "No Adverse Effect" applies for this species. However, the NGPC recommended that surveys be completed within/around dens for this species if work within the Platte River or along a bank would occur (CERT Reports Appendix C).

Southern Flying Squirrel (*Glaucomys volans*)
This species of squirrel inhabits primarily hardwood forests along the southeast edge of the state of Nebraska, including the Missouri River Forests, Indian Cave Bluffs, and Rulo Bluffs landscape. They rely on existing cavities in mature trees for nesting. This habitat is not located within the review area.

Critical Habitat – There are no designated Critical Habitats located within the project area as confirmed in the USFWS IPAC report provided in Appendix C. No impacts to critical habitat are expected from the project.

Section 7(a)(1) Conservation - It should be noted that the Monarch Butterfly is a candidate for federal listing as a protect species in the region. Although no effect determination has been made for this species because it is not currently a listed species, there is the potential for minor impacts to pollinator habitat that could support this species within the project area. FEMA, consistent with its ESA 7(a)(1) obligation, has encouraged proactive conservation of the Monarch Butterfly and pollinator species in general within the City of Plattsmouth during the development of this project.

4.4.3.1 Alternative 1 - No Action

The No Action Alternative would have no direct impacts on endangered or threatened species because no work is proposed under this action. However, ongoing effects from flooding of the existing WTP would occur which can negatively affect threatened or endangered species that exist in the Missouri River and its floodplains such as the Lake Sturgeon, the Interior Least Tern, Piping Plover, the Pallid Sturgeon and the Sturgeon Chub. The release of chemicals associated

with the water treatment plant operations into the Missouri River during significant floods events degrades water quality and exposes protected aquatic species to pollutants which can impact their ability to survive and thrive in these waterways. These impacts represent the current baseline conditions and would persist under the No Action Alternative.

4.4.3.2 Alternative 2 –*Proposed Action, Proposed Action* - Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

The Proposed Action may affect but will not result in adverse effects to endangered or threatened species. Detailed review and coordination with the agencies was completed confirming this.

No work is proposed directly within the Platte or Missouri Rivers or along the riverbanks under the Proposed Action. Large river and creek crossings will be accomplished by directional bore technologies. Several of the protected species of concern may inhabit these rivers, river sandbars, or riverbanks. However, impacts to these habitats will be avoided under this alternative.

The Proposed Action would eliminate the risks and affects associated with discharging pollutants into the Missouri River during flood events by abandoning the existing WTP. The removal of flooding risk to the WTP would promote the conservation and recovery of the Lake Sturgeon, Pallid Sturgeon, Sturgeon Chub, and River Otter. Work in the rivers or along the river banks of the larger waterways will be avoided by the use of directional bore technologies. This technology may result in some vibrations that may cause these species to avoid the area briefly during the directional boring. For this reason, FEMA determined that the project May Effect but is Not Likely to Adversely Affect the Pallid Sturgeon. The USFWS concurred in this determination by letter dated February 26, 2021 (Appendix F-1a).

Trees may be removed to construct the proposed watermain under this alternative. The Northern Long-eared Bat (NLEB) roosts in large trees near riparian areas and other woodland openings and utilizes these habitats for foraging in summer and during fall and spring swarming periods when proximal to a hibernaculum. The project action area is within an approximate 5-mile radius of a known hibernacula with confirmed presence of NLEB. In accordance with the NLEB 4(d) rule, the project is exempt from take prohibitions and tree removal restrictions for this species are discretionary. The USFWS has requested implementation of a discretionary tree cutting conservation recommendation to promote conservation of NLEB. To support conservation of the species, if feasible, tree removal only occur from December 1 through March 1..

Southern Flying Squirrels are known to reside in established hardwood forests. The project site is located near their northern range; however, this species is not known to occur within the project area. No impact to this species or its habitat is expected. This determination was concurred by the NE Game and Parks Commission dated 8/19/2020 (Appendix C).

It is unlikely that Piping Plover or Least Terns are located within the overall project area. These birds are known to nest along the Platte River on sandbars and other sandy areas. Directional bore technologies would be utilized to cross the Platte River and its riparian areas. Staging of the boring equipment would be located in uplands areas that have been previously disturbed from the installation and maintenance of the MUD wellfields. All drilling fluids will be contained so that they do not impact wildlife or waterways. No impacts to these avian species are expected. However, the NGPC recommended that the project consider implementing a regional survey protocol at the directional bore staging areas to ensure the project does not disturb nesting Least Terns or Piping Plovers during construction. Given that there is the possibility of these species occurring along the Platte River near the MUD plant and Platte River crossing, FEMA has determined that the project May Effect but is Not Likely to Adversely Affect the Piping Plover or Interior Least Tern. The USFWS concurred by letter dated February 26, 2021 (Appendix F-1a).

American Ginseng and Western Prairie Fringed Orchid have very specific habitat needs that are not found within the work areas for this project site. The project would not likely affect these species. A determination that conservation measures are not needed for these species was provided by the NGPC in the August 18, 2020 report provided in Appendix C. FEMA determined the effect on the Western Prairie Fringed Orchid to be “No Effect” as detailed in correspondence to the USFWS on December 22, 2020 (Appendix F-1a).

By preliminary correspondence dated November 23, 2020, (Appendix F1-c) Mr. Scott Larson of the USFWS stated, that their agency had no objections to the proposed project. Based on review of the proposed action (Alternative 2) FEMA has determined that the project May Affect but is Not Likely to Affect the following federally protected species: Northern Long-eared Bat, Least Tern, Piping Plover, and Pallid Sturgeon. FEMA requested informal consultation with the USFWS, via a letter submitted on December 22, 2020, requesting concurrence with the effect determinations made for the Proposed Action. By letter dated February 26, 2021, the USFWS stated that they concur with the effect determinations made by FEMA(Appendix F1-a).

4.4.3.3 Alternative 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

Removing the risk of flooding to the WTP by relocating the WTP out of the floodplain would have minor beneficial effects on all the protected species within the Missouri River corridor. Alternative 3 would have no adverse effects on threatened and endangered species. The construction of the WTP would occur on approximately 3 acres of land that is currently in agricultural production. The RWTL and watermain connection is proposed within existing road ROWs in the City of Plattsmouth. These areas are heavily managed and regularly maintained. Trees within the proposed ROW may be removed as part of this alternative.

The work associated with wellhead protection is located within the floodplain of the Missouri River, adjacent to five existing municipal wells. This area is regularly mowed and disturbed by flood events depositing or scouring sand and silt to or from the area. Because of this, it is unlikely that

the Piping Plover or Interior Least Tern would in utilize this area leading FEMA to determine that Alternative 3 will have No Effect on the Piping Plover or Interior Least Tern.

No work would occur within open waters or on the banks of large rivers with this alternative. Therefore, impacts to the Sturgeon Chub, Lake Sturgeon, Pallid Sturgeon, or River Otter are not expected to occur. This was confirmed by the NGPC in their correspondence (Appendices C and F) providing that standard best management practices, protecting waterways, are incorporated into the project where appropriate and practical. FEMA has determined that Alternative 3 will have No Effect on the Pallid sturgeon.

Trees may be removed to construct the RWTL connecting the wellfield to the proposed WTP and for the water line connecting to the City of Plattsmouth's distribution system under Alternative 3. The Northern Long-eared Bat (NLEB) roosts in large trees near riparian areas and other woodland openings and utilizes these habitats for foraging during summers and in fall and spring swarming periods, when proximal to a hibernacula. The project action area is within an approximate 5-mile radius of a known hibernacula with confirmed presence of NLEB. In accordance with the NLEB 4(d) rule, the project is exempt from take prohibitions and tree removal restrictions for this species are discretionary. The USFWS has requested implementation of a discretionary tree cutting conservation recommendation to promote conservation of NLEB. To support conservation of the species, if feasible, tree removal only occur from December 1 through March 1.

Southern Flying Squirrels are known to reside in established hardwood forests which do not occur within the project area for this alternative. Impact to this species or its habitat is not expected. A determination of "No Adverse Effect" applies for this species. This determination was concurred by the NGPC Cert Report (Appendix C).

American Ginseng and Western Prairie Fringed Orchid have very specific habitat needs that are not found within the work areas for this alternative. The project would not affect these species. This determination was concurred in by the NGPC (Appendix C). FEMA determined the effect on the Western Prairie Fringed Orchid to be "No Effect" as detailed in correspondence to the USFWS on December 22, 2020 (Appendix F-1a).

Based on review of Alternative 3 action, including preliminary coordination with the USFWS, FEMA has determined that there will be No Effect to the Western Prairie Fringed Orchid, Interior Least Tern, Piping Plover, and Pallid Sturgeon. FEMA also determined that this alternative "May Effect" but is Not Likely to Affect the Northern Long-eared Bat.

By preliminary correspondence dated November 23, 2020, Mr. Scott Larson of the USFWS stated, they have reviewed the Proposed Action and its alternatives and have no objections to the proposed project(Appendix F-1c). By letter dated December 22, 2020, FEMA requested informal consultation with the USFWS and concurrence with the effect determinations made for

the Alternative 3. By letter dated, February 26, 2021 (Appendix F-1a), the USFWS stated that they concur with the effect determinations made by FEMA. These letters and correspondences are provided in Appendix F.

4.4.3.4 Mitigation

It is recommended that directional boring technologies be considered for the crossing of the Platte River and its mature riparian floodplain areas to avoid any potential disturbances to habitat of protected species that may utilize this waterway and its riparian areas. In addition, staging for the bore technology work will be located in previously disturbed areas. All drilling fluids will be contained as to not impact the environment.

To support conservation of the Northern Long-eared Bat, if feasible, tree removal will only occur from December 1 through March 1.

FEMA, consistent with its ESA 7(a)(1) obligation, has encouraged proactive conservation of the Monarch Butterfly and pollinator species in general within the City of Plattsmouth during the development of this project.

4.5 Cultural Resources

In addition to review under NEPA, consideration of impacts to cultural resources is mandated under Section 106 of the National Historic Preservation Act (NHPA), as amended and implemented by 36 CRF Part 800. Requirements include the identification of significant cultural resources that may be impacted by the undertaking of a project. Cultural resources are those, buildings, structures, objects, districts, or sites, including archeological sites that are listed in or determined eligible for listing in the Natural Register of Historic Places (NRHP).

Only cultural resources determined to be potentially significant under NHPA are subject to protection from adverse impact resulting from a project undertaking. To be considered significant a cultural resource must meet one or more of the criteria established by the National Park Service that would make that resource eligible for inclusion in the National Register of Historic Places (NRHP). The phrase “Eligible for Inclusion in the NRHP “includes all properties that meet the NRHP criteria for evaluation. These are specific in the Department of Interior regulations Title 36, Part 60.4 and NRHP Bulleting 15. Sites not yet evaluated may be considered potentially eligible for inclusion in the NRHP and, as such, are afforded the same regulatory consideration as nominated properties, whether prehistoric, historic, or traditional, significant cultural resources are referred to as “historic properties”.

For the purposes of this analysis, the term “area of potential effect” (APE) encompasses areas requiring ground disturbance (e.g. areas of grading, cut and fill, etc.) associated with the proposed relocation of the proposed WTP and its alternatives. Figure 8 below outlines the APEs for the Proposed Action (Alternative 2) and Alternative 3.

Figure 8
Area of Potential Effect Map

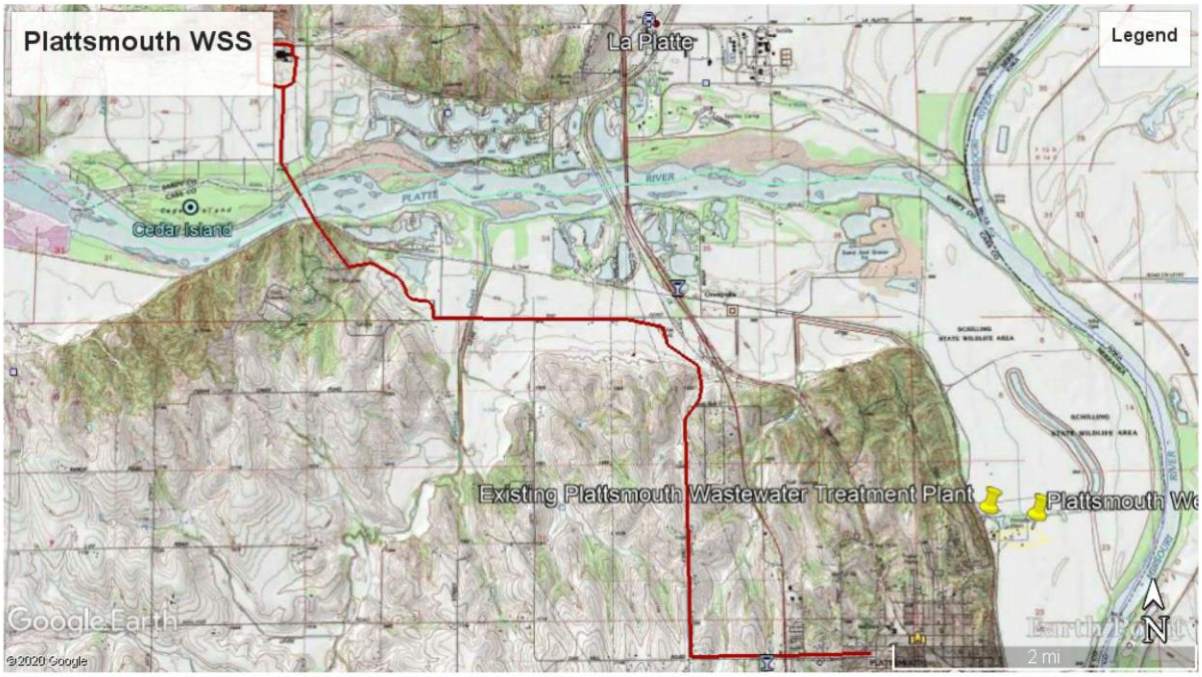


Figure 3: Alternative 2 USGS Topographic Map showing the APE (in red)

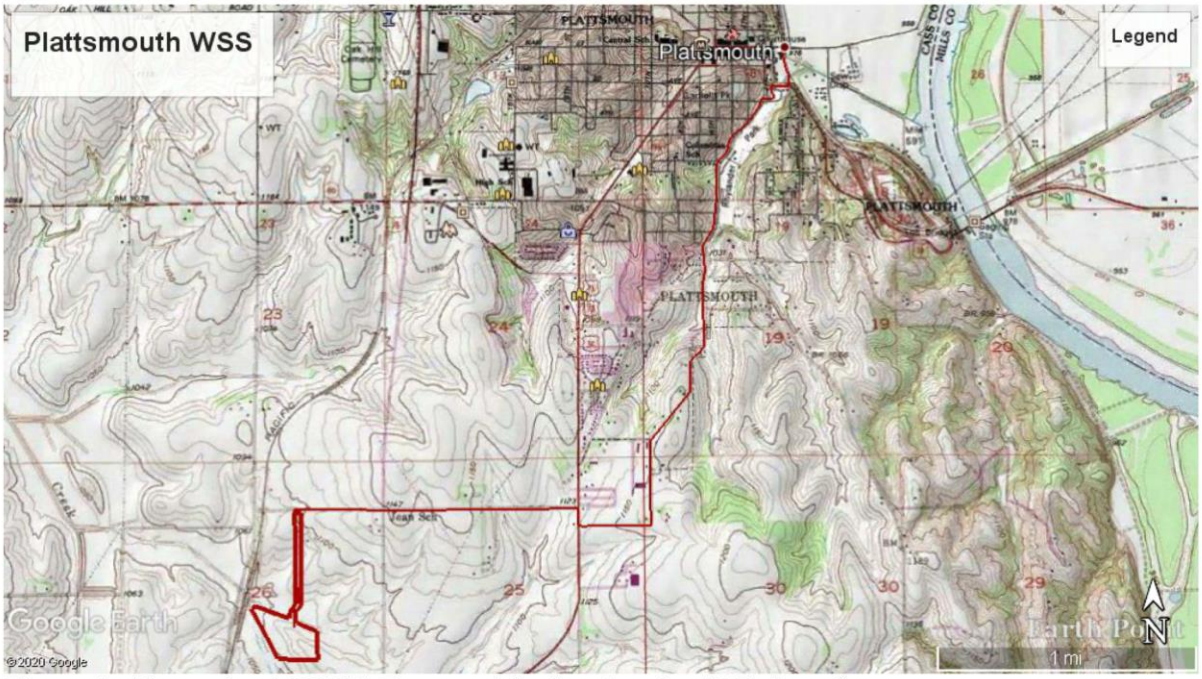


Figure 4: Alternative 3 USGS Topographic showing the APE (in red)

4.5.1 Archeological

Cultural resources evaluation was conducted for the APE associated with the Plattsmouth Water Supply System Relocation Project. The APE includes 70 feet on either side of the proposed road shoulder ROWS, a 200-foot-wide ROW between the MUD WTP and Bay Road, the proposed wellhead protection work area and the site of the proposed WTP. Figure 8 identifies the APEs for each of the alternatives.

An intensive Cultural Resources Inventory of approximately 14 acres of land associated with the Proposed Action (Alternative 2), including the watermain ROW, north of the Platte riverbank to the MUD WTP and South of the Platte Riverbank to Bay Road, was completed on September 22, 2020, by Ms. Jana Morehouse, RPA and Principal Investigator. A copy of this report is provided in Appendix E. The cultural resources records search revealed no cultural resources within the proposed review area. No new cultural resources were identified during the intensive cultural resources inventory completed for the review area. The remaining APE area for the Proposed Action is located within previously disturbed road shoulders ROWs and within utility corridors with previously disturbed soils.

The APE for Alternative 3 includes the WTP site, RWTL and potable watermain, and wellhead protection sites. A Level I Cultural Resource Records Search and Level III Cultural Resources Inventory of the proposed WTP Site (Alt 3) were completed on June 1, 2020, and June 19, 2020. These reports are provided in Appendix E. The APE for the RWTL and potable watermain (Alt 3) involve existing transportation ROWs and utility corridors with previously disturbed soils. The wellhead protection work areas also have previous disturbances from the installation of the wells and subsequent repairs.

4.5.1.1 Alternative 1- No Action Alternative

As no construction activities would occur with the No Action Alternative, there would be no impact to archeological resources.

4.5.1.2 Alternative 2 – *Proposed Action* - Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

An intensive Cultural Resource Survey was conducted on September 22, 2020, for the proposed ROW areas where previous disturbances could not be documented as shown in Figure 8. The archeological survey reviewed approximately 14 acres along the Platte River area of the RWTL ROW. The findings of this survey indicate that no cultural resources or historic properties are located in the review area. Therefore, the Proposed Action is likely to have no effect on archeological resources.

The remaining portions of the APE for the Proposed Action involve the roadside ROW where the proposed watermain would be constructed as shown in Figure 8 above. This work involves temporary earth work associated with the installation of a 20-inch diameter water line which would be located within previously disturbed areas of the public road ROW. Our review of the NHRP

show no listed sites, no eligible sites, and no national historic landmark sites along this route. Nearby archeological inventories have shown that archeological sites in this area are usually found on the surface, not deeply buried. The majority of the proposed water line ROW is located within disturbed road shoulders. Based on the amount of disturbance, it is unlikely to find cultural resources within existing roads shoulders or in the underlaying soils affected by the directional boring proposed for the stream crossings.

Under the May 11, 2015, Programmatic Agreement between FEMA, The Nebraska State Historical Society (SHPO), and Nebraska Emergency Management Agency (NEMA); specifically, "Tier II Allowances, Section D-(1(a)), and Section D(1(b)) of that agreement which reference the installation of new utilities and features within existing right-of way or utility corridors and previously disturbed soils, it appears that further study of Archeological and Cultural Resources would not be required for the remaining portion of the APE, the roadside ROW work under the Proposed Action. These allowances were verified by Mr. Mark Lance, SOI certified archeologist with FEMA, and it has been determined that no further archeological survey work is necessary for these areas.

By letter dated January 4, 2021, FEMA initiated formal consultation under Section 106 of the National Historic Preservation Act with the Nebraska State Historic Preservation Office (NeSHPO). This letter provided details about the proposed project and its alternatives, a copy of the Cultural Resource Report prepared for the project, and a summary of FEMA's findings after conducting a Section 106 review in accordance with the programmatic agreement referenced above. By letter dated, January 15, 2021, Mr. John Swigart, Preservation Archeologist for NeSHPO, responded to this consultation request, approving FEMA's determination and concurrence with the findings, the Proposed Action would have no effect on archeological resources. A copy of these records is provided in Appendices F-2a and F-2b.

4.5.1.3 Alternative 3 – Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

No impacts to archeological resources are expected to occur from Alternative 3. The APE associated with the WTP, the RWTL, and potable watermain share a common location and alignment with a separate project being advanced for the replacement of the Plattsmouth Wastewater Treatment Plant (WWTP), reviewed by the NeSHPO (Appendix E). The remaining portions of the APE for the Proposed Action involve the roadside ROW where the proposed watermain would be constructed (Figure 8). This work involves temporary earth work associated with the installation of a 20-inch diameter water line which would be located within previously disturbed areas of the public road ROW. Our review of the NHRP show no listed sites, no eligible sites, and no national historic landmark sites along this route. Nearby archeological inventories have shown that archeological sites in this area are usually found on the surface, not deeply buried. The majority of the proposed water line ROW is located within disturbed road shoulders. Based on the amount of disturbance, it is unlikely to find cultural resources within existing roads

shoulders or in the underlaying soils affected by the directional boring proposed for the stream crossings.

The APE for the wellhead improvements proposed as part of this alternative are located in an active area of the Missouri River floodplain. The existing soils within the area are disturbed by continual flood deposits, excavations, and backfill associated with well construction and subsequent repairs. The APE for the Wellhead protection work involves approximately 14,000 SF for each of the five wells. Our review of the NHRP show no listed sites, no eligible sites, and no national historic landmark sites at this location or within close proximity of the APE. It is unlikely that the proposed work associated with the wellhead protection would impact cultural resources given the ongoing site disturbances at the site.

Under the May 11, 2015, Programmatic Agreement between FEMA, The Nebraska State Historical Society (SHPO), and Nebraska Emergency Management Agency (NEMA); specifically, "Tier II Allowances, Section D-(1(a)), and Section D(1(b)) of that agreement which reference the installation of new utilities and features within existing right-of way or utility corridors and previously disturbed soils, it appears that further study of Archeological and Cultural Resources would not be required for the remaining portion of the APE, the roadside ROW work under the Proposed Action. These allowances were verified by Mr. Mark Lance, SOI certified archeologist with FEMA, and it has been determined that no further archeological survey work is necessary for these areas.

Based on this review, it appears that no impacts to archeological resources are expected to occur from Alternative 3. Mr. Mark Lance, SOI certified archeologist with FEMA, completed a detailed review of the materials provided. FEMA determined that Alternative 3 would have no effect on historic or cultural resources.

By letter dated January 4, 2021, FEMA initiated formal consultation under Section 106 of the National Historic Preservation Act with the Nebraska State Historic Preservation Office (NeSHPO). This letter provided details about the proposed project and its alternatives, a copy of the Cultural Resource Report prepared for the project, and a summary of FEMA's findings after conducting a Section 106 review in accordance with the programmatic agreement referenced above. By letter dated, January 15, 2021, Mr. John Swigart, Preservation Archeologist for NeSHPO, responded to this consultation request, approving FEMA's determination and concurrence with the findings, the Proposed Action would have no effect on archeological resources. A copy of these records is provided in Appendices F-2a and F-2b .

4.5.1.4 Mitigation:

If artifacts or human remains are found during construction, appropriate state and federal agencies will be contacted. Work will cease in the area of discovery. In addition, all fill/gravel should be obtained from a commercial source. Fill/gravel from non-commercial sources may

require permits and/or additional SHPO consultation, and failure to obtain these prior to doing the work may jeopardize federal funding. No other mitigation is recommended.

4.5.2 Historic Properties

A review of the NRHP, the National Historic Landmark online databases, and the Nebraska State Historic Preservation Office archives was completed for the APEs associated with the Proposed Action (Alternative 2), WTP, RWTL, and Wellheads (Alternative 3). The findings are provided in the Level I Cultural Resources Searches, and Level III Intensive Cultural Resources Inventories provided in Appendix E. No historic properties were identified within the APEs.

The Plattsmouth Main Street Historic District (MSHD) is listed on the NRHP, see Appendix E. The Historic District encompasses approximately five blocks of Main street and additional areas to the north and south. The MSHD was placed on the National Register of Historic Places in 1985. Numerous additional historic property studies were completed on areas within close proximity to the MSHD over the past 10 years to assess historic properties of community. These studies and the Plattsmouth Main Street Historic District Plan are available at the Plattsmouth Historical Society as well as archived on the Nebraska History database.

The MSHD is located within approximately 700 feet of a section of the proposed RWTL, which would be constructed below the ground surface near the intersection of Schilling Road and East Main Street. The MSHD is located primarily along the Main Street Corridor from 3rd to 7th Street.

In addition, several properties are identified as being potentially eligible for inclusion in the NHRP within Plattsmouth. None of these properties are located in the project APE.

4.5.2.1 Alternative 1 - No Action Alternative

As no construction activities would occur with the No Action Alternative, there would be no direct impact to historic properties. However, it is important to note that the existing WTP is located within fairly close proximity to the MSHD. The ongoing flooding of the WTP and associated unreliability of potable water could have negative effects on the Historic District, limiting its ability to host education opportunities, tourism, and cultural resource activities and initiatives within the community.

The No Action Alternative leaves the potentially eligible historic properties and the MSHD that depend on a reliable supply of clean drinking water at risk due to the loss of this public service. Reliable drinking water is necessary to continue local and regional historic preservation initiatives.

These negative impacts are not significant.

4.5.2.2 Alternative 2 –*Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

No historic properties are listed or proposed to be listed on the NHRP within the APE for the Proposed Action, Alternative 2. The Proposed Action would not involve construction activities within the MSHD or near other listed properties in the City of Plattsmouth.

Potable water service is essential to preserving and maintaining the integrity of individual historic properties as well as the viability of MSHD. The Proposed Action would provide a certain level of assurance that investments made into historic properties and within the MSHD will be protected. This will have a small but notable long-term beneficial effect on historic preservation initiatives throughout the region and could serve as an example for other small historic communities in the nation to continue their historic preservation efforts.

By letter dated January 4, 2021, FEMA initiated formal consultation under Section 106 of the National Historic Preservation Act with the Nebraska State Historic Preservation Office (NeSHPO). This letter provided details about the proposed project and its alternatives, a copy of the Cultural Resource Report prepared for the project, and a summary of FEMA's findings after conducting a Section 106 review in accordance with the programmatic agreement referenced above. By letter dated January 15, 2021, Mr. John Swigart, Preservation Archeologist for NeSHPO, responded to a consultation request in agreement with FEMA's determination and concurring with the findings that the Proposed Action would have no effect on historic properties. A copy of these records is provided Appendices F-2a and F-2b.

The project is not expected to have an effect on historic properties.

4.5.2.3 Alternative 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

Impacts to historic properties are not expected to occur from Alternative 3. No historic properties are located within the proposed WTP site, the RWTL, wellhead protection site, or watermain connection. Work that will occur near the MSHD involves the installation of less than 200 linear feet of the RWTL line underground. This work is temporary and is located outside and downslope of the MSHD. The installation of the RWTL will have no negative effects on the MSHD. However, any action that would bring a reliable source of clean drinking water to the community would benefit the MSHD and other historic properties in the community.

The work associated with this alternative was reviewed by Mr. Mark Lance a SOI certified archeologist of FEMA. Mr. Lance determined that no effects to historic properties are expected to occur from this alternative. By letter dated December January 4, 2021, FEMA initiated formal consultation under Section 106 of the National Historic Preservation Act with the Nebraska State Historic Preservation Office (NeSHPO). This letter provided details about the proposed project and its alternatives, a copy of the Cultural Resource Report prepared for the project, and a summary of FEMA's findings after conducting a Section 106 review in accordance with the

programmatic agreement referenced above. By letter dated January 15, 2021, Mr. John Swigart, Preservation Archeologist for NeSHPO, responded to this consultation request, stating that they approved FEMA's determination and concurred with the findings that the Proposed Action would have no effect on historic properties. A copy of these records is provided in Appendices F-2a and F-2b.

4.5.2.4 Mitigation

No mitigation is proposed to offset impacts to historic resources. No impacts are expected to occur.

4.5.3 American Indian/Native American/ Religious sites

FEMA is required to consult with Federally Recognized Tribes for FEMA undertakings on tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, in accordance with 36 CFR Part 800. The APE for this project is not on tribally owned lands and no American Indian/Native American/religious sites are known to occur in the area. FEMA recognizes that the tribes may have special knowledge of the area with regards to properties of religious or cultural significance and pursued tribal consultation with regards to the undertaking.

No American Indian/Native American/religious sites are known to occur in the area.

Letters requesting consultation from the Tribal Historic Preservation Officers (THPO) of the following tribes were submitted on January 7 and January 12, 2021 (Appendix F-3a):

- Apache Tribe of Oklahoma;
- Cheyenne and Arapaho Tribes of Oklahoma;
- Omaha Tribe of Nebraska;
- Otoe-Missouria Tribe of Indians, Oklahoma;
- Iowa Tribe of Oklahoma;
- Ponca Tribe of Nebraska;
- Sac and Fox Nation of Missouri in Kansas and Nebraska;
- Sac and Fox Nation, Oklahoma;
- Sand Fox Tribe of the Mississippi in Iowa; and the
- Iowa Tribe of Kansas and Nebraska.

The letters included project drawings showing the APE for the project and its alternatives. No responses were received from any of the THPOs expressing concerns about the project within 30 days.

4.5.3.1 Alternative 1 - No Action Alternative

As no construction activities would occur with the selection of the No Action Alternative. The No Action Alternative would not impact American Indian/Native American/religious sites.

4.5.3.2 Alternative 2 –*Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

No response was received from representatives of the Federally Recognized American Indian/Native American Tribes with interest in actions in Cass and Sarpy Counties regarding concerns about the project. In light of this, and through the historical and cultural resources reviews conducted for the project, no impacts to American Indian/Native American/religious sites are expected to occur from the project. No significant impacts to this resource area are expected to occur from this alternative.

4.5.3.3 Alternative 3 – Relocation of the WWTP Using Existing Outfall on the Missouri River

No response was received from the representatives of Federally Recognized American India/Native American Tribes with interest in actions in Cass and Sarpy Counties regarding concerns about the project. In light of this, and through the historical and cultural resources reviews conducted for the project, it is unlikely that the project would impact American Indian/Native American/religious sites. No significant impacts to this resource area are expected to occur from this alternative.

4.5.3.4 Mitigation

If artifacts or human remains are found during construction, appropriate state and federal agencies will be contacted. Work will cease in the area of discovery.

4.6 Socioeconomic Resources

4.6.1 Environmental Justice

The U.S. EPA defines Environmental Justice (EJ) as the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that federal agencies, whenever practical and appropriate, maintain information of populations by race, national origin, or income and shall use this information to determine whether their programs, policies, and activities have disproportionately high and adverse human health or environmental effects. Consistent with EO 12898, FEMA identifies and addresses any disproportionately high or adverse human health or environmental effects of its actions on minority and low-income populations as part of the NEPA process.

Environmental Justice and Census data were obtained from the EPA's EJ Screen Mapper Tool (https://ejscreen.epa.gov/mapper/). According to queries made on the EJ Screen, Plattsmouth has low percentages of minority populations, low-income populations, linguistically isolated populations, and populations with less than high school education, compared to state, regional, and national averages. The route of the water supply line under the Proposed Action (Alt 2), is

located in rural areas and along two moderately higher socioeconomic neighborhoods constructed within the past 20 years.

Overall, the City of Plattsmouth would not be considered an Environmental Justice community when compared to the rest of the country. It is likely that some minority or low-income individuals are located within the project areas but would not be disproportionately impacted by this project.

4.6.1.1 Alternative 1 – No Action

Under the No Action Alternative, the WTP would not be relocated and wells would not be protected. The existing WTP and wells would continue to flood leaving the community without a safe and reliable drinking water supply. The No Action Alternative would allow the continual negative effects of flooding to affect the health and welfare of all residents of the community. This can be particularly harmful to minority and low-income residences, especially those with language barriers who may have difficulties interpreting the boil water advisories that would continue to be issued. However, no disproportionate impact to minority and low-income populations would occur under this alternative.

4.6.1.2 Alternative 2 –*Proposed Action ,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source:

No impacts to minority or low-income populations would occur from the Proposed Action. This action would involve the construction of a new watermain that would bring potable water to the community from a reliable regional water district. There will be no increase in costs to the residents from this service. Therefore, no hardship will be placed on the residents, including any minority or low-income members of the community.

The watermain would be constructed in the rural areas of town. Impacts resulting from construction work would be temporary and would outweigh the benefits of having a reliable water supply for the community. No disproportionate impacts to minority and low-income populations are expected to occur from this alternative.

4.6.1.3 Alternative 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

Alternative three involves the relocation of the WTP to a City-owned industrial park located in a sparsely populated area of Plattsmouth. The nearest residence to the proposed WTP relocation area is approximately a quarter mile to the southeast. Additional work associated improvements to protect the wellheads and the construction of the RWTL and watermain would occur. Any temporary impacts to residents resulting from construction work along this route would far outweigh the benefits of having a reliable water supply for the community.

Plattsmouth is not considered an environmental justice community. Therefore, no disproportionate impacts to minority and low-income populations are expected to occur from this alternative.

4.6.1.4 Mitigation

No mitigative measures are necessary to offset impacts to minority and low-income populations.

4.6.2 Hazardous Materials

A Phase I Environmental Site Assessment (ESA) was prepared for the Fourmile Industrial Park on July 30, 2015 and updated on June 29, 2020. In addition, an ESA was prepared for the proposed "Headworks Influent Structure and Pump Station" site for the Plattsmouth WWTP relocation area on July 6, 2020. This area is also part of the proposed ROW under Alternative 2. This area is located near along E. Main Street near a City-owned lot located where the Cass County Department of Motor Vehicle building is today.

The ESA reports are provided in Appendix D of this document. The purpose of an ESA is to identify recognized environmental conditions (RECs) and controlled RECs (CRECs), which are defined by ASTM International Standard E 1527-13 as the following:

> *REC: The presence or likely presence of hazardous substances or petroleum products in, on, or at a property (1) due to a release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of future release to the environment.*
>
> *CREC: A recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory agency (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).*

Based on the findings of the Phase I ESA, RECs were not identified in connection with Fourmile Industrial Park.

RECs were identified southwest of the intersection of South 1st Street and East Main Street, near a portion of the RWTL alignment in Alternative 3. Identified RECs and CRECs relate to the following:

- A bulk oil station historically located along the railroad track that the proposed utility transmission line will extend through. A gasoline underground storage tank (UST) was removed from a location approximately 10 to 20 feet south of the proposed RWTL and minor concentrations of total extractable hydrocarbons (TEH) were reported in soil and groundwater samples collected at the former UST location. The petroleum contamination at this location is considered a CREC since the TEH concentrations are below all risk-

based screening levels (RBSLs) other than the drinking water standard (which is not applicable at this specific location within Plattsmouth) and a No Further Action letter has been issued by the NDEE.

- Soil and groundwater contamination at Rylander Park, which adjoins the section of the RWTL that is proposed to be constructed. Concentrations of arsenic, chromium, and semi-volatile organic compounds (SVOCs) have been reported in soil samples near the RWTL (approximately 170-300 feet east/southeast) that are above Nebraska Voluntary Cleanup Program (VCP) remediation goals for residential settings. Institutional controls and a Materials Management Plan (MMP) were established for Rhylander Park in 2015, making the known contamination a CREC.
- The historical and current use of a property, approximately 40 feet west of the proposed RWTL alignment along Richey Street for welding and painting, including storage of significant quantities of paint and solvents, is considered a REC based on the potential for or contamination.
- The historical use of the above-listed west adjoining property for auto repair in approximately 1929-1949 is also considered a REC based on potential for contamination along the RWTL.

Note that the above-listed RECs and CRECs were identified in the Phase I ESA due to the proximity of known or suspected environmental contamination to the proposed RWTL that is proposed as part of Alternative 3. In the Phase I ESA report for the proposed the site, Terracon recommended that a Construction Site Pollution Prevention Plan (CSPPP) and MMP be developed with the construction documents to address soil and/or groundwater contamination that may be encountered during construction activities. It is anticipated that the MMP would be similar to that which was prepared for Rhylander Park in 2015.

To evaluate exposure to hazardous materials as part of the Proposed Action, an Area/Corridor Report from Environmental Data Resources, Inc. (EDR) for the proposed transmission main route that extends between the MUD Platte South WTP and the delivery point to the existing main at South 16th Street and B Avenue was ordered. The EDR Area/Corridor Report (Appendix D-3) lists federally regulated and state-regulated facilities such as hazardous waste generators, aboveground or underground storage tanks, spills/releases, etc. that are located along or within 1/8-mile of the proposed transmission main. The EDR Area/Corridor Report identified one regulated facility located at 3600 West Bay Road that has an Emergency Response Notification System (ERNS) listing. According to the incident report, in 2006 a traffic accident resulted in a release of approximately half a gallon of antifreeze and half a gallon of motor oil to the bridge along Bay Road over the Fourmile Creek. The report estimated that approximately one quart of motor oil discharged to the creek. The fire department was dispatched to the incident location, where they applied oil dry compound to the bridge to contain the release.

A review of regulatory files for the MUD Platte South WTP from the NDEE were reviewed. The files include a Step 6 Initial Site Assessment that was conducted at the plant in 2008 after a

suspected release of 1,850 gallons of fluorosilicic acid from one of its USTs. Fluorosilicic acid has a pH of 1.0 and is used to add fluoride to treated water. The NDEE requested a Step 6 Assessment to determine if groundwater at the MUD plant had been impacted. A boring was advanced to approximately 48 feet below ground surface (bgs) adjacent to the UST. The pH of the soil samples appeared to be only slightly acidic (5.86 to 6.85) and the groundwater sample had a neutral pH (7.10). A fluoride concentration of 0.655 milligrams per liter (mg/L) was reported in the groundwater sample. A MUD representative stated that untreated raw water from the wellfield typically contained around 0.3 mg/L of naturally occurring fluoride. Based on the findings of the Step 6 Assessment, the soil and groundwater at the MUD plant appear to be minimally impacted by the release from the fluorosilicic acid UST.

4.6.2.1 Alternative 1 - No Action

Disturbance of potentially contaminated subsurface media will not occur in the No Action Alternative as no construction activities would occur. However, continued flooding at the plant may result in chemicals stored at the plant to be released into the Missouri River and the surrounding floodplains, which could adversely affect downstream communities, agricultural producers, and businesses. The potential risk of contaminant exposure from flood events, although minor, will continue under the No Action Alternative. No significant impact is anticipated.

4.6.2.2 Alternative 2 - *Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

No significant impacts associated with Hazardous Materials are anticipated from the Proposed Action. Disturbance of contaminated soil or groundwater is not anticipated for from construction activities associated with the Proposed Action. In addition, the abandonment of the existing WTP removes the storage of chemicals necessary for water treatment processes. The risk exposure from transportation, storage, and use of these chemicals would be eliminated as well as the potential release of these contaminants into surface waters during flood events.

Releases of the chemicals stored at the MUD south WTP site have not been reported, with the exception of fluorosilicic acid incident discussed above. Based on the minor amount of automotive chemicals released at this location, this spill incident does not represent a significant risk of exposure to hazardous materials during construction of the transmission main in this area (part of the Proposed Action). No other incidents or concerns were found along the southern portion of the ROW which is the area south of the Platte River. It is not expected that the construction of the water line associated with the Proposed Action would occur near or impact these areas.

The Proposed Action may result in the storage of larger quantities of many of the above-listed hazardous chemicals due to increased demand for treated water. However, since MUD has stated that they have adequate capacity to serve the needs of Plattsmouth and the facility chemicals are contained indoors or in USTs, any potential increased storage of these chemicals does not necessarily increase the potential for releases, such as possible spills. This holds particularly true when compared to current conditions. Overall, no measurable change in current

exposure to hazardous materials would occur from the Proposed Action beyond those typically associated with construction activities.

4.6.2.3 Alternative 3 - Relocation of the WTP and Flood Protection for Existing Wells

Disturbance of contaminated soil or groundwater is not anticipated at the WTP construction site. The Phase I ESA completed for the WTP site (Appendix D-2), which is part of the larger Fourmile Industrial Park, did not identify current storage of petroleum products and/or hazardous chemicals at the site.

The relocation of the Plattsmouth WTP into the industrial park would include the storage of treatment chemicals, other cleaning and maintenance chemicals, and fuel at the site. The most recent Tier II Reporting Forms for the Plattsmouth WTP indicate that the following hazardous chemicals are stored at the existing WTP in quantities that are reportable to the NDEE: chlorine gas, calcium oxide, hydrofluoric acid solution, and carbon dioxide gas. The chlorine gas and carbon dioxide gas do not have the potential to impact soil or groundwater due to their gaseous forms. The other chemicals referenced above would be stored and used in accordance with appropriate requirements to protect the environment. The amount of stored chemicals at the new WTP is anticipated to be similar to those stored at the existing WTP.

Under this alternative, the possibility exists for soil and/or groundwater contamination to be encountered during construction activities along a portion of the RWTL route that extends south and west from the existing City-owned lot and Cass County DMV building located on East Main Street in Plattsmouth. Contaminants that may be encountered include, petroleum hydrocarbons, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and Resources Conservation and Recovery Act (RCRA) metals as described in the Phase I ESA (Appendix D-1). Groundwater in the area is anticipated to be approximately 9 to 11 feet below ground surface (bgs) based on groundwater sampling conducted at Rhylander Park. Therefore, contaminated groundwater may be encountered during excavation and/or trenching activities if excavation depth reaches those levels, or if construction takes place during an unusually wet season where groundwater levels are higher.

No contaminants are expected to be encountered at the site of municipal wellhead improvement protections. This area has limited access and is heavily monitored due to its use as a public water supply.

Overall, no significant impacts are expected to occur from this alternative. However, any transportation, storage, or use of hazardous chemicals carries some risk of spills into the environment or exposure to workers at the plant. In addition, the risk of exposure to contaminants in the groundwater near the Rylander Park area of the RWTL is worth noting. Proper notifications and precautions will be taken to protect workers and contain any contaminants during construction.

4.6.2.4 Mitigation

During the final design of the project, a Construction Site Pollution Prevention Plan, outlining appropriate safety procedures, notification procedures, best management practices (BMPs) and remediation and disposal processes will be developed in accordance with EPA recommendations in the event that hazardous materials are encountered during construction. This plan will be part of the contract documents and all contractors working the site will be informed of the risks and responsibilities associated with working in the areas identified above. The following actions will be undertaken, where possible:

- If working within the Rylander Park area, the Materials Management Plan (MMP), previously developed for Rhylander Park (2015, NDEE) will be utilized in the development of the above CSPPP. Construction activities associated with the RWTL that take place along Rhylander Park will adhere to the requirements of the MMP. The MMP will be made available to design and construction managers, and all contractors working the site will be informed of the risks and responsibilities associated with working in this area.

- A Construction Stormwater Pollution Prevention Plan and a Spill Prevention Plan will be developed for the site to ensure that sediment and containments shall not become adrift in stormwater.

- The drilling equipment utilized at the site will have self-contained drilling fluid technology to ensure that groundwater resources are protected.

- Hazardous chemicals that may be relocated to the new WTP at Fourmile Industrial Park (Alternative 3) will follow appropriate hazardous material transportation guidelines and will be reported to the NDEE prior to any relocation. In addition, all hazardous materials stored at the new WTP will be reported to the NDEE and stored appropriately in order to comply with the Environmental Planning and Community Right-to-Know Act (EPCRA) and current hazardous material regulations.

Industrial Stormwater Permits associated with the proposed WTP will be required. The final design of the plant will incorporate stormwater management plans that address contaminants stored at the site to ensure that these chemicals are not released into stormwater in quantities that are not approved by the NDEE.

4.6.3 Noise

Noise is federally regulated by the Noise Control Act of 1972. Noise is generally defined as unwanted sound. Human response to noise can vary according to the type and characteristics of the noise source, the distance between the noise source and the receptor, the sensitivity of the receptor, and the time of day. Cass and Sarpy County's zoning limits noise in industrial and commercial areas to normal traffic noise on adjacent streets at the time of the daily peak hour of

traffic volume. Noise is measured at the property line (Cass County Zoning Regulations Reprint 2016 and Sarpy County Zoning Regulations: Approved Jan. 22, 2019).

Noise-sensitive receptors are defined as locations where people reside or where the presence of unwanted sound may adversely affect the use of the land. Noise-sensitive receptors include residences, schools, hospitals, lodging, libraries, churches, and some recreational uses. There are no sensitive noise receptors in the project area.

No data exists for ambient noise in the construction areas for the two proposed alternatives. It is assumed that noise levels within the project area are consistent with that of urban and suburban areas including, heavy traffic and some commercial noise.

4.6.3.1 Alternative 1 No Action:

Under the No Action alternative, noise from the WSS would remain unchanged from the current operations and would not be expected to cause additional noise. As a result, no noise impacts would occur from this alternative.

4.6.3.2 Alternative 2 – *Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

Under the Proposed Action the City would obtain a new water supply source from the Metropolitan Utilities District (MUD) South Platte water treatment plant. Noise levels resulting from operations of the MUD plant would be unchanged from current noise levels at the plant. No long-term noise impacts are expected from the Proposed Action.

Temporary noise impacts would occur due to construction activities associated with the installation of approximately 7.5 miles of watermain which would connect the City to the MUD plant. The majority of this new water line would be constructed along existing road ROWs. The remainder of the water line would be located within the municipal wellfield located adjacent to the MUD WTP, under the Platte River and within an existing electrical power line corridor.

Most of the adjoining land use along the watermain ROW includes agricultural cropland, residential and commercial areas, a cemetery, and a golf course. Noise-sensitive receptors include residences, schools, hospitals, lodging, libraries, churches, and some recreational uses. Sensitive noise receptors are not known to occur along the route and construction activities are expected to be limited to daytime hours. Overall, the temporary noise impacts from construction work would be minimal. No significant impacts from noise are expected to occur from this alternative.

4.6.3.3 Alternative 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

No significant long-term noise impacts are expected from this alternative given the sites position in the landscape and surrounding land use. Noise-sensitive receptors include residences,

schools, hospitals, lodging, libraries, churches, and some recreational uses. There are no sensitive noise receptors in the project area for this alternative.

Under Alternative 3, the WTP would be relocated to the existing 68-acre Fourmile Industrial Park, which is currently undeveloped. Surrounding land uses to this site include industrial/commercial and agricultural land uses. In addition, a railroad line is located to the south of the WTP site. The closest residential property is more than ¼ mile away from the site.

The proposed WTP would be situated adjacent to the proposed Plattsmouth Wastewater Treatment Plant (WWTP). Noise levels resulting from operations of the WWTP would exceed noise levels from the WTP. Noise from the railroad line is likely to exceed the noise levels of both facilities. Therefore, no long-term impacts to noise are expected from this alternative.

Temporary noise impacts due to construction of the WTP would occur at the site. In addition, temporary noise impacts due to the construction of the RWTL and watermain would occur along an existing road ROWs in the City. The temporary noise impacts would be somewhat minimal, and work is expected to occur during daytime hours. There are no known sensitive noise receptors within these work areas. No significant noise impacts are expected from this alternative.

4.6.3.4 Mitigation

Construction will be limited to daytime hours to reduce noise impacts.

4.6.4 Transportation

The review of transportation resources involves both short term impacts from construction activities including, interruptions in service, temporary detours, construction flagging and lane closures, transportation of equipment and materials on roadways, and long-term traffic impacts due to the operations of the facility, such as commuting, deliveries, customer traffic.

Transportation resources in the review area include public roads, and several railroad lines that primarily carry freight. A small municipal airport is located approximately 4 miles south of the project and Offutt Air Force Base is located approximately 4 miles north of the review area at its closest point.

The main thoroughfares in Plattsmouth are Highway 34, Chicago Avenue, Livingston Highway, and Washington Avenue. Bay Road and 6th Street are a fairly well traveled corridor to and from residential areas in the outskirts of Plattsmouth.

4.6.4.1 Alternative 1 - No Action:

The No Action Alternative would have no impact on traffic circulation or volume as no work is proposed and no changes to existing conditions would occur.

4.6.4.2 Alternative 2 – *Proposed Action,* Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source:

The Proposed Action (Alt 2) would not have any long-term impacts on traffic or railroad operations as the water line would be constructed below grade. The construction activities would temporarily result in traffic delays on Bay Road and 6th Street causing some drivers to detour to other roadways. These delays and inconveniences to travelers would also occur during any future repair work to the watermain. These impacts would be temporary and would not be significant.

Railroad transportation will not be impacted by the project. Two railroad lines will be crossed in the Proposed Action. However, it is anticipated that these crossings will be accomplished by directional bore technology to avoid impact to the railroad operations. Coordination with the appropriate officials will be completed once project plans are in place.

Overall, the Proposed Action would not cause adverse impacts to transportation resources.

4.6.4.3 Alternative 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

The alternative would have no significant impact on traffic or effect railroad operations at the site. East Wiles Road borders the proposed WTP site where employees or deliveries will enter. The site of the proposed WTP has been earmarked as an industrial park. Given that only 2 employees would work at the WTP, and the limited number of delivery trucks traveling to the WTP, no long-term impacts to traffic are expected from the construction or operation of the plant.

Traffic will increase on a temporary basis at the proposed WTP site during construction due to construction workers, equipment, and suppliers traveling to and from the site. Given the location of the site within an existing industrial area, these impacts will be minimal and temporary. The majority of the traffic will travel along E Wiles Road east, to Highway 34. This is a rural two-lane highway with moderate traffic flows. Temporary impacts to traffic at this intersection are not expected to affect normal traffic patterns to any significant extent.

The roads along the RWTL and waterline ROWs may experience temporary traffic delays during construction and any future repair work from temporary detours around the work sites. Although these detours and delays may be an inconvenience for travelers, they are not expected to create significant impacts to traffic within this small community.

One railroad line will be crossed by the proposed RWTL. Coordination with the appropriate officials will be completed once project plans are in place. It is expected that all railroad crossings will be constructed using directional drilling technologies to avoid impacts to rail transportation resources.

No significant impacts to traffic circulation or volume would result from this alternative. This alternative would have minor temporary impacts on local traffic and no impacts to regional traffic

are expected. Overall, the work associated with this alternative would not cause adverse impacts to transportation resources.

4.6.4.4 Mitigation

Work zone traffic controls would be implemented in accordance with transportation safety standards as appropriate during construction. Appropriate signage and barriers would be placed prior to construction activities to alert pedestrians and motorists of project construction and any traffic pattern changes. Coordination with appropriate transportation agencies or authorities is recommended to ensure that appropriate standards and notifications are being made.

4.6.5 Public Services and Utilities

Public services and utilities include water and sewer services, police, fire and other emergency services, general municipal services such as transportation infrastructure, public health services, road maintenance, energy and telecommunications supply, and many others.

The Plattsmouth WTP provides approximately three MGD of potable drinking water to the Plattsmouth community. The WTP was significantly damaged during Flood Event 4420DR that occurred in the Spring of 2019 and was out of service for 6 months. Flooding of the WTP and wells have been a reoccurring trend since the plant was constructed in 1972 with flooding becoming more frequent. Water use limitations, boil water advisories, and bottled water provisions have become a burden to the community and places demands on many public services. Emergency service providers, and the Cass County Health Department, as well the public works staff, local leadership, and other local and county agencies and organizations are engaged in efforts to protect the public health and welfare during these flood events. A reliable and safe source of drinking water is the foundation of a community. Providing this critical infrastructure has been a challenge for the Plattsmouth community due to the WTP's location within the Floodplain of the Missouri River.

The Plattsmouth WWTP provides sewage treatment services for the City. The plant is located southeast of the WTP, also within the floodplain of the Missouri River, and floods regularly. A new WWTP is proposed to be relocated outside of the floodplain.

Electricity is provided to the City of Plattsmouth by Nebraska Public Power District (NPPD). Natural gas is provided by Black Hills Energy. Telecommunication services are provided by numerous providers including cellular services and cable service providers.

The MUD Platte South WTP is being considered as an alternate water source for Plattsmouth. According to a 2017 NDEE Compliance Inspection Report, the MUD Platte South WTP has the capacity to produce potable water at a rate of up to 60 MGD. The average daily production in 2017 was 48 MG, leaving plenty of capacity for the 3 MGD that Plattsmouth requires. Water quality studies have been conducted by MUD and the City of Plattsmouth to ensure that the water quality of MUD, Plattsmouth, and the Cass County Rural Water District would be compatible for mixing

water supply sources. The studies indicated that no issues with water quality or aesthetics would occur (taste, olfactory).

4.6.5.1 Alternative 1 - No Action Alternative:

Under the No Action Alternative, the WTP and wellheads will continue to be flooded resulting in interruptions in the public water supply service, boil water advisories, limited access to the wells, and WTP during flooding as well as additional costs for cleanup and repairs. Health and safety risks will continue, causing demands on public service providers working in emergency services, health care services, and organizations throughout the community. In addition, burdens will continue to be placed on the public works departments as they try to protect/stabilize the flooding around the WTP.

The impacts to public services and utilities are significant from this alternative

4.6.5.2 Alternative 2 – Proposed Action, Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

The Proposed Action would provide a reliable source of potable water to the community, benefiting public services and the community at large. Existing utilities, public service offices and schools would also benefit from having reliable potable water services. Health clinics, shelters, churches, and many other community buildings that provide community services would be able to provide improved services during and after flood events.

The Proposed Action will reduce demands on public service providers addressing short- and long-term health effects related to the contamination of public water supplies. There would also be a reduction in the responsibilities of maintaining the WTP and the wells, allowing the community to focus on other services that have been back-shelfed due to the flood issues.

Implementation of this alternative would reduce stresses on emergency services (health department, police, emergency medical services) as these entities would not need to respond to emergency situations resulting from a disruption in water treatment.

The MUD South Water Treatment Plant has adequate capacity to supply the City of Plattsmouth with potable water. Under this alternative a reliable and safe source of public drinking water will be supplied to the community, reducing demands and stresses on existing public services while also reducing public health risks. The Proposed Action would have a positive impact on public services and utilities.
No significant negative impacts are expected from this action. However, construction activities may result in traffic detours which could temporarily impact emergency response times for emergency services.

4.6.5.3 Alternative 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

Relocation of the WTP will alleviate costly, recurring repairs to existing infrastructure, equipment, and buildings that will inevitably be necessary if the WTP remains at its current location, within the floodplain of the Missouri River. Relocation of the WTP and construction of wellhead protection buildings will extend the life of the City's WSS and increase efficiency in treating water.

Implementation of this alternative would have a positive impact on the community by reducing stress on local public services (health department, police, emergency medical services, public works, etc.) as these entities would not need to respond to emergency situations resulting from a disruption in water treatment, eliminating interruptions in water service, and overall improving public health.

The ability to provide a safe and reliable water supply will have a positive impact on the community. No significant negative impacts to this resource area would occur from this alternative. However, construction activities may result in traffic detours which could temporarily impact emergency response times for emergency services.

4.6.5.4 Mitigation

Emergency Service providers will be notified during construction of activities that may impact response times enabling them to plan alternative routes.

4.6.6 Public Health and Safety

Reliable water treatment services are essential to public health and safety. During a flood, non-potable water throughout the water supply systems can enter residences, businesses, and public and private buildings. Boil water advisories are put in place, but many community members may not be notified in a timely manner. Exposure to E. coli and other contaminants can lead to many health and safety issues. This is particularly concerning for elderly residents and children, or those with diminished immune systems.

Water quality studies have been conducted by MUD and the City of Plattsmouth to ensure that water quality of MUD, Plattsmouth, and the Cass County Rural Water District would be compatible mixing water supply sources. The studies indicated that no issues with water quality or aesthetics (taste, olfactory) would occur. There is adequate supply of water as well.

Public health and safety providers are burdened by the demands placed on them during flood events. This can lead to reduced response time and services for the community in general. In addition, the safety of the WTP and emergency service providers are at risk from attempting to protect, assess, and repair the WTP during and after a flood event.

4.6.6.1 Alternative 1 - No Action Alternative

Providing a reliable clean drinking water supply is a public health and safety essential service. Under the No Action Alternative, the existing WTP is susceptible to flooding and frequent service interruptions, leading to increased risk of bacteria exposure and health concerns for residents, businesses, and public health and safety providers. The absence of reliable water treatment services leaves residents in Plattsmouth vulnerable to illness, particularly the elderly, and children.

There are also safety concerns for WTP workers and nearby residents if the plant equipment becomes damaged, or if debris and contaminants from the WTP washes off-site. WTP workers and public safety providers take risks to access the wells and the plant during flood events as well. The potential for these impacts would continue under this alternative.

The existing plant is over 40 years old and has been updated several times over the years. The existing WTP cannot provide adequate service due to its age and the damages it has suffered from the recent flooding. The ongoing negative impacts to public health and safety would continue under this alternative threatening public health and safety.

4.6.6.2 Alternative 2 – *Proposed Action* - Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source

No significant impacts to public health and safety would occur from the Proposed Action.
Under the Proposed Action, the community would have a reliable water supply from a large and well-funded public water district. The MUD south Platte WTP has adequate capacity to meet the needs of the Plattsmouth community and has a long history of providing drinking water from this site to its surrounding communities. The WTP is well maintained with adequate staffing.

Flooding of the MUD wellfields along the banks of the Platte River occasionally occurs, but the facility has well maintained well houses that protect the wells from excessive contamination. Additionally, the MUD WTP is located outside of the floodplain, allowing them to continue to treat the water supply during most high-water events. There is no reason to expect that disruptions in water services or public health and safety issues would occur from this alternative.

The construction of 7.5 mile of watermain will provide some minor temporary public safety issues related to construction work along roadways. This includes traffic safety issues, and dust during construction. These impacts will be minor and temporary and can be mitigated by utilizing BMPS for dust control and appropriate DOT signage for construction activities along roadways.

The existing public health and safety issues mentioned in the No Action alternative above would be eliminated entirely. Overall, no significant negative impacts to public health and safety would occur from this alternative. A positive long-term impact to the public health of the community and the safety of the public servants who are involved with protecting the WPT during flooding would occur as a result of this action.

4.6.6.3 Alternative 3 – Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections

The relocation of the WTP would have long-term beneficial impacts to public health and safety by providing a reliable and safe water supply to the community. Relocating the plant outside of the floodplain would remove the risk of flooding and result in less interruptions to water treatment services, minimizing exposure of residents, businesses, and downstream communities to pollutants; thereby benefiting public health and safety. In addition, the risk taken by the WTP workers and emergency service providers to protect and access the plant during floods would be eliminated.

The wellheads would remain in the floodplain and would be accessible by boat during floods as they are now. The associated health and safety risks will remain for those public service providers. In addition, contaminants from floodwaters could potentially enter the wellheads, even with the new wellhead protections in place, leaving the community susceptible to public health and safety risks.

Construction of the WTP, RWTL, and watermain, are anticipated to have short-term impacts to public safety from construction activities, including detours and dust. Traffic controls and/or temporary road closures may also be necessary during construction. These actions could cause delays in emergency services or school bus transportation. However, these impacts are temporary, and minor compared to the benefits of the project as a whole.

Some equipment at the WTP poses safety risks for workers. Plant workers receive safety training to minimize the risks of working around this equipment. The construction of new plant equipment would be beneficial for plant worker safety as the equipment would be new, have improved efficiency, and be less susceptible to flood damages. Overall, no significant impacts to public health and safety would occur from this alternative beyond the beneficial impacts of having a reliable drinking water supply for the community and a safer WTP for employees of the plant.

4.6.6.4 Mitigation

Fencing and/or other barricades will be installed during construction activities to address the safety of nearby residents. Appropriate BMPs for dust control and erosion will be implemented during construction.

Coordination of road closures, detours and with other public service providers will be undertaken regularly to minimize impacts.

5.0 CUMULATIVE EFFECTS

The CEQ regulations for implementing NEPA define cumulative effect as the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. The proposed activities associated with the

Proposed Action and its alternatives were evaluated against existing environmental documents related to current and planned future actions to determine the potential for cumulative environmental impacts as defined in the CEQ regulation of implementing the procedural provisions of NEPA (40) CFR Part 1508.27.

Omaha Metro region is growing and can be expected to continue the trend into the future. Plattsmouth is on the southeastern edge of the Omaha Metro region, which includes the Omaha-Council Bluffs area. The Metropolitan Area Planning Agency is responsible for managing the growth of the Omaha Metro region. A review of the MAPA 2050 Long Range Transportation Plan (LRTP), indicates no actions proposed with the Plattsmouth area https://mapacog.org/wp-content/uploads/2020/10/MAPA-2050-LRTP-Chapter-6.pdfm. Reviews of the goals within the Nebraska Department of Transportation LRTP (Vision 3032) https://dot.nebraska.gov/projects/publications/lrtp/ , the Cass County Comprehensive Plan http://www.cassne.org/downloads/Zoning/Cass%20County%20Comprehensive%20Plan.pdf and the Plattsmouth Comprehensive Plan https://www.plattsmouth.org/PDF/CityHall/Comprehensive-Plan20150302.pdf considering the proposed alternatives were also completed to evaluate the potential for cumulative environmental impacts.

The City of Plattsmouth WWTP was also impacted by the 2019 flooding. The City, with FEMA funding assistance, is pursuing a project to relocate WWTP.

5.1 No action alternative

The no action alternative would not have any significant cumulative effects. Ongoing flooding of the WTP would continue along with the impacts to the environment and health and safety of residents of Plattsmouth. People would continue with boil water advisories and exposure, while access to the plant would continue to be dangerous and limited during flood events.

5.2 Alternative 2 – Proposed Action, Utilize the MUD South WTP for a Water Source

A review of the planning resources mentioned above indicate that growth in the Omaha metro region will continue as expected. No additional projects are known to be planned within the Plattsmouth area as a result of this project. The City, with FEMA funding assistance, is pursuing a project to relocate WWTP. Coordination of construction scheduling for the two projects will occur to minimize any effects to public services and emergency providers. There are no other known projects occurring along this project area that would occur beyond normal road work maintenance. Cumulative effects associated with the Proposed Action, Alternative 2, are not expected to occur.

5.3 Alternative 3 – Relocation of the WWTP Using Existing Outfall on the Missouri River

No significant cumulative environmental effects would occur from Alternative 3. A review of the planning resources mentioned above indicate that growth in the Omaha Metro region will continue as expected. No additional projects are known to be planned within the Plattsmouth area, beyond the construction of the new WWTP and associated sewage and wastewater collection systems, proposed along the same right of way and same lot at the Fourmile Industrial Park. It is preferable if both projects could be constructed at the same time to limit the temporary construction impacts to a single event. However cumulatively, the negative cumulative effects from construction are temporary and are minimal.

Development of vacant lands within the Fourmile Industrial Park will likely occur over time. However, this could take years. No known projects are occurring at the Fourmile Industrial Park or along the project areas at this time or in the foreseeable future. The overall environmental impacts from this project are minor and temporary. When combined with typical roadway and utility maintenance work along the proposed ROW, and other potential development in the area, no significant cumulative effects would occur from this alternative.

6.0 SUMMARY OF IMPACTS AND MITIGATION

This chapter summarizes the existing environmental resources and the environmental impacts that may occur from the Proposed Action (FEMA's funding of the relocation of the Plattsmouth Water Supply System by utilizing the MUD South WTP as a water source) and its alternatives. Temporary and permanent impacts were analyzed for all alternatives to the Proposed Action, including the No Action Alternative, within each of the resource areas. The potential environmental impacts were analyzed through comparison with the potentially affected environmental components or conditions and mitigation measures that could offset any environmental impacts.

The existing conditions of the environmental resources within the work area of Proposed Action and at its alternatives, are presented in Section 4. Section 4 also presents an analysis of each alternative's potential effects on each environmental resource. Cumulative impacts represented in this table are discussed in detail in Section 5. The resource areas eliminated from further analysis in Section 3.5 are not discussed in this summary.

In accordance with CEQ Regulations (40 CFR Part 1502.14 and 23 CFR 771), Table 6-1 below presents "the environmental impacts of the proposed and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision-maker and the public.".

As shown in Table 6.-1, the No Action Alternative would result in no environmental impacts and no improvement to the environment. Existing pollutant loading to the Missouri River and its

floodplain, along with the contamination of drinking water supplies and burdens on public service providers would continue.

The Proposed Action, Alternative 2, would involve funding the construction of 7.5 miles of watermain that would bring potable water from the MUD South WTP to the Plattsmouth community. This would result in minor temporary environmental impacts and the permeant loss of a small area of trees or hedgerows as described in table 6.1. Temporary impacts to wetlands are greater under this alternative. However, the impact estimate is a worst-case scenario. Most of these wetlands are disturbed due to maintenance or farming and are located along road shoulders. These wetland areas may very well be avoided in the final design plans. The minor impact on the environment are outweighed by the long-term improvement to public health and safety that would be provided by this action. As well, the flood risks to a piece of critical public infrastructure would be eliminated.

Alternative 3, involves the construction a new WTP, new water line carrying raw water from the existing municipal wells to the new WTP for treatment, and a new watermain connecting to the existing distribution system, as well as making significant improvements to five existing wellheads for protection during flooding would involve greater environmental impacts than the Proposed Action of Alternative 2. This alternative would have longer construction times, higher construction costs, greater temporary impacts to many environmental resources, and result in a permanent loss of flood storage capacity within the floodplain due to the well head improvements.
The following table summarize these determinations.

Table 6.1 Summary of Environmental Consequences and Impact

Environmental Resource	Alt 1 - No action	Alt 2 – Proposed Action Utilize the MUD Regional Water Supply as a Water Source	Alt 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections
Farmland (FPPA)	No Impact	No Impact	No Impact
Geology and Soils	No Impact	Temporary - 31 Ac	Temporary 20 Ac
Water Quality	No Improvement to Pollutant Loading to Missouri River During Floods	Greatest Floodplain Improvement	Practicable Floodplain Minimization Alternatives – Floodplain Improvement
Streams	No Impact	Temporary 130 LF	Temporary 1,100 LF
Wetlands	No Impact	Temporary 0.9 Ac	Temporary 0.03 Ac
Floodplain	Greatest Negative Impact to Floodplains - WTP and wells remain in floodplain	Greatest Improvement	Loss of 13 ac ft
Woodland	No Impact	0.003 ac	No Impact
Hedgerow	No Impact	0.002 ac	0.01 ac

Environmental Resource	Alt 1 - No action	Alt 2 – Proposed Action Utilize the MUD Regional Water Supply as a Water Source	Alt 3 - Relocation of the Plattsmouth Water Treatment Plant and Wellhead Protections
Threatened & Endangered Species Habitat	No Improvement – Existing Effects to Species in the Missouri River Corridor Continue. No Conservation Improvements.	May Effect, Not Likely to Adversely Affect 3 federal Threatened/Endangered Species. Best conservation Benefit to Pallid Sturgeon.	May Effect, Not Likely to Adversely Affect 1 federal Threatened/Endangered Species. Less Conservation Benefit Due to WTP Construction and wellheads remaining in the Missouri River floodplain.
Historic Resources	Negative Effects to the MSHD Remain. No Improvements	No Historic Properties Affected	No Historic Properties Affected
Archeological Resources	No Impact	No Historic Properties Affected	No Historic Properties Affected
Tribal Resources	No Impact	No Impact	No Impact
Air Quality	No Impact	Temporary	Temporary, Greater
Noise	No Impact	Temporary	Temporary, Greater
Environmental Justice	No Impact	No Disproportionate Effects to EJ Populations	No Disproportionate Effects to EJ Populations
Transportation	No Impact	Temporary	Temporary
Public Services and Utilities	No Improvement	Permanent Improvement Temporary Negative - minor	Permanent Improvement Temporary Negative - Greater
Cumulative Impact	No Impact	No significant impact	No significant impact
Cost	NA	$27,059,692 dollars	$40,566,971 dollars

6.1 Mitigation

No formal mitigation measures are necessary to offset the minor impacts of these alternatives. However, the following measures will be included where appropriate to limit the impacts to the minimum necessary to accomplish the work:

- Utilizing BMPs to protect workers and the environment during construction.
- Use of proper erosion and sediment controls.
- Limit tree clearing to outside of the Northern Long-eared Bat roosting and hibernacula swarming seasons by cutting trees only from December 1 to March 1 if feasible.
- Use of Directional bore technologies under streams and wooded riparian areas where possible.
- Limit construction work to day light hours.
- Survey for protected species where necessary prior to working in or adjacent to potential habitat areas.
- Incorporate the use of native seed mixes to restore and promote natural habitat where possible.
- If artifacts or human remains are found on site during construction or within borrow areas, the Nebraska SHPO and FEMA will be contacted immediately and work will cease in the area of discovery.

- Fill/gravel from non-commercial sources may require permits and/or additional SHPO consultation, and failure to obtain these prior to doing the work may jeopardize federal funding. No other mitigation is recommended.

It is understood that various environmental and construction permits will be required prior to undertaking this work associated with the Proposed Action. A list of these potential permits are provided in Section 8 below. All necessary permit will be obtained prior to construction.

Given all of the above, it appears that the Proposed Action is the best alternative to relocate the WWTP outside of the floodplain, protect the water supply of the City of Plattsmouth and downstream communities, and protect public health, safety, and the environment.

Mitigation measures to offset these temporary impacts to the environment include; utilizing BMPs to protect workers and the environment during construction, use of proper erosion and sediment controls, survey protocol for nesting birds and limiting tree clearing as appropriate, limiting construction work to daylight hours and utilizing directional bore technologies where possible to limit impacts to surface waters and other important natural habitats, and incorporating the use of native seed mixes to encourage wildlife habitat and limit invasive species. With these measures in place and all appropriate permits obtained, the Proposed Action would have no significant impact on the environment.

7.0 AGENCY COORDINATION, PUBLIC INVOLVEMENT AND PERMITS

7.1 Agency Coordination

- Nebraska State Historic Preservation Officer
- Nebraska Department of Environment and Energy
- Nebraska Department of Natural Resources
- Nebraska Game and Parks Service
- U.S. Fish and Wildlife Service, Nebraska Field Office, Mountain-Prairie Region
- U.S. Army Corps of Engineers, Nebraska Regulatory Branch, Omaha District
- U.S. Environmental Protection Agency
- Tribal Historic Preservation Officers

7.2 Public Involvement

A public notice was issued on xxxx 2020, requesting comments from the public on the Proposed Action for a XXX public comment period. A copy of the Draft EA, prepared for the action, was made available for public review at the Town Office and online in electronic format.

This section will be updated upon completion of public comment.

A copy of the notice is provided in Appendix F along with the comments received and responses to those comments.

Overall, the public comments received supported the project.

7.3 Permits

The proposed project would require the following permits which would be applied for during the design process, prior to beginning construction or operations as appropriate:

- Local Grading and Building Permit - City of Plattsmouth Building Department
- Floodplain Construction Permit - City of Plattsmouth Building Department, possibly Sarpy County Building Department for the watermain under the Platte River
- Non- Point Source Discharge Permit for Construction Activities - NDEE
- Temporary Work Permit County and Highway Disturbance - NDOT and Cass County DPW
- Section 404 permit for the discharge of Fill material in Waters of the U.S. - USACE Permit
- For the Proposed Action (water supply from the MUD Platte South WTP) it is anticipated that the current air permit will be sufficient unless otherwise notified by the NDEE.
- Department of Health Water Supply modification approval – NDHHS

8.0 REFERENCES

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Wild and Scenic Rivers Program https://www.rivers.gov/map.php

9.0 LIST OF PREPARERS

Terracon Consulting Scientists and Engineers - Ms. Kim Copenhaver, Senior Environmental Scientist, 15080 A Circle Omaha, NE, 68144, Phone (402) 384-7009, Facsimile (402) 330-7606, kim.copenhaver@terracon.com.

Terracon Consulting Scientists and Engineers - Ms. Jessica Engelbart, Senior Environmental Scientist, 15080 A Circle Omaha, NE, 68144, Phone (402) 330-2202, Facsimile (402) 330-7606, jessica.engelbart@terracon.com

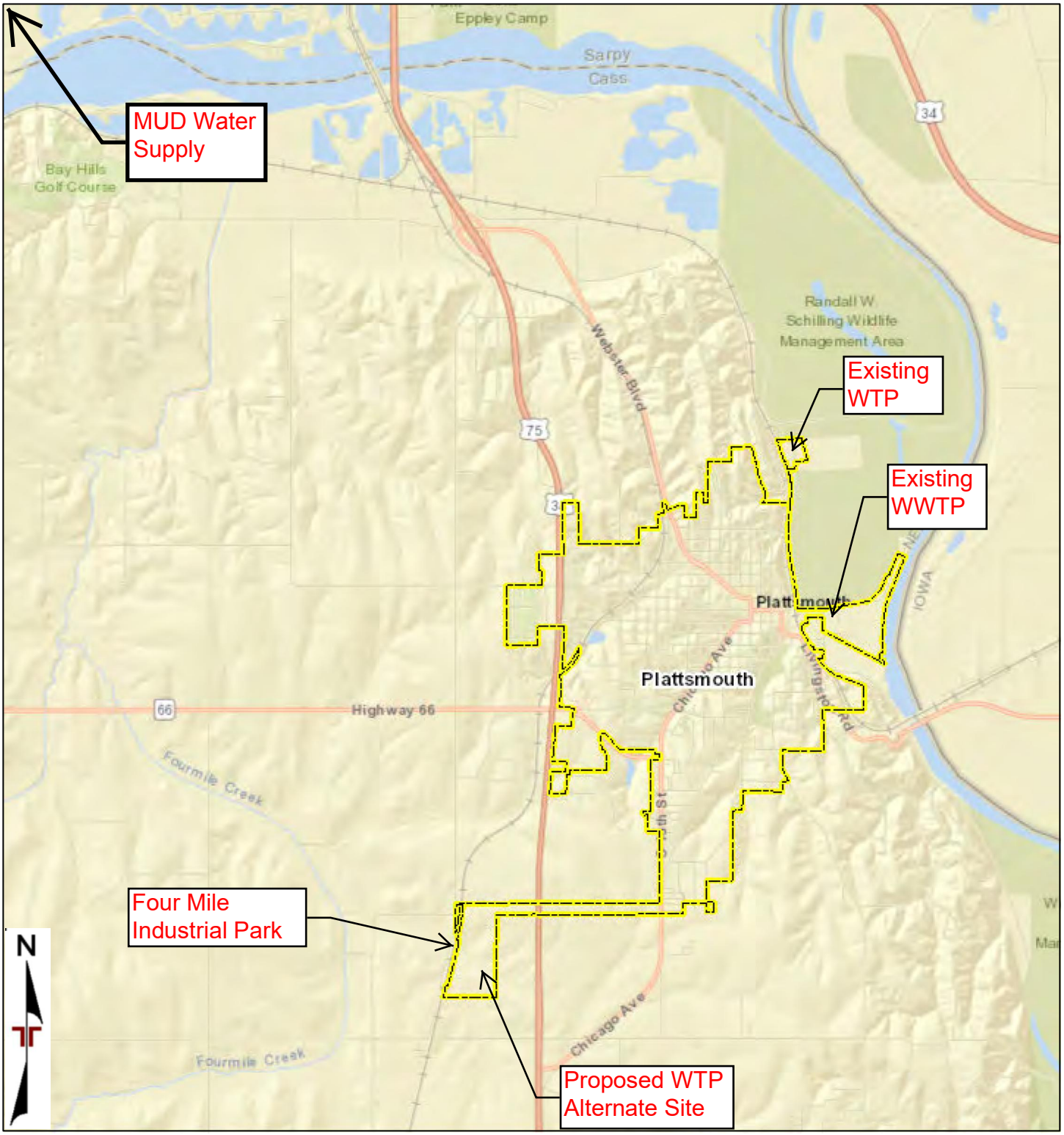
Terracon Consulting Scientists and Engineers - Ms. Kari Munk, Environmental Scientist, 15080 A Circle Omaha, NE, 68144, Phone (402) 384-2202, Facsimile (402) 330-7606, kari.munk@terracon.com.

Terracon Consulting Scientists and Engineers - Ms. Jennifer Peters, Environmental Planning Group Manager, Phone (210) 907-7648, Jennifer.Peters@terracon.com.

Olmsted and Perry Engineers – Mr. Steven Perry PE, 10730 Pacific St. #232, Omaha NE 68114,(402) 399-8552, SteveP@olmstedperry.com

APPENDIX A
MAPS, LISTS, DATA

gWorks



February 10, 2020

DISCLAIMER: This map is not intended for conveyances, nor is it a legal survey. The information is presented on a best-efforts basis, and should not be relied upon for making financial, survey, legal or other commitments.

Legend

City Limits

1:72,224

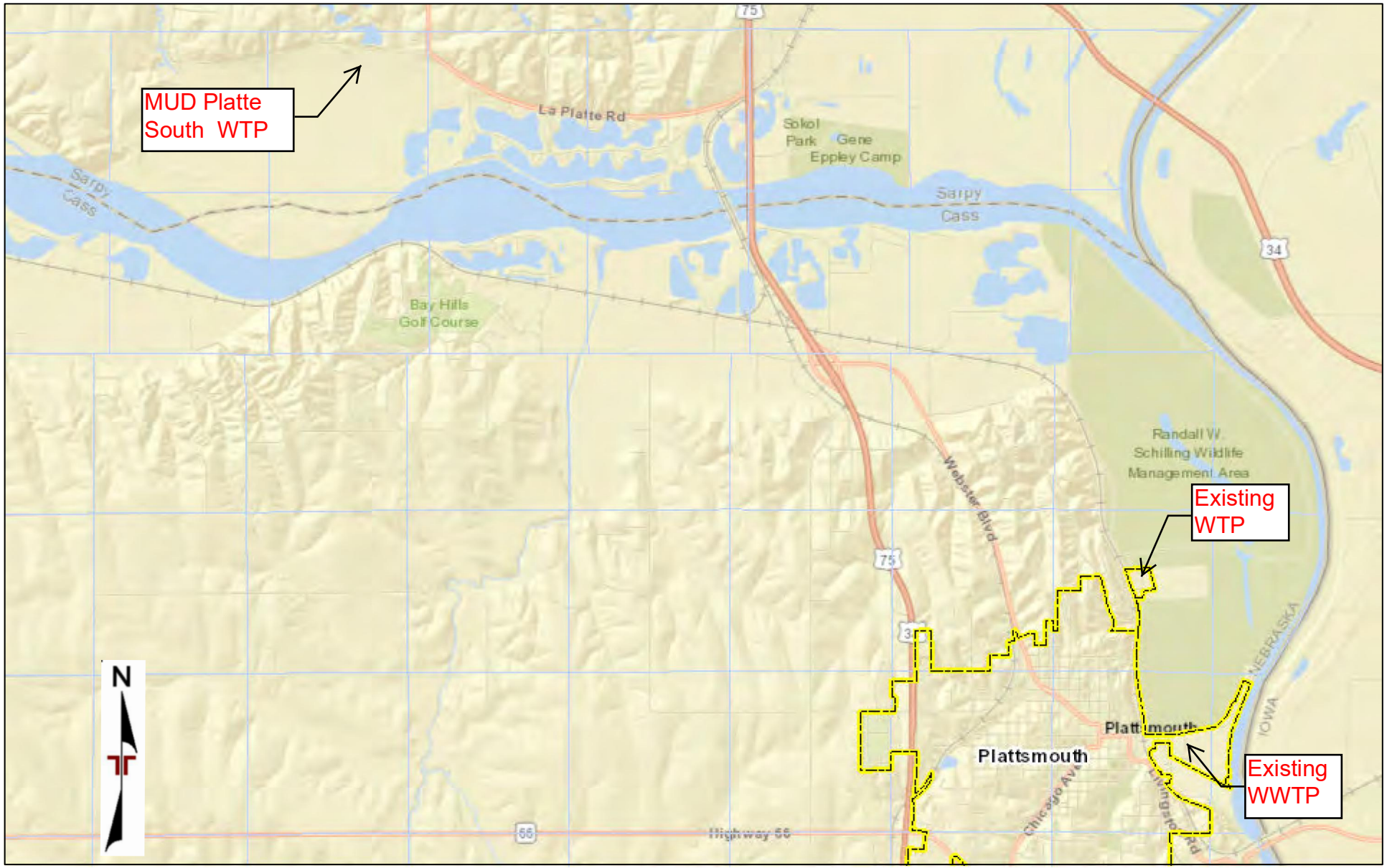
0 0.5 1 2 mi

0 1 2 4 km

Olmsted & Perry Consulting Engineers Inc.
OPCE Project No. 19092

GENERAL LOCATION MAP - EXHIBIT A
Plattsmouth Water Supply Relocation Project
Plattsmouth, Nebraska

MUD Regional Water Supply Site Location Map



March 3, 2020
16:07 PM

DISCLAIMER: This map is not intended for conveyances, nor is it a legal survey. The information is presented on a best-efforts basis, and should not be relied upon for making financial, survey, legal or other commitments.

1:72,224

0 3,250 6,500 13,000 ft

0 1,000 2,000 4,000 m

City Limits

Sections

Olmsted & Perry Consulting Engineers Inc.
OPCE Project No. 19092

MUD Water Supply Location MAP - EXHIBIT B
Plattsmouth Water Supply Relocation Project
Plattsmouth, Nebraska

Cass County gWorks.

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 14. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information about the **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at www.ngs.noaa.gov.

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If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

(A)——(A)	Cross section line
(23)- - - - -(23)	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4489000m N	1000-meter Universal Transverse Mercator grid values, zone 14
ML5510 X	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile
ID119 ⊗	Interior Drainage Structure See FIS Report for summary of Interior Drainage Elevations.

MAP REPOSITORIES
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JANUARY 19, 1995

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
December 2, 2005 - to change Base Flood Elevations, Special Flood Hazard Areas and floodway; to update corporate limits and map format; to add roads and road names; to incorporate previously issued Letters of Map Amendment and Letters of Map Revision; and to reflect updated topographic information.

For Community map revision history prior to countywide mapping, refer to the community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0205G

FIRM
FLOOD INSURANCE RATE MAP

SARPY COUNTY, NEBRASKA
AND INCORPORATED AREAS

PANEL 205 OF 255

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELLEVUE, CITY OF	310191	0205	G
PAPILLION, CITY OF	315275	0205	G
SARPY COUNTY	310190	0205	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
31153C0205G

MAP REVISED
DECEMBER 2, 2005

Federal Emergency Management Agency

Exhibit C-1 Flood Maps

NOTES TO USERS

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National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

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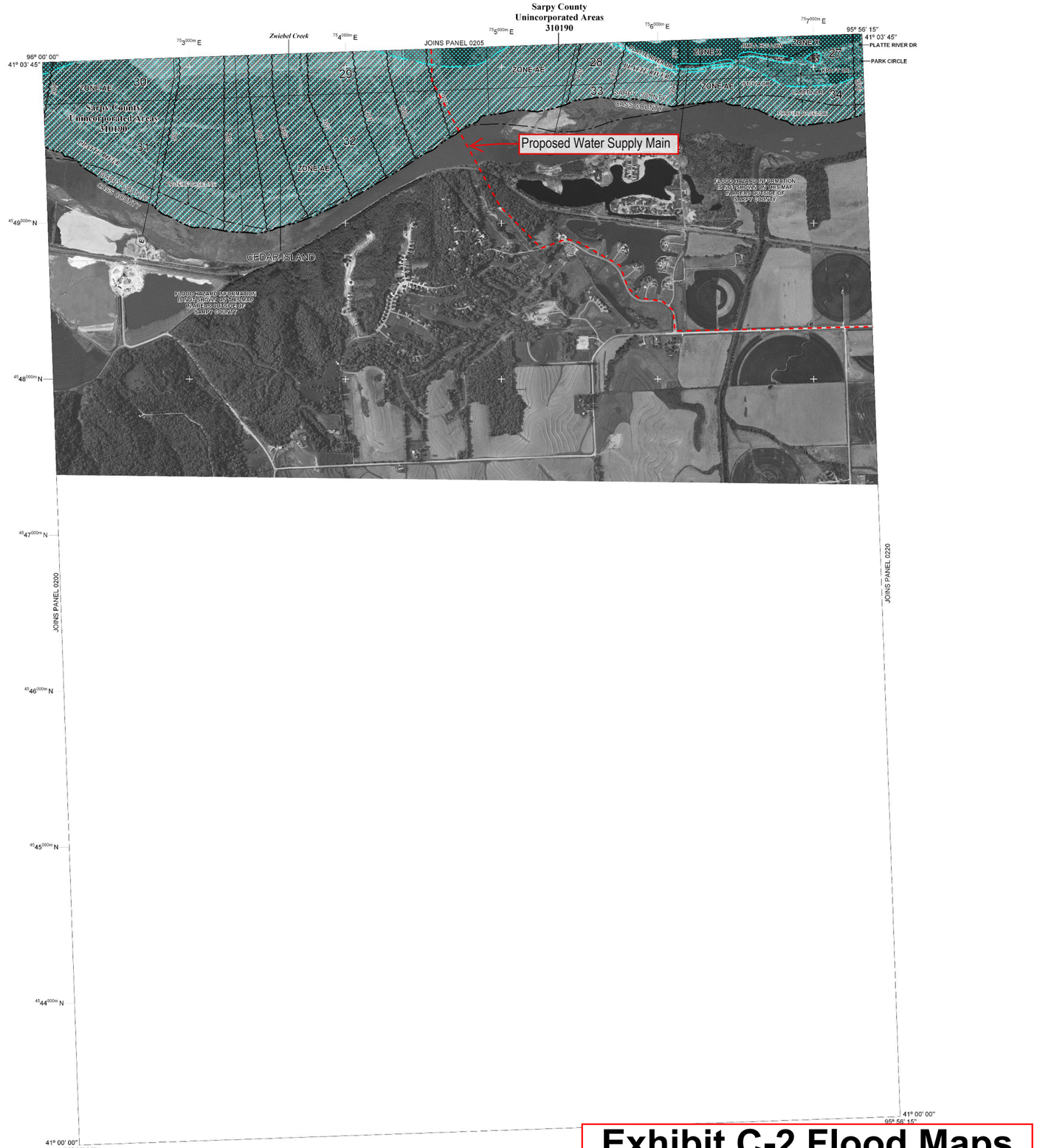

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

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ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

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ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
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OTHERWISE PROTECTED AREAS (OPAs)

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	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

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ML5510 X	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile
ID119 ⊗	Interior Drainage Structure See FIS Report for summary of Interior Drainage Elevations.

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Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JANUARY 19, 1995

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

December 2, 2005 - to change Base Flood Elevations, Special Flood Hazard Areas and floodway; to update corporate limits and map format; to add roads and road names; to incorporate previously issued Letters of Map Amendment and Letters of Map Revision; and to reflect updated topographic information.

For Community map revision history prior to countywide mapping, refer to the community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0215G

FIRM
FLOOD INSURANCE RATE MAP

SARPY COUNTY, NEBRASKA
AND INCORPORATED AREAS

PANEL 215 OF 255

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SARPY COUNTY	310190	0215	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
31153C0215G

MAP REVISED
DECEMBER 2, 2005

Federal Emergency Management Agency

Exhibit C-2 Flood Maps

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929. Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Nebraska State Plane Coordinate System of 1983, FIPS 2600. The **horizontal datum** was NAD 1983. Differences in datum, spheroid, projection or state zone used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** , or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the Nebraska Department of Natural Resources. This information was photogrammetrically compiled at a scale of 1:12,000 from aerial photography dated 1999 or later.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables*for Cedar Creek, Platte River, Missouri River, and Turkey Creek in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

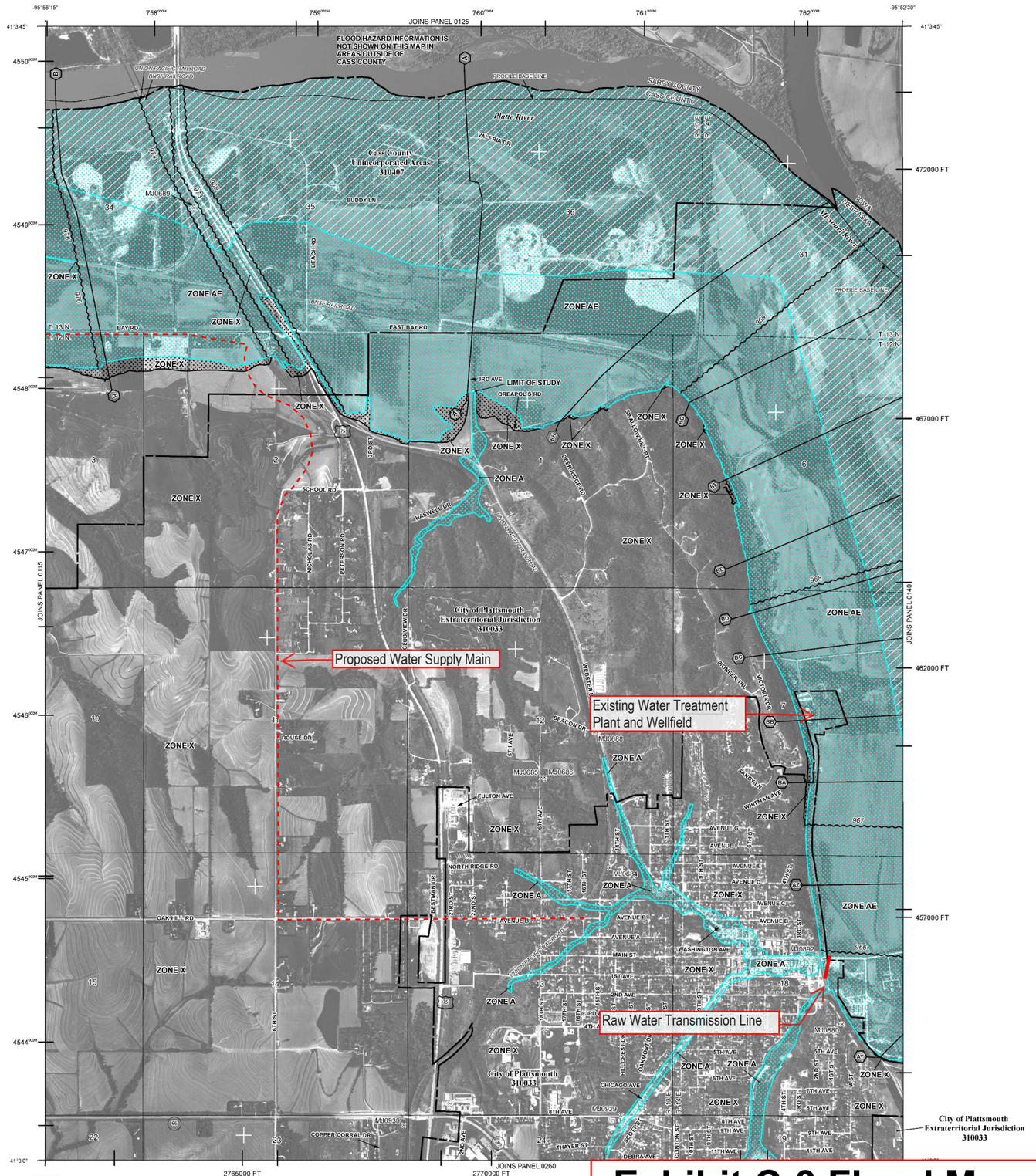
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center (MSC)** via the FEMA Map Information eXchange (FMIX) at 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A — A	Cross section line
23 - - - - 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000 FT	1000-meter Universal Transverse Mercator grid ticks, zone 14
6000000 FT	5000-foot grid values: Nebraska State Plane coordinate system, (FIPSZONE 2600), Lambert projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORIES
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
November 26, 2010
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0120D

FIRM
FLOOD INSURANCE RATE MAP

CASS COUNTY, NEBRASKA
AND INCORPORATED AREAS

PANEL 120 OF 450

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CASS COUNTY	310407	0120	D
PLATTSMOUTH, CITY OF	310033	0120	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

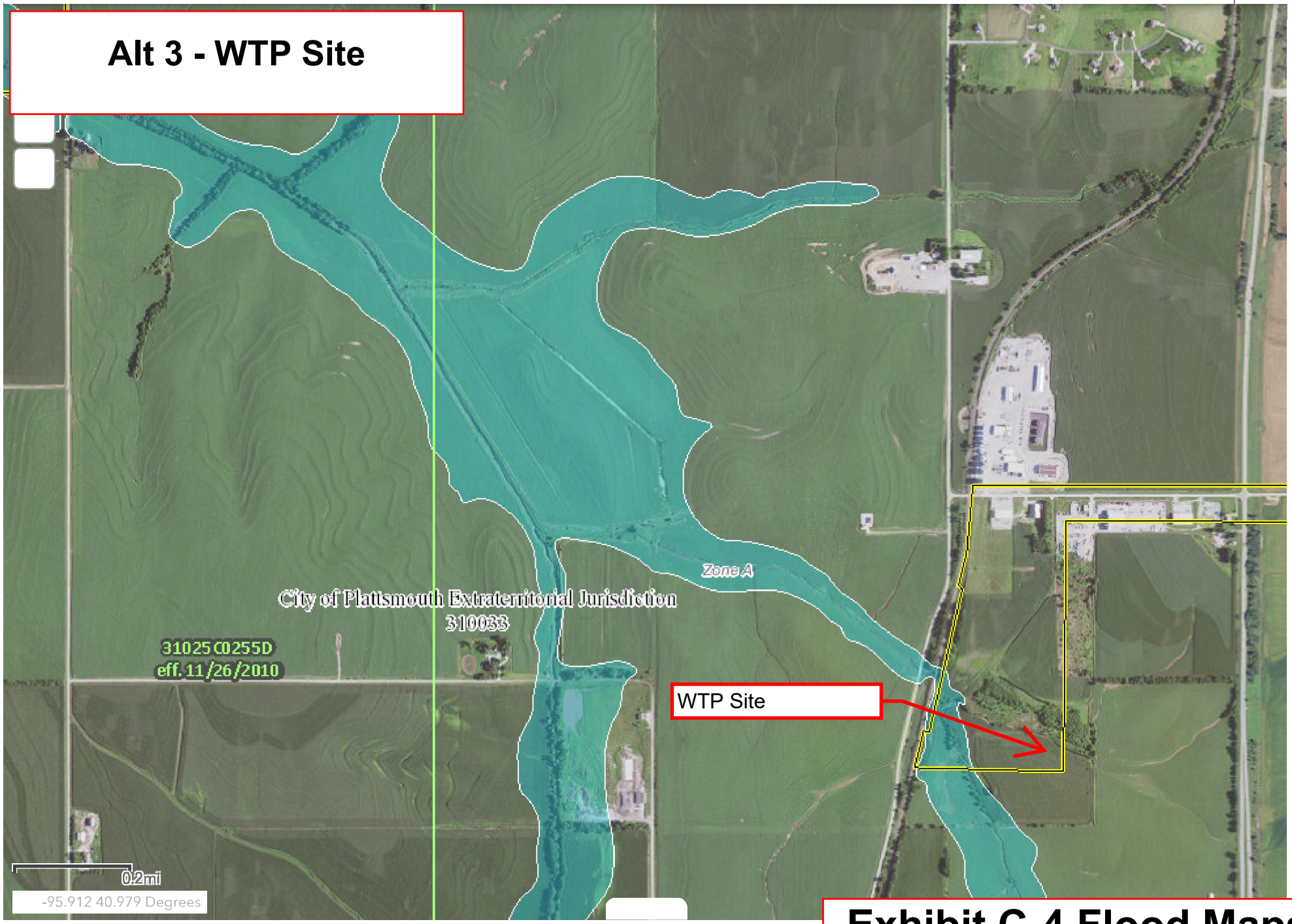
MAP NUMBER
31025C0120D

EFFECTIVE DATE
NOVEMBER 26, 2010

Federal Emergency Management Agency

Exhibit C-3 Flood Maps

FEMA's National Flood Hazard Layer (NFHL) Viewer with Web AppBuilder for ArcGIS



https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd&extent=-95.94645

Exhibit C-4 Flood Maps

APPENDIX B
Wetland Delineation and Aquatic Resource Reports

EXECUTIVE ORDER 11988/11990

FLOODPLAIN MANAGEMENT/WETLANDS – CHECKLIST (44 CFR Part 9)

APPLICANT: Plattsmouth Water Supply Relocation

COUNTY/STATE: Plattsmouth/NE

COORDINATES: **Existing Metropolitan Utilities District Water Supply-(41.071329, -95.972490)**
Existing Wells (to be abandoned)- (41.024369°,-95.881954°)
New 7.5 Mile Main-From Existing MUD to Distribution Point
Distribution Point and Booster Pump-(41.013387,-95.898392).

PROPOSED ACTION:

Alternative 2-Proposed Action Utilize the Metropolitan Utilities District Regional Water Supply as a Water Source Estimated Cost: $27,059,692

A. Abandon Existing Wells

The Proposed Action involves the abandonment of the existing WTP, associated wells, and construction of a new watermain to transport potable water from a water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. Existing Water Treatment Plant and associated wells (41.024369°,-95.881954°)

B. Construct New 7.5 mile Main

Construction of approximately 7.5 miles of 20- inch diameter potable watermain from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road in, Sarpy County, NE (41.071329, -95.972490).

-4,600 ft trench by excavation-2,000 ft under Platte River and a Railroad Line by jack and bore,
-Within ROW Along Buccaneer Boulevard 4,150 ft,Eastward 8,300 ft along Bay Rd,2.3 Miles South along 6th street, finally 6,100 ft east ward to the distribution point and booster pump.

Construction of the watermain would involve a 70-foot-wide work ROW throughout the route.
The trench excavation will be no more than 60 inches below ground.

C. Distribution Point and booster pump

The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County, Nebraska at (41.013387,-95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

APPLICABLILITY: Actions which have the potential to affect floodplains/wetlands or their occupants, or which are subject to potential harm by location in floodplains/wetlands.

☐ **YES** ☒ **NO** The proposed action could potentially adversely affect the floodplain/wetlands.

Remarks:

☒ **YES** ☐ **NO** The proposed action could potentially be adversely affected by the floodplain/wetlands.

Remarks:

IF ANSWER IS NO, REVIEW IS COMPLETED, OTHERWISE CONTINUE WITH REVIEW.

ACTION:

☒ **Review against 500 Year floodplain (for Critical Action)**

☐ **Review against 100 Year floodplain**

STEP NO. 1 **Determine whether the proposed action is located in the 100-year floodplain/wetland (500-year floodplain for critical actions); (44 CFR §9.7)**

M.U.D Water Treatment Plant

Zone X	31153C0205G	12/2/2005 Outside 500 y-r

New 7.5 Mile Main

Floodway	31153C0205G	12/2/2005
Floodway	31153C0215G	12/2/2005
Zone A	31025C0115D	11/26/2010
Zone X	31025C0120D	11/26/2010

Distribution Point and booster pump

Zone X	31025C0120D	11/26/2010

STEP NO. 2 **Notify the public at the earliest possible time of the intent to carry out an action in a floodplain/wetland, and involve the affected and interested public in the decision-making process; (44 CFR §9.8)**

☒ Notice was provided as part of a disaster cumulative notice:

☐ Project Specific Notice (e.g. EA, newspaper, public meeting, etc):

Type of Public Notice: FEMA website and Federal register

Date: 05/15/2019

STEP NO. 3 **Identify and evaluate practicable alternatives to locating the proposed action in a floodplain/wetland (including alternatives sites, actions and the "no action" option). (44 CFR §9.9)**

Alternative Options

☐**YES** ☒**NO** Is there a practicable alternative site location outside of the floodplain/wetland?

Site location:

☐**YES** ☒**NO** Is there a practicable alternative action outside of the floodplain/wetland that will not affect the floodplain/wetland?

Alternative action:

☐**YES** ☒**NO** Is the NO Action alternative the most practicable alternative?

If a practicable alternative exists outside the floodplain/wetland, FEMA must locate the action at the alternative site.

STEP NO. 4 **Identify the potential direct and indirect impacts associated with the occupancy or modification of floodplains/wetlands and the potential direct and indirect support of floodplain/wetlands development that could result from the proposed action; (44 CFR §9.10)**

☐**YES** ☒**NO** Is the proposed action in compliance with the NFIP?

☐**YES** ☒**NO** Does the proposed action increase the risk of flood loss?

☐YES ☒NO Will the proposed action result in an increased base discharge or increase the flood hazard potential to other properties or structures?

☒YES ☐NO Does the proposed action minimize the impact of floods on human health, safety and welfare?

Remark: If repaired in place, the existing WTP and wells would continue to be susceptible to risks of flooding and the pollutant loading. The purpose of the project is to prevent public health and safety concerns, protect the natural and human environment, and eliminate flood risks to critical public infrastructure.

☐YES ☒NO Will the proposed action induce future growth and development, which will potentially adversely affect the floodplain/wetland?

☐YES ☒NO Does the proposed action involve dredging and/or filling of a floodplain/wetlands?

☐YES ☒NO Will the proposed action result in the discharge of pollutants into the floodplain/wetlands?

☒YES ☐NO Does the proposed action avoid long and short-term adverse impacts associated with the occupancy and modification of floodplains/wetlands?

☐YES ☒NO Will the proposed action result in any indirect impacts that will affect the natural values and functions of floodplains/wetlands?

☐YES ☒NO Will the proposed action forego an opportunity to restore the natural and beneficial values served by floodplains/wetlands?

☒YES ☐NO Does the proposed action restore and/or preserve the natural and beneficial values served by floodplains/wetlands?

☒YES ☐NO Will the proposed action result in an increase to the useful life of a structure or facility?

REMARKS:

STEP NO. 5 **Minimize the potential adverse impacts and support to or within floodplains/wetlands to be identified under Step 4, restore and preserve the natural and beneficial values served by floodplains/wetlands; (44 CFR §9.11)**

☐YES ☒NO Were flood hazard reduction techniques applied to the proposed action to minimize the flood impacts if site location is in the 100- or 500-Year floodplain/wetlands?

☐YES ☒NO Were avoidance and minimization measures applied to the proposed action to minimize the short and long term impacts on the 100-Year floodplain/wetlands?

If no, identify measures required as a condition of the grant:

Building a new line that pulls form the M.U.D WTP would minimize flood impacts to the existing water treatment and supply system as a whole.

☐YES ☒NO Were measures implemented to restore and preserve the natural and beneficial values of the floodplain/wetlands.

If no, identify measures required as a condition of the grant:
Remark: None/Not Applicable.

☒YES ☐NO Is new construction or substantial improvement in a floodway, and new construction in a coastal high hazard area proposed? If Yes:

☒YES ☐NO Is the activity considered as functionally dependent use or a structure or facility which facilitates an open space use?

REMARKS: Part of the new line will be bored below the Platte River, so itstechnically NOT in the floodway.

STEP NO. 6 **Reevaluate the proposed action to determine first, if it is still practicable in light of its exposure to flood hazards, the extent to which it will aggravate the hazards to others, and its potential to disrupt floodplain/wetlands values and second, if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. (44 CFR §9.9)**

☒YES ☐NO The action is still practicable at a floodplain/wetland site in light of the exposure to flood risk and ensuing disruption of natural values.

☐YES ☒NO The floodplain/wetlands site is the only practicable alternative.

REMARKS: A second alternative (see Alternative 3) is being evaluated for NEPA purposes

☐YES ☒NO There is no potential for limiting the action to increase the practicability of previously rejected non-floodplain/wetlands sites and alternative actions.

☒**YES** ☐**NO** Minimization of harm to or within the floodplain/wetlands can be achieved using all practicable means.

☒**YES** ☐**NO** The action in a floodplain/wetland clearly outweighs the requirement of E.O. 11988/11990.

FEMA shall not act in a floodplain/wetland unless it is the only practicable location.

STEP NO. 7 **Prepare and provide the public with a finding and public explanation of any final decision that the floodplain/wetland is the only practicable alternative; and (44 CFR §9.12)**

☒ Check if the Initial Public Notice serves as the Final Public Notice. No condition required.

☐ Check if the condition was added to the REC indicating that "Per 44 CFR Part 9.12(e), the Applicant is responsible for issuing a Public Notice 15 days prior to the start of construction of any final decision where the proposed floodplain or wetland project is the only practicable alternative."

STEP NO. 8 **Review the implementation and post - implementation phases of the proposed action to ensure that the requirements stated in Section 9.11 are fully implemented. Oversight responsibility shall be integrated into existing processes. (44 CFR §9.11)**

☐**YES** ☒**NO** Was Grant conditioned on review of implementation and post-implementation phases to insure compliance of EO 11988?

Failure to comply with conditions enumerated in the Record of Environmental Consideration may jeopardize federal funding.

EXECUTIVE ORDER 11988/11990

FLOODPLAIN MANAGEMENT/WETLANDS – CHECKLIST (44 CFR Part 9)

APPLICANT: Plattsmouth Water Supply Relocation

COUNTY/STATE: Plattsmouth/NE

COORDINATES: **New Water Treatment Plant (40.980568, -95.918781).**
Well Protection Measures (41.025031,-95.816630)

PROPOSED ACTION: **Alternative 3- Relocation of the Plattsmouth Water Treatment Plant (WTP) and Wellhead Protections $40,566,971.**

a. New Water Treatment plant:
Alternative 3 involves the construction of a 3.04 million gallon per day (MGPD) lime softening WTP at a city-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. The existing WTP would be abandoned under this alternative. Dismantling and demolition of facility is not being considered as part of this project.

b. Well protection measures:
City-owned wells in floodplain at (41.025031,-95.816630) will remain in place.
Wellhead protection measures will be constructed to limit the risks of flood damages.
To protect the wells from future flood damage, the existing well house structures will be removed, and new pre-fabricated buildings placed on 12’x12' steel raised platforms will be constructed to a height of 14-16’ above ground surface. Each well casing will be extended two feet above the 500-year flood elevation.

c. New Raw Water transmission line.
To bring raw water to the new water treatment facility, approximately four miles of 16-inch diameter raw water transmission line RWTL will be constructed along existing road ROW throughout the City. All electrical controls and well motors will be located on platforms above potential flood levels.

APPLICABLILITY: Actions which have the potential to affect floodplains/wetlands or their occupants, or which are subject to potential harm by location in floodplains/wetlands.

☐**YES** ☒**NO** The proposed action could potentially adversely affect the floodplain/wetlands.

☒**YES** ☐**NO** The proposed action could potentially be adversely affected by the floodplain/wetlands.

IF ANSWER IS NO, REVIEW IS COMPLETED, OTHERWISE CONTINUE WITH REVIEW.

ACTION:

☒ **Review against 500 Year floodplain (for Critical Action)**

☐ **Review against 100 Year floodplain**

STEP NO. 1 **Determine whether the proposed action is located in the 100-year floodplain/wetland (500-year floodplain for critical actions); (44 CFR §9.7)**

New Water treatment plant

Zone X	31025C0260D	11/26/2010	Outside 500-yr

Existing wells

Zone AE	31025C0120D	11/26/2010

STEP NO. 2 **Notify the public at the earliest possible time of the intent to carry out an action in a floodplain/wetland, and involve the affected and interested public in the decision-making process; (44 CFR §9.8)**

☒ Notice was provided as part of a disaster cumulative notice:

FEMA website and Federal register 05/15/2019

☐ Project Specific Notice (e.g. EA, newspaper, public meeting, etc):

Type of Public Notice: _____

Date: _____

STEP NO. 3 **Identify and evaluate practicable alternatives to locating the proposed action in a floodplain/wetland (including alternatives sites, actions and the "no action" option). (44 CFR §9.9)**

Alternative Options

☐**YES** ☒**NO** Is there a practicable alternative site location outside of the floodplain/wetland?

Site location:

☐**YES** ☒**NO** Is there a practicable alternative action outside of the floodplain/wetland that will not affect the floodplain/wetland?

Alternative action:

☐**YES** ☒**NO** Is the NO Action alternative the most practicable alternative?

If a practicable alternative exists outside the floodplain/wetland, FEMA must locate the action at the alternative site.

STEP NO. 4 **Identify the potential direct and indirect impacts associated with the occupancy or modification of floodplains/wetlands and the potential direct and indirect support of floodplain/wetlands development that could result from the proposed action; (44 CFR §9.10)**

☒**YES** ☐**NO** Is the proposed action in compliance with the NFIP?

☐**YES** ☒**NO** Does the proposed action increase the risk of flood loss?

☐YES ☒NO Will the proposed action result in an increased base discharge or increase the flood hazard potential to other properties or structures?

☒YES ☐NO Does the proposed action minimize the impact of floods on human health, safety and welfare?

Remark: New WTP is out of the 500-year floodplain and well protection measures are being implemented.

☐YES ☒NO Will the proposed action induce future growth and development, which will potentially adversely affect the floodplain/wetland?

☐YES ☒NO Does the proposed action involve dredging and/or filling of a floodplain/wetlands?

☐YES ☒NO Will the proposed action result in the discharge of pollutants into the floodplain/wetlands?

☒YES ☐NO Does the proposed action avoid long and short-term adverse impacts associated with the occupancy and modification of floodplains/wetlands?

☐YES ☒NO Will the proposed action result in any indirect impacts that will affect the natural values and functions of floodplains/wetlands?

☐YES ☒NO Will the proposed action forego an opportunity to restore the natural and beneficial values served by floodplains/wetlands?

☒YES ☐NO Does the proposed action restore and/or preserve the natural and beneficial values served by floodplains/wetlands?

☒YES ☐NO Will the proposed action result in an increase to the useful life of a structure or facility?

REMARKS:

STEP NO. 5 Minimize the potential adverse impacts and support to or within floodplains/wetlands to be identified under Step 4, restore and preserve the natural and beneficial values served by floodplains/wetlands; (44 CFR §9.11)

☐YES ☒NO Were flood hazard reduction techniques applied to the proposed action to minimize the flood impacts if site location is in the 100- or 500-Year floodplain/wetlands?

☒**YES** ☐**NO** Were avoidance and minimization measures applied to the proposed action to minimize the short and long term impacts on the 100-Year floodplain/wetlands?

If no, identify measures required as a condition of the grant:

☐**YES** ☒**NO** Were measures implemented to restore and preserve the natural and beneficial values of the floodplain/wetlands.

If no, identify measures required as a condition of the grant:
Remark: None/Not Applicable.

☒**YES** ☐**NO** Is new construction or substantial improvement in a floodway, and new construction in a coastal high hazard area proposed? If Yes:

☒**YES** ☐**NO** Is the activity considered as functionally dependent use or a structure or facility which facilitates an open space use?

STEP NO. 6 **Reevaluate the proposed action to determine first, if it is still practicable in light of its exposure to flood hazards, the extent to which it will aggravate the hazards to others, and its potential to disrupt floodplain/wetlands values and second, if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. (44 CFR §9.9)**

☒**YES** ☐**NO** The action is still practicable at a floodplain/wetland site in light of the exposure to flood risk and ensuing disruption of natural values.

☐**YES** ☒**NO** The floodplain/wetlands site is the only practicable alternative.

REMARKS: A second alternative (see Alternative 2) is being evaluated for NEPA purposes

☐**YES** ☒**NO** There is no potential for limiting the action to increase the practicability of previously rejected non-floodplain/wetlands sites and alternative actions.

☒**YES** ☐**NO** Minimization of harm to or within the floodplain/wetlands can be achieved using all practicable means.

☒**YES** ☐**NO** The action in a floodplain/wetland clearly outweighs the requirement of E.O. 11988/11990.

FEMA shall not act in a floodplain/wetland unless it is the only practicable location.

STEP NO. 7 **Prepare and provide the public with a finding and public explanation of any final decision that the floodplain/wetland is the only practicable alternative; and (44 CFR §9.12)**

☒ Check if the Initial Public Notice serves as the Final Public Notice. No condition required.

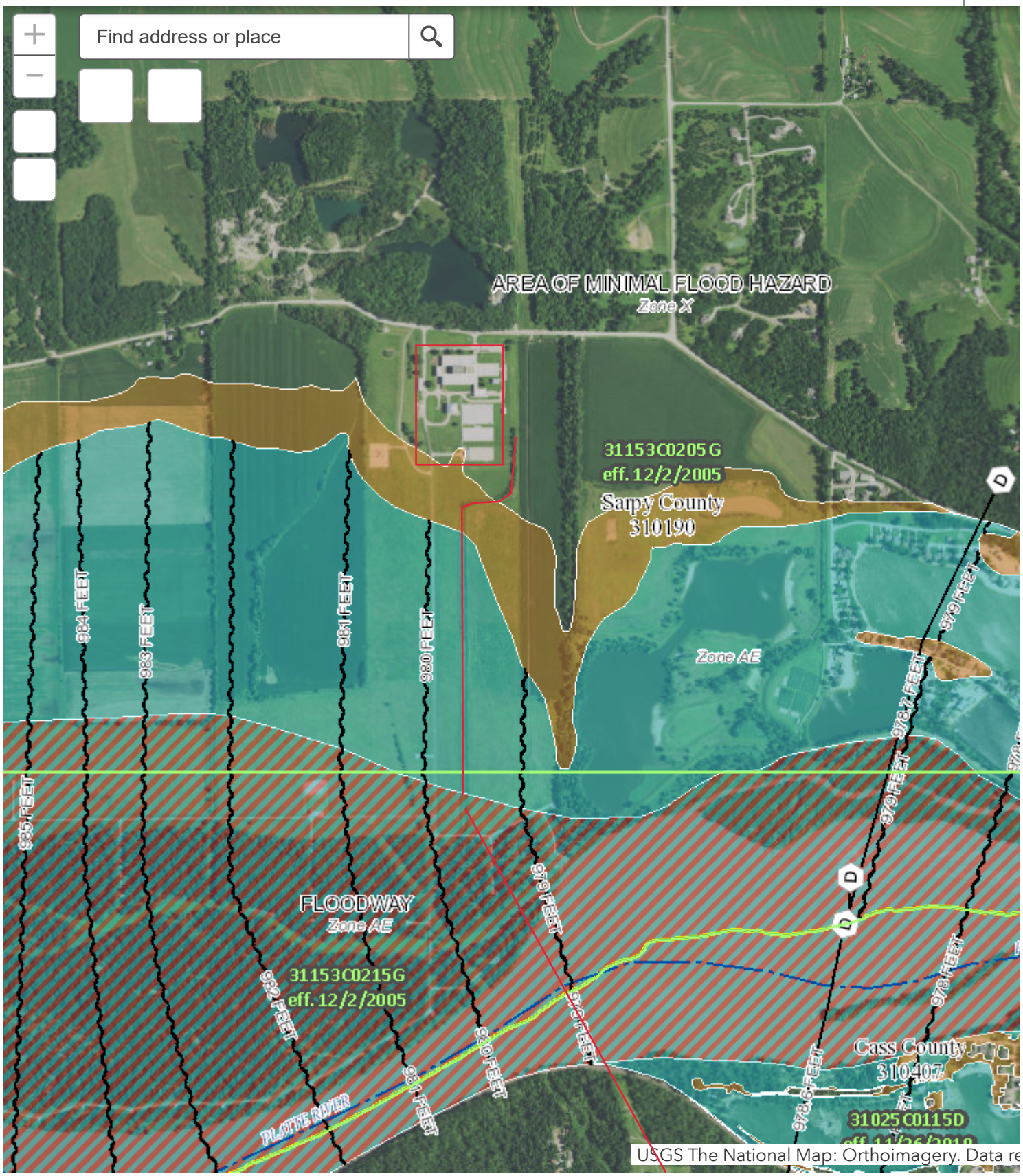
☐ Check if the condition was added to the REC indicating that "Per 44 CFR Part 9.12(e), the Applicant is responsible for issuing a Public Notice 15 days prior to the start of construction of any final decision where the proposed floodplain or wetland project is the only practicable alternative."

STEP NO. 8 **Review the implementation and post - implementation phases of the proposed action to ensure that the requirements stated in Section 9.11 are fully implemented. Oversight responsibility shall be integrated into existing processes. (44 CFR §9.11)**

☐**YES** ☒**NO** Was Grant conditioned on review of implementation and post-implementation phases to insure compliance of EO 11988?

Failure to comply with conditions enumerated in the Record of Environmental Consideration may jeopardize federal funding.

FEMA's National Flood Hazard Layer (NFHL) Viewer



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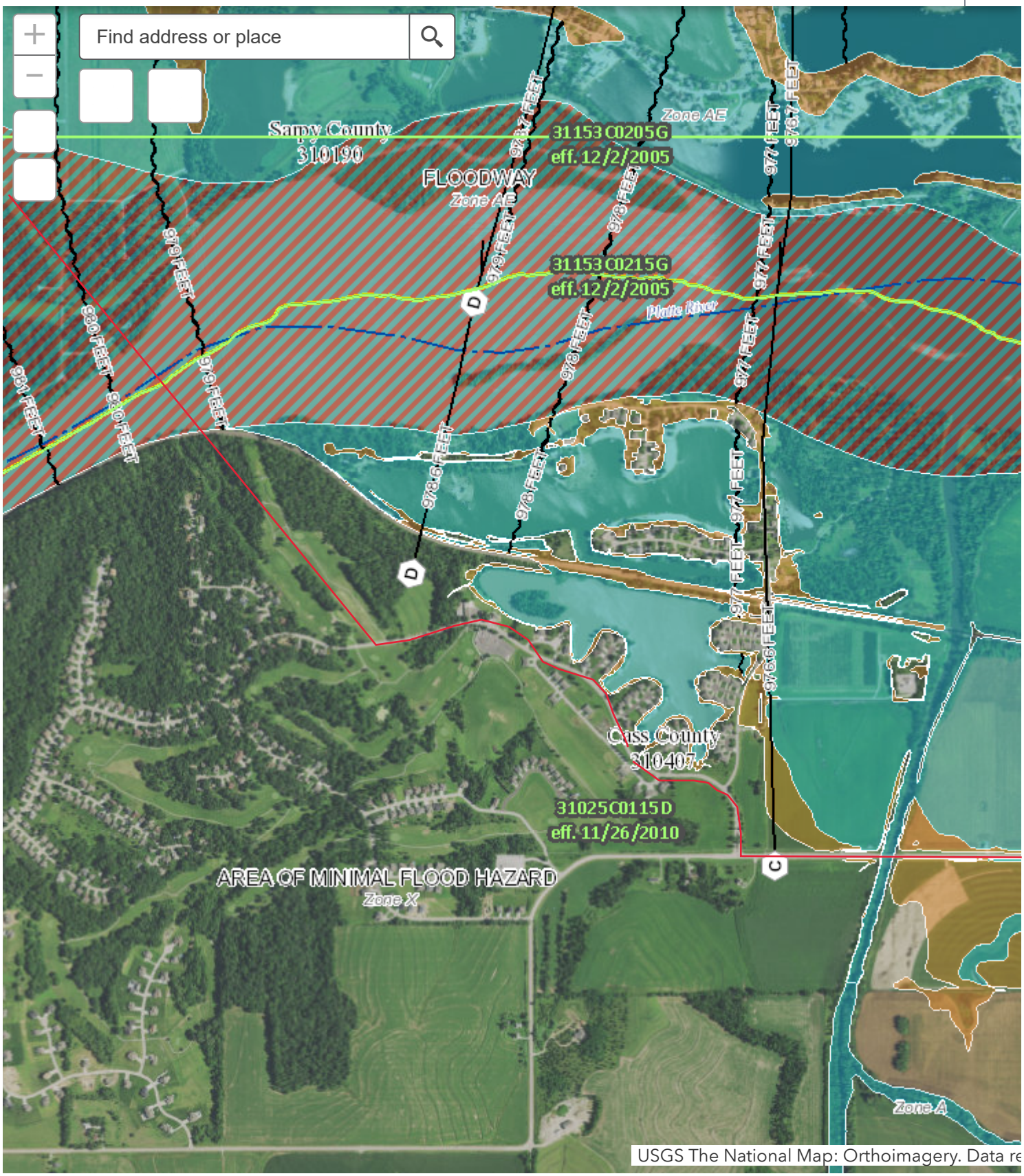
FEMA's National Flood Hazard Layer (NFHL) Viewer



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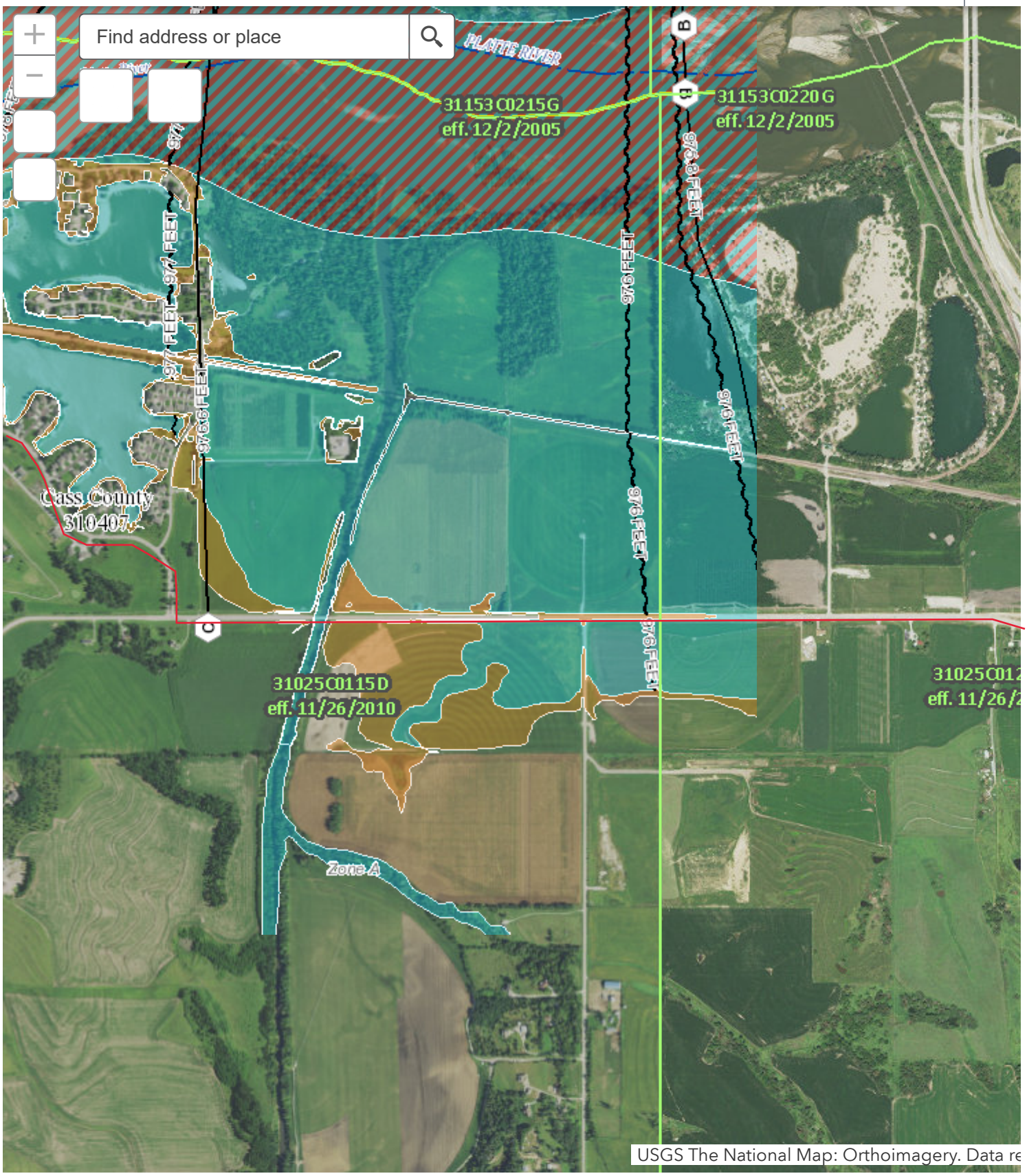

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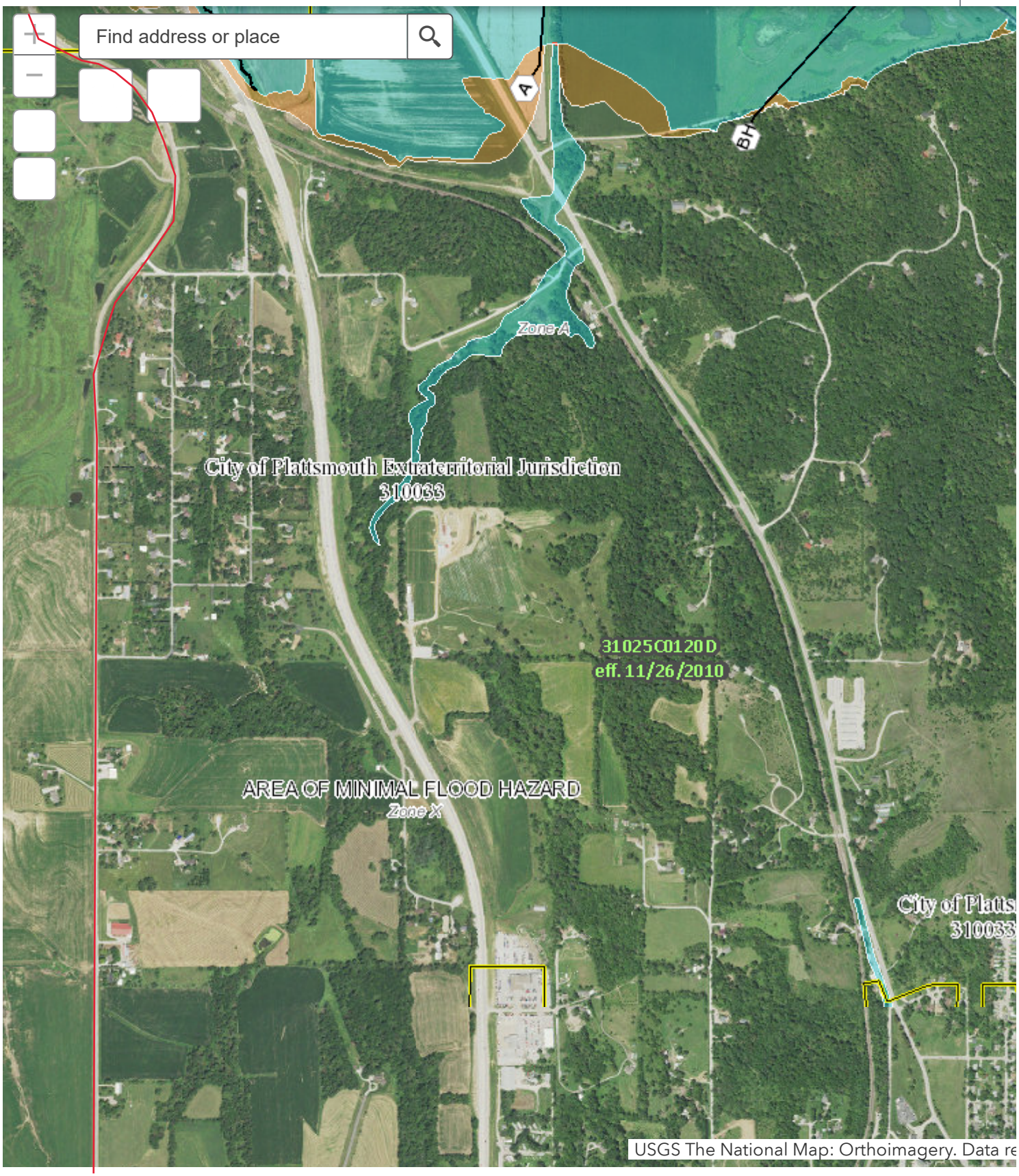

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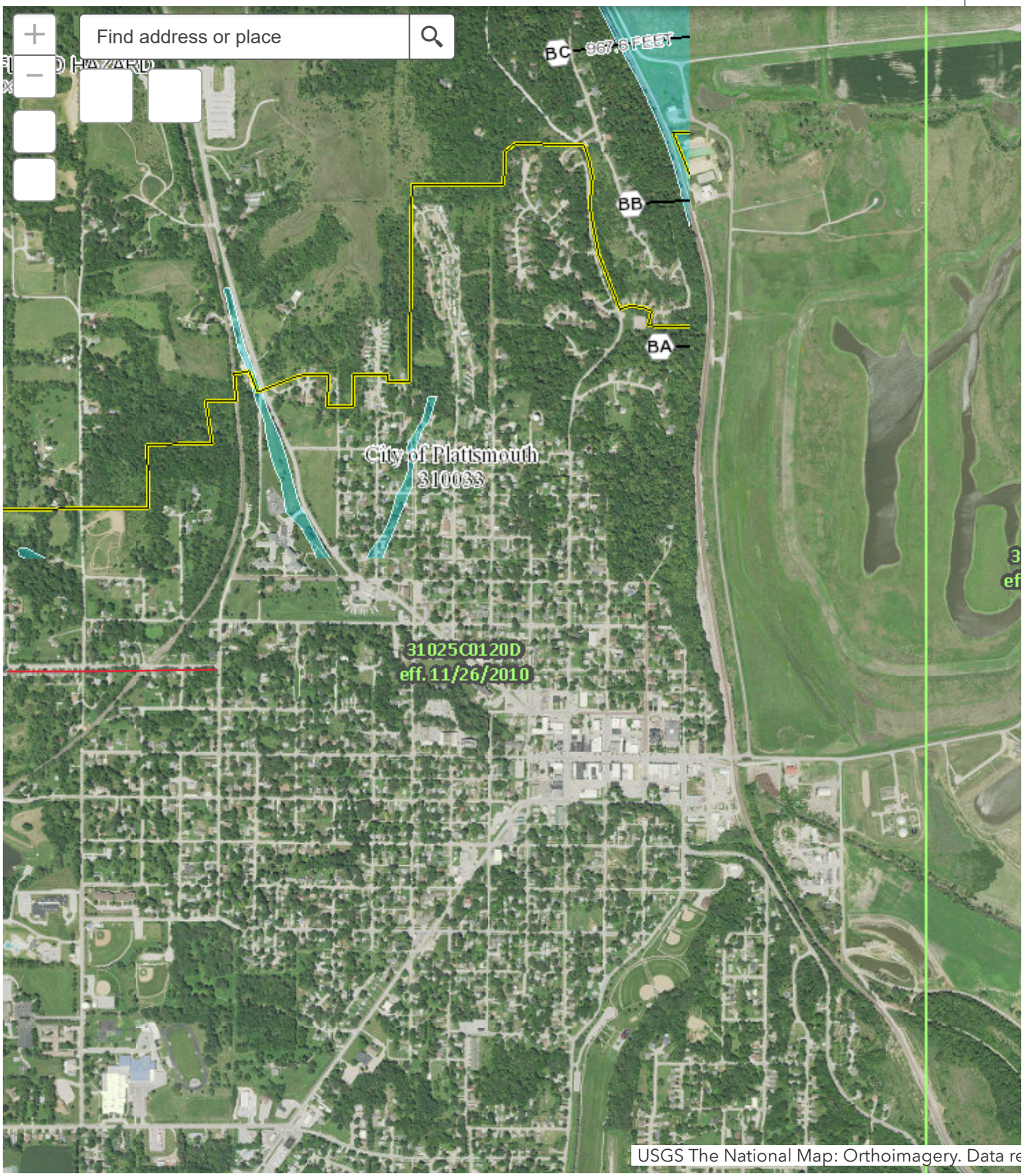

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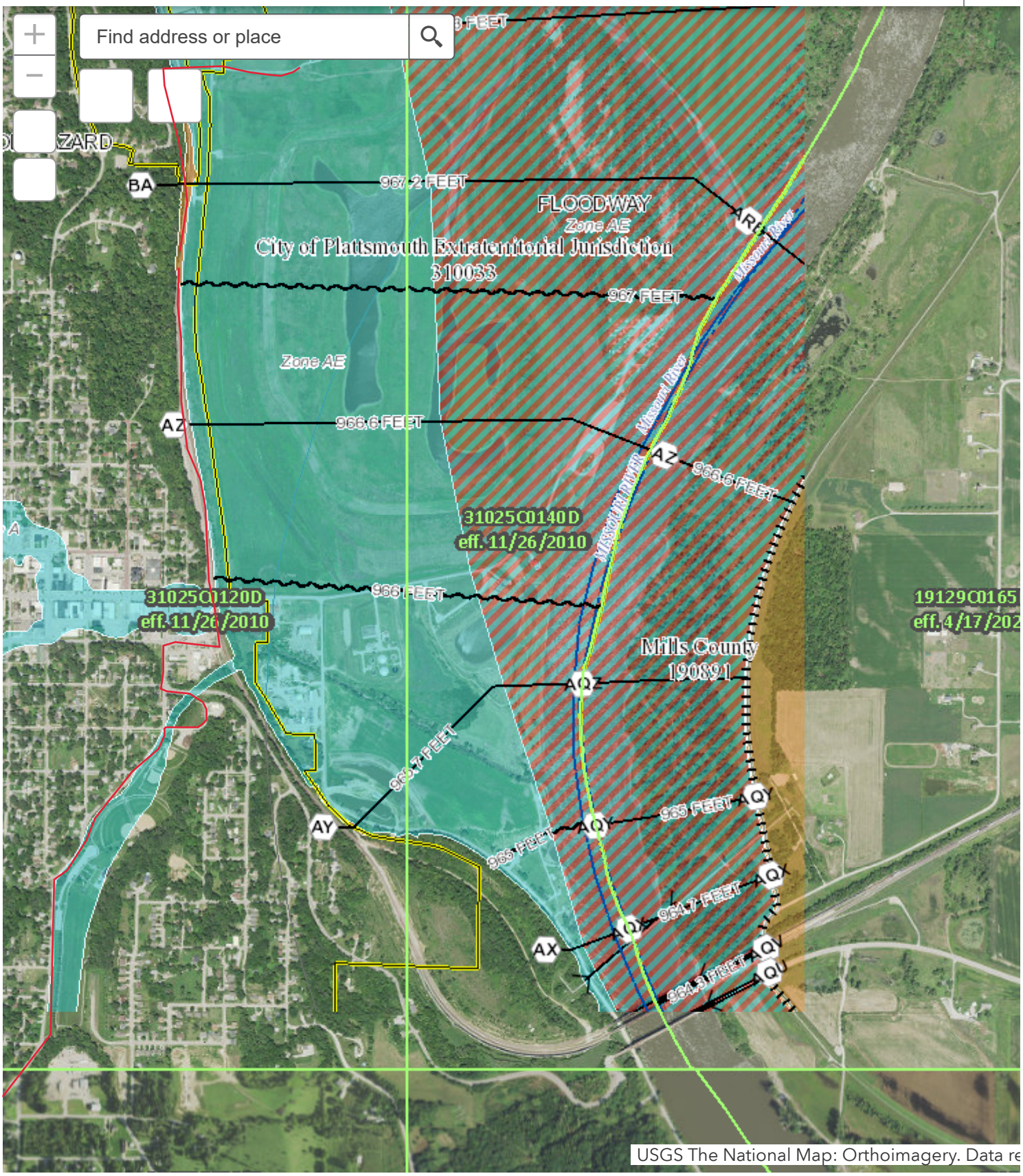

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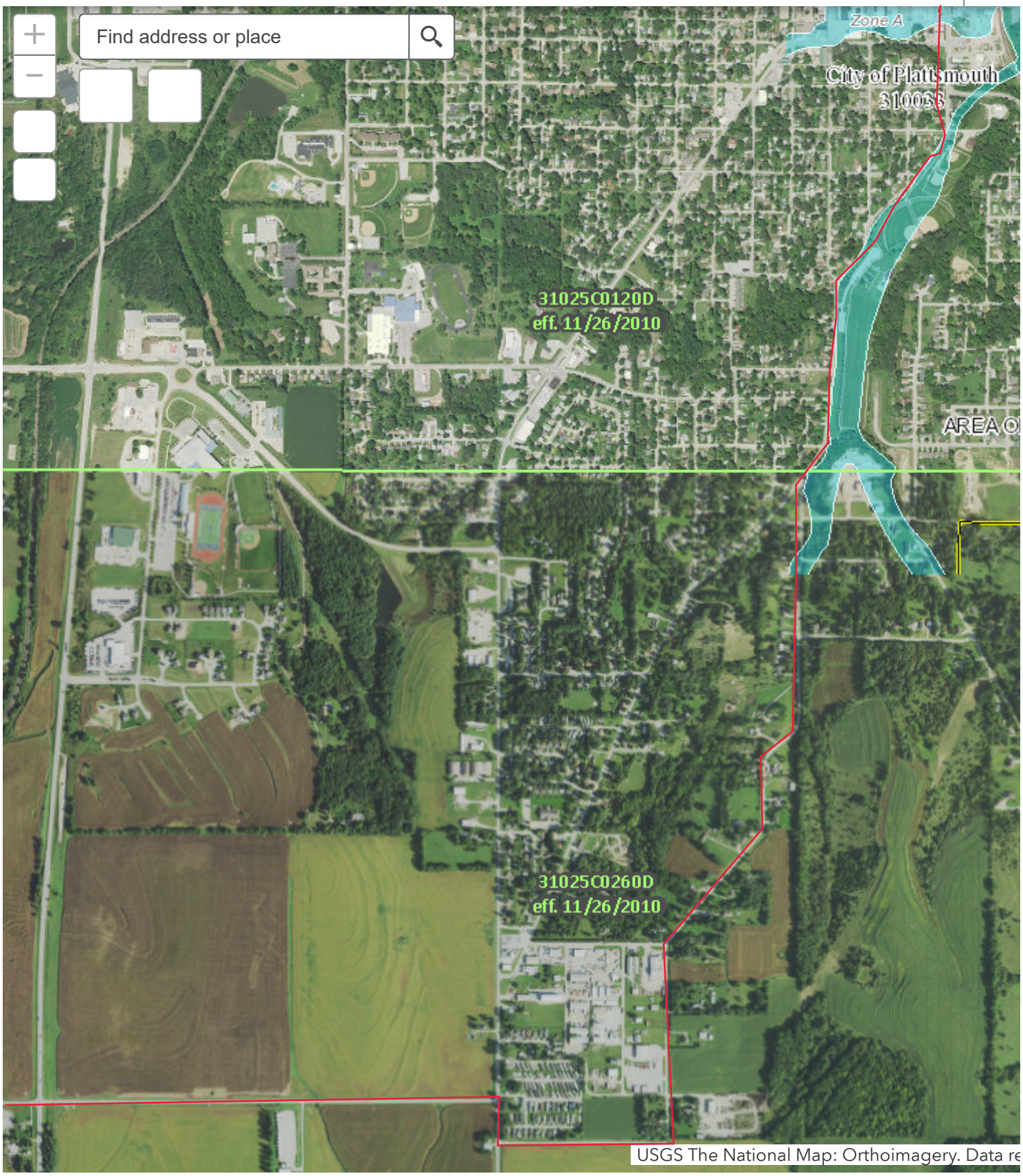

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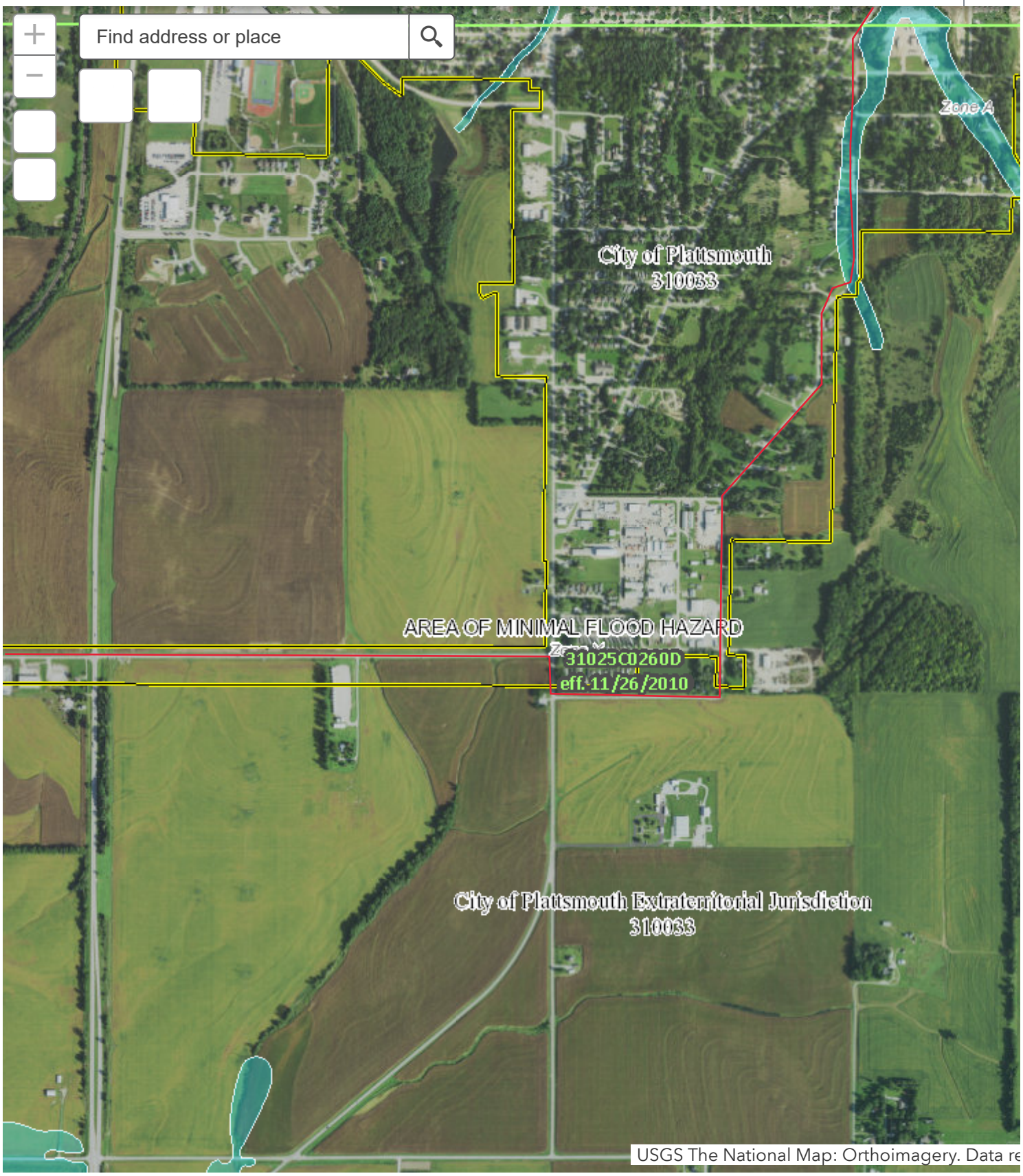

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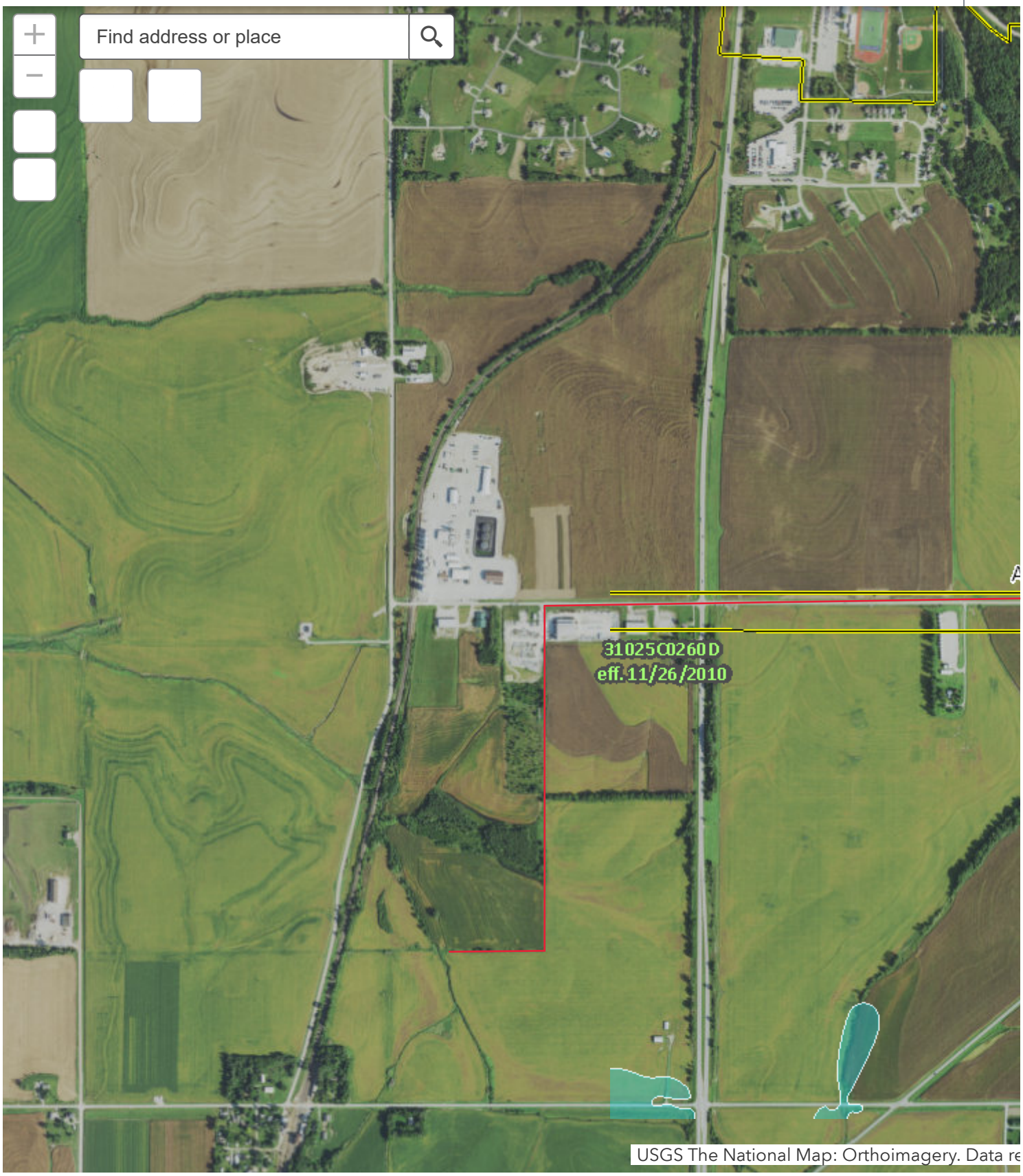
FEMA's National Flood Hazard Layer (NFHL) Viewer



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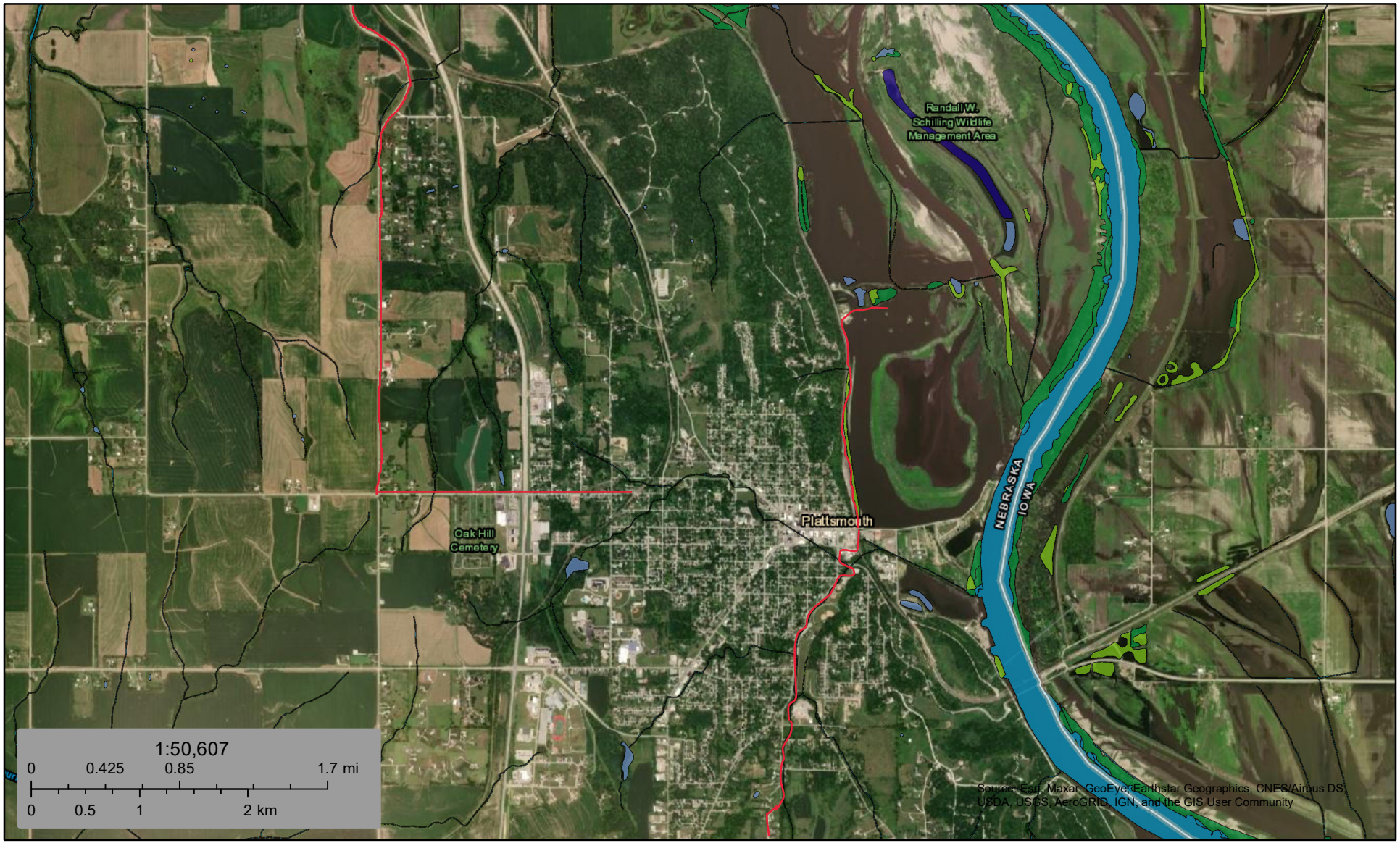
U.S. Fish and Wildlife Service

National Wetlands Inventory

WETLANDS MAP 2



February 26, 2021

Wetlands

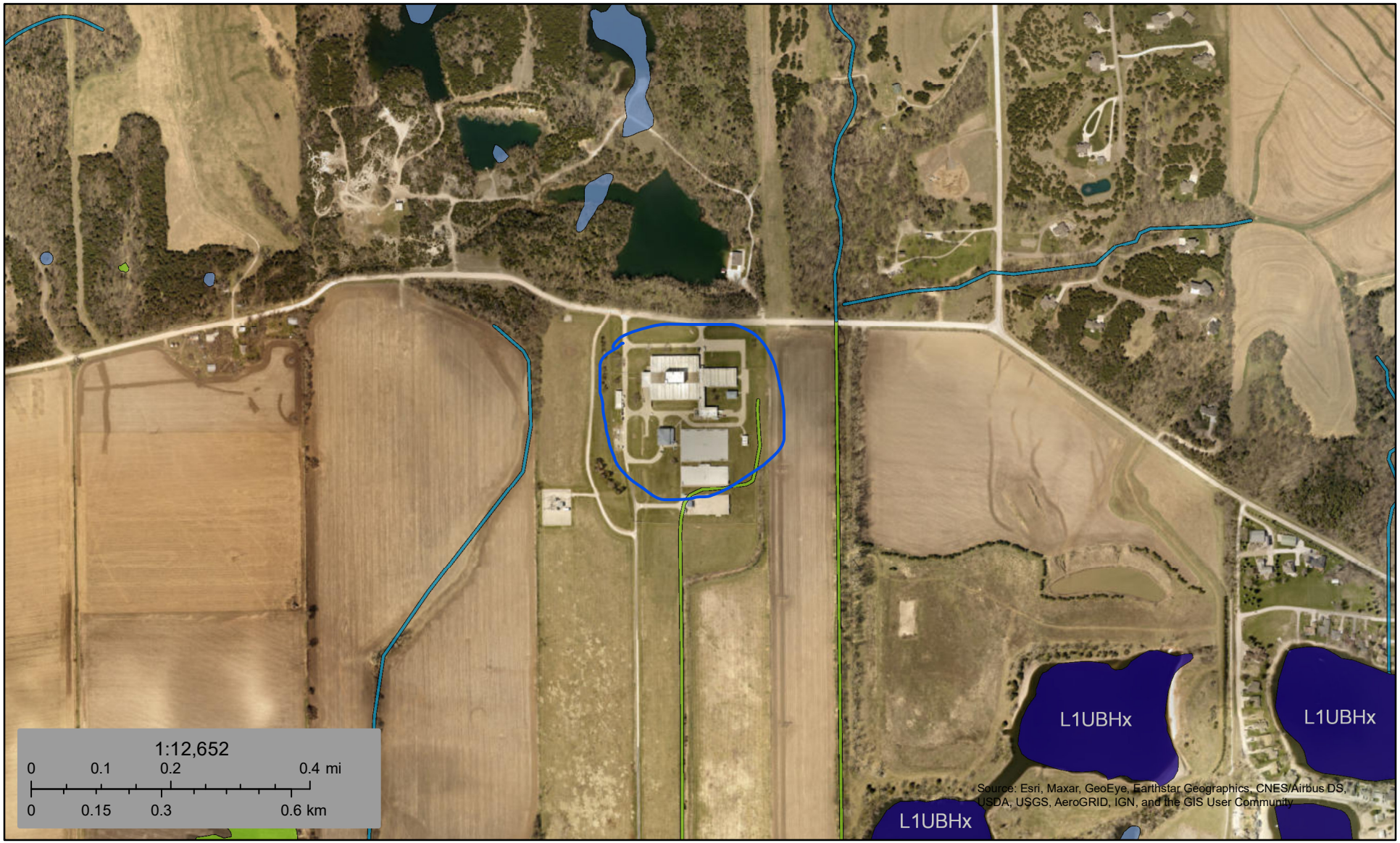
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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

U.S. Fish and Wildlife Service
National Wetlands Inventory

M.U.D Water Treatment Plant



February 26, 2021

Wetlands

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

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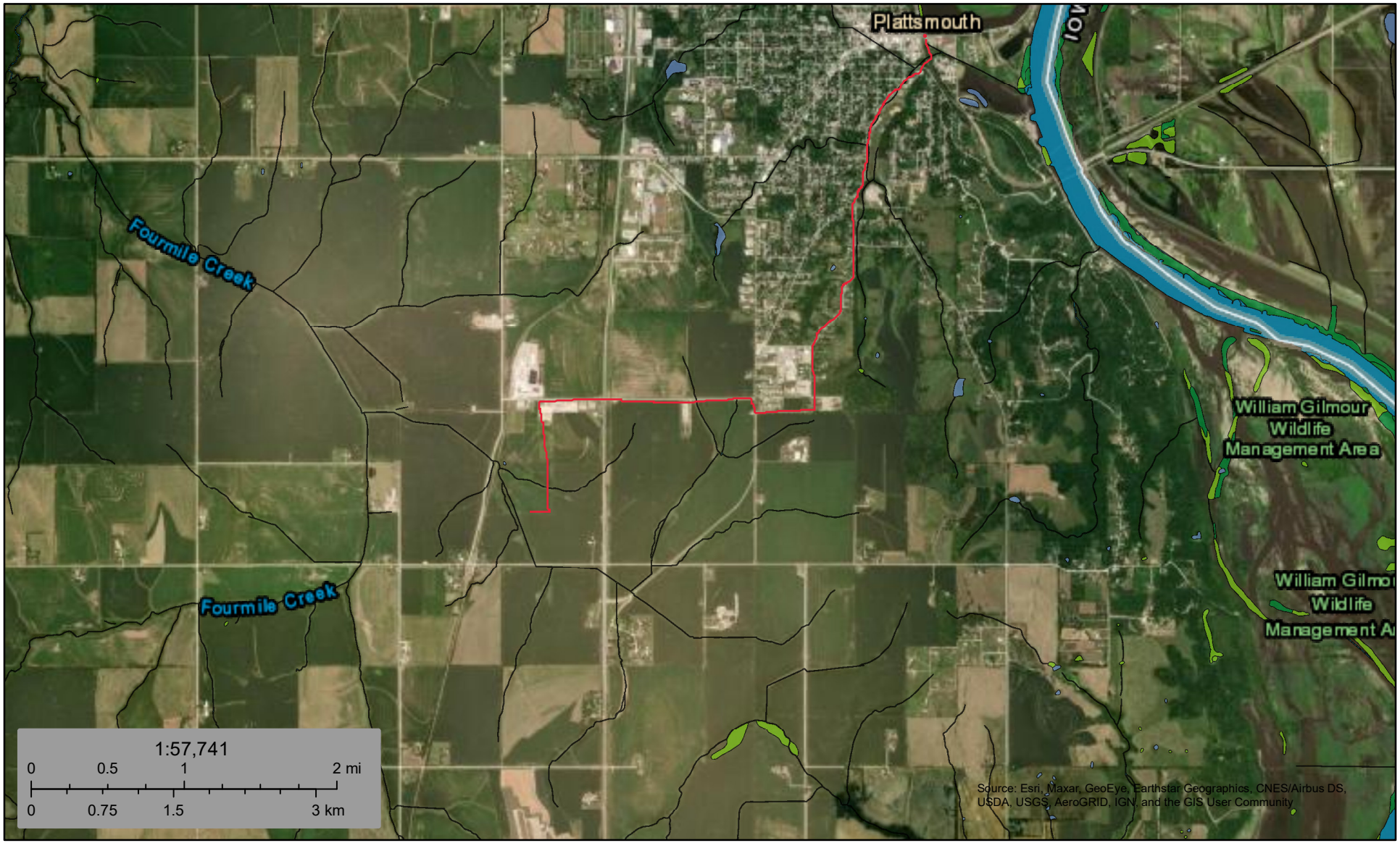
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

U.S. Fish and Wildlife Service

National Wetlands Inventory

WET-New Water Treatment Plant



February 26, 2021

Wetlands

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

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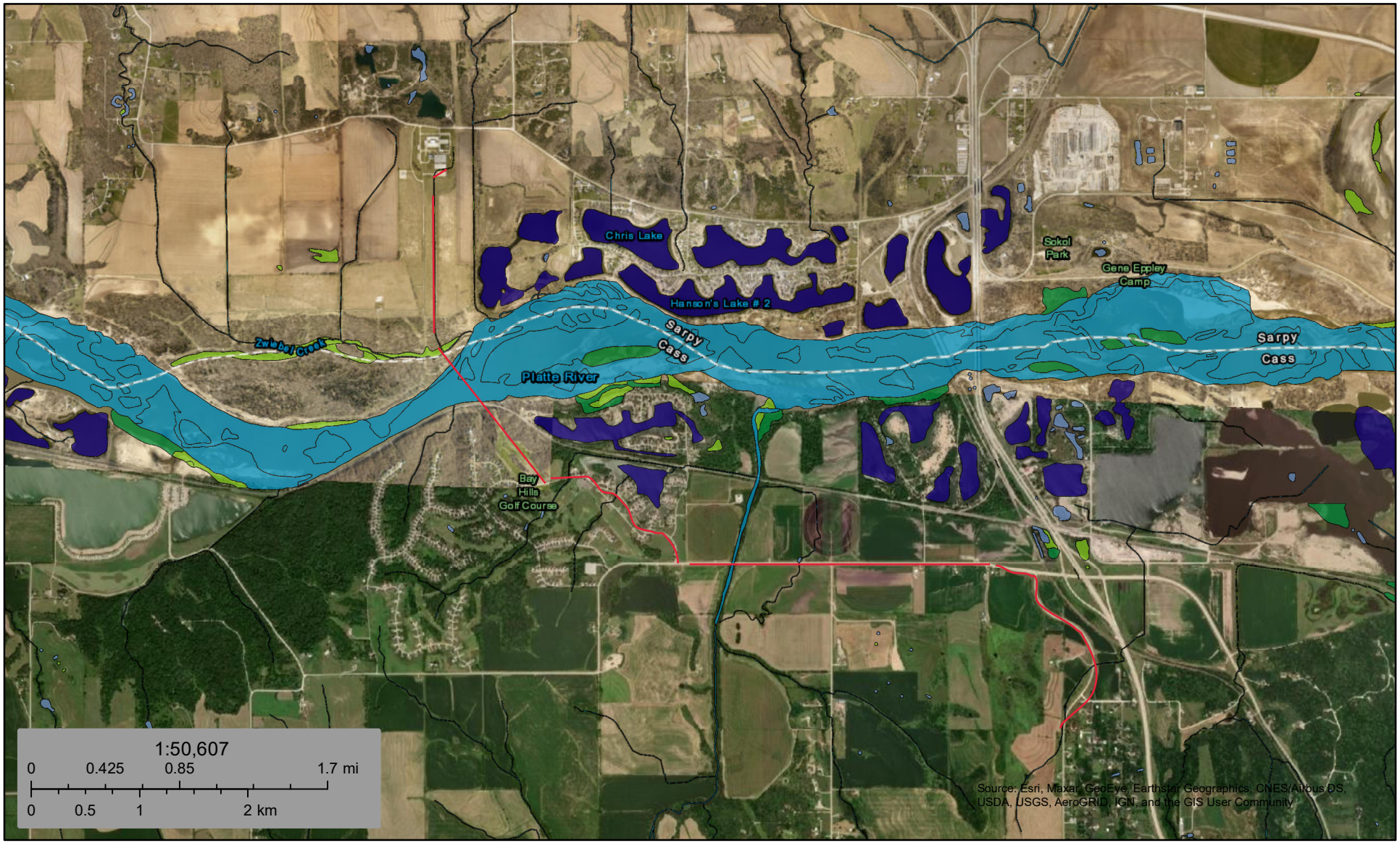
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

U.S. Fish and Wildlife Service

National Wetlands Inventory

New 7.5 Mile Main start



February 26, 2021

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

October 20, 2020

Olmsted & Perry Consulting Engineers Inc.
10730 Pacific Street, Suite 232
Omaha, Nebraska 68114

Attn: Mr. Steve Perry, PE
P: (402)-399-8552
E: stevep@olmstedperry.com

Re: Wetland and Waters of the U.S. Delineation Report
City of Plattsmouth Public Water Supply Relocation
Plattsmouth, Cass County, Nebraska
Terracon Project No 05207584

Dear Mr. Perry:

Terracon Consultants Inc. (Terracon) appreciates the opportunity to submit this Aquatic Resource Report delineating wetlands and other potential Waters of the United States (WOUS) located on the above referenced project site. Based on the results of the delineation, nine wetland areas were delineated, additionally three perennial streams, two intermittent streams, and one ephemeral drainage was identified at the site. Please note that only the USACE can make the final determination on the jurisdictional status of wetlands or WOUS, and on the need for permit processing and compensatory mitigation.

If you have questions regarding this report, please contact Philip Lind at 402-384-6988 or Kim Copenhaver at 402-384-7009 or by email at Kim.copenhaver@terracon.com.

Sincerely,
Terracon Consultants, Inc.

Philip Lind
Staff Scientist

Jerry Hentges, P.G.
Senior Hydrologist

Kim Copenhaver
Senior Environmental Scientist

PL/JH/KC:pl/nm

Distribution: Addressee (pdf via email)
Enclosures

Aquatic Resource Report

City of Plattsmouth Water Supply Relocation
Plattsmouth, Sarpy And Cass County, Nebraska

October 20, 2020
Terracon Project No. 05207584

Prepared for:
Olmsted & Perry Consulting Engineers Inc.
Omaha, Nebraska

Prepared by:
Terracon Consultants, Inc.
Omaha, Nebraska

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APPENDIX C – GROUND PHOTOGRAPHS

APPENDIX D – WETLAND DETERMINATION DATA FORMS

AQUATIC RESOUCE REPORT
CITY OF PLATTSMOUTH PUBLIC WATER SUPPLY RELOCATION
PLATTSMOUTH, SARPY AND CASS COUNTY, NEBRASKA

Terracon Project No. 05207584
October 20, 2020

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by Mr. Steve Perry PE of Olmsted & Perry Consulting Engineers Inc., on behalf of the City of Plattsmouth, to conduct a wetland delineation for construction of a new watermain for the City of Plattsmouth water supply relocation, hereafter referred to as the site. The purpose of the delineation was to evaluate the presence and extent of wetlands and other waterways on the site that may be considered Waters of the United States (WOUS), regulated by Section 404 of the Clean Water Act (CWA).

The site consists of approximately 7.5 miles of right of way (ROW) where a proposed waterline would be installed. The ROW starts northwest of the City of Plattsmouth at the Metropolitan Utilities District Platte South Water Treatment Plant (WTP) located in the city of Plattsmouth, Sarpy County and heads south across the Platte River, through Bay Hills Golf Club, then following road ROW through the City of Plattsmouth eventually ending near the intersection of Avenue B and North 15th Street in the City of Plattsmouth, Cass County, Nebraska, as shown on Exhibit 1, Appendix A. The Platte River and Missouri River and their flood plains are located within close proximity to the northern and eastern site boundaries. The site generally starts at latitude-longitude coordinates of approximately 41.07163 and -95.97111 and generally ends at latitude-longitude coordinates of approximately 41.01335 and -95.89715.

Site inspections were completed on September 15th and September 28th by Kim Copenhaver and Philip Lind of Terracon to delineate the wetlands and other potential WOUS on the site. Prior to the site inspection a review of the available natural resource maps, aerial photographs and other resources was completed to assist with locating potential wetland and WOUS areas at the site. These maps and resources include the following:

- USGS Topographic Map
- Web Soil Survey Map
- Aerial Photographs
- USFWS National Wetland inventory
- Google Earth and other available online resources
- National Weather Service Data

According to National Weather Service, the weather history data for the month of September 2020 for the area of Plattsmouth Nebraska, the precipitation for the month was approximately

1.70 inches, which is 0.98 inches below the monthly normal for this area. The average monthly temperature was 77.4 degrees Fahrenheit (ºF). The supporting weather data can be accessed at https://www.weather.gov/oax/monthly_climate_records

Delineation Techniques

The wetland delineation was conducted in general accordance with the 1987 United States Army Corps of Engineers (USACE) Wetlands Delineation Manual and the 2010 Regional Supplement to the USACE Wetland Delineation Manual: Midwest Region. These manuals describe the methods for delineating wetlands in natural conditions using three wetland characteristics: hydrophytic (wetland) vegetation, hydric soils, and wetland hydrology. Other delineation methods for disturbed sites and managed landscapes are also described in these manuals, including landscapes within agricultural production. Vegetation, soils, and hydrology were characterized within each suspect area to evaluate for the presence of wetland characteristics. In agricultural fields aerial photographs, hydrology and soils were the primary indicators used for wetland determinations. Streams were identified on the site using standard guidance from the USACE using mapping references and observations of stream characteristics such as defined bed and banks, evidence of an ordinary high water mark (OHWM) and water sorted materials.

The following definitions are used when describing streams:

- Flow Characteristics:
  - Perennial: contains water at all times except during extreme drought.
  - Intermittent: carries water a considerable portion of the time; but ceases to flow occasionally or seasonally.
  - Ephemeral: carries water only during and immediately after periods of rainfall or snowmelt.

Other aquatic resources that may have the potential to be WOUS such as: ponds, basins, drainages, ditches, lakes, canals, and other waterways are reviewed and delineated, if they occur on the site.

Wetland data sheets, maps and a discussion of the aquatic resources delineated at the site are provided in this report. Photographs of the site are also provided in this report.

2.0 SITE DESCRIPTION

The northern portion of the project site is located within the MUD plant. This area consists of a manicured lawn within the MUD well field. The portion of the site closest to the river consist of an unmanicured landscape north of the Platte River. South of the Platte River the project site consists of road corridors and manicured landscaping within the road (ROW). Zwiebel Creek and the Platte River and associated wetlands are located along the northern portion of the site. Fourmile Creek crosses Bay Road through north central portion of the site. The site generally

drains toward the Platte River and is located in the Hydrologic Unit Code (HUC) 10200201. The USGS Topography maps and national wetland inventory map confirmed the location of these tributaries. The site is bordered by several well-traveled roads, Bay Hills Golf Club, residential homes, commercial properties, a cemetery, and agricultural cropland. Several man-made drainages and swales were found throughout the area, with culverts occasionally carrying flow under the roads. Aerial photographs of the site are included in Appendix B and Ground photographs of the site are included in Appendix C.

The project involves a crossing of the Platte River and its flood plain, as well as several other main tributaries mentioned above. Floodplain map 31153C0205G, effective December 2, 2005 indicates that portions of the project site are within the Zone X, 0.2% flood hazard and Zone AE with a Base Flood Elevation (BFE) of approximately 980 feet of the Platte River. The Bay Road portion of the project site is planned to cross Fourmile Creek, located approximately 3,800 feet south from its confluence of the Platte River. Floodplain maps 31025C0115D and 31025C0120D, effective November 26, 2010 indicate that portions of the project site are within Zone X and Zone AE with a BFE of approximately 973 feet of the Platte River.

A topographic map is included in Appendix A, Exhibit 1 demonstrating the topography of the site. The National Wetland Inventory (NWI) map is shown as Exhibit 2 of Appendix A. Soils Survey Map is shown as Exhibit 3. The Aquatic Resource map delineating the limits of potential wetlands identified on the site is provided as Exhibit 4. The Flood plain map is shown as Exhibit 5 in Appendix A.

Based on the Web Soil Survey results, the following hydric soils were mapped on the site:

Map Unit Symbol	Map Unit Name	National Hydric Soil
7050A	Kennebec silt loam, occasionally flooded	Yes
7099A	Zook silty clay loam, occasionally flooded	Yes
7750	Nodaway silt loam, occasionally flooded	Yes
7770	Colo silty clay loam, occasionally flooded	Yes
7867	Nodaway silt loam, channeled, frequently flooded	Yes
7773	Colo-Nodaway complex, frequently flooded	Yes

A copy of the soil survey map is provided in Appendix A. These soils are documented as hydric soils located in drainageways and within floodplains that are occasionally flooded. The soil characteristics were confirmed during the site inspection.

3.0 AQUATIC RESOURCE OBSERVATIONS

The findings of the field work are provided below, with additional details provided on the Wetland Determination Data Forms in Appendix D. Photographs of the site taken during the inspection, along with photographs of the data points, are shown in the photograph log provided in Appendix C.

3.1 Wetlands

Based on field observations, one Palustrine Forested Wetland (PFO), five Palustrine Emergent wetlands (PEMA) with a forested wetland fringe, two Palustrine Scrub Shrub wetland, and one Palustrine Emergent Farmed wetland (PEMAf) was identified on site. The PFO wetland is located north of the Platte River and is bordered by a perennial stream to the north and the Platte River to the south. The PEMA wetlands are south of the Platte River located near the Fourmile Creek within the ROWs along Bay Road and 6th Street as shown on the wetland delineation map provided in Appendix A. The wetlands would be characterized as a palustrine emergent marsh wetland with pockets of forested wetland along its fringe.

Wetland Description	
Wetland ID	Wetland Area 1 PEMA
Size	0.07 acres
Sampling Point(s)	W1
Photo ID	P-1
Association w/ other waters	Adjacent to Zwiebel Creek
Jurisdictional Opinion	Likely jurisdictional due to the close proximity to the creek and the floodplain of a major river.
Wetland Description	Wetland 1 is comprised of a shallow depression located near a shallow creek and a river located in the northern portion of the property. Dominant vegetation at this wetland is Reed Canary Grass (*Phalaris arudinacea*). Hydrology of the wetland appears to be supplied by the runoff from overflow from the creek and/or the river.
Non-Wetland (Upland) Description	
Upland Data Point(s)	S-1 Up
Was there a marked difference between the wetland and upland?	Data point was taken at a slightly higher elevation. Vegetative cover was a markedly different between wetlands to upland in along the creek bank. Upland was approximately six inches to one foot higher than wetland areas. Wetlands were not identified at the higher elevation along the banks.

Wetland Description	
Wetland ID	Wetland Area 2 PFO
Size	1.5 acres
Sampling Point(s)	W2
Photo ID	P-20 & P-21
Association w/ other waters	Adjacent to Platte River, within the floodplain
Jurisdictional Opinion	Likely jurisdictional due to the Platte River that flows adjacent to the wetland.
Wetland Description	Dominant vegetation at this wetland was large mature Silver Maples trees (*Acer saccharinim)* and Reed Canary Grass (*Phalaris arudinacea*) in the under story.
Non-Wetland (Upland) Description	
Upland Data Point(s)	S-1 Up
Was there a marked difference between the wetland and upland?	An upland point was not taken. The site lies in the floodplain of a major river and is regularly flooded. No upland point was identified within the ROW.

Wetland Description	
Wetland ID	Wetland Area 3 PEMAf
Size	0.17 acres
Sampling Point(s)	S-4
Photo ID	P-3
Association w/ other waters	Within floodplain of Fourmile Creek.
Jurisdictional Opinion	Likely jurisdictional due to the connection to Fourmile Creek. The creek appears to be a relatively permanent water (RPW) within the Platte River Basin.
Wetland Description	Wetland 3 is located in an agricultural field and is highly disturbed with no vegetation present. Area was at a slightly lower elevation in a suspect area. The primary indicators of this wetland were soil and hydrology.
Non-Wetland (Upland) Description	
Upland Data Point(s)	S-4 Up
Was there a marked difference between the wetland and upland?	Data points were taken in the ROW approximately two feet higher in elevation. No wetlands were identified in ROW at this location.

Wetland Description	
Wetland ID	Wetland Area 4 PEMA
Size	0.12 acres
Sampling Point(s)	S-5
Photo ID	P-5
Association w/ other waters	Within floodplain of the Platte River, approximately 3,500 feet south.
Jurisdictional Opinion	Potentially jurisdictional due to the field swale and off site manmade drainage ditches that flow through the wetland and into small lakes, and eventually into the Platte River. According to aerial photographs the swale appears to be seasonally flooded within the Platte River Basin.
Wetland Description	Wetland Area 4 is comprised of a shallow farm pond. The pond and associated wetland fringe appear to be approximately one foot below normal levels. Wetland 4 is located on the north side of Bay Road. Dominant vegetation at this wetland is Reed Canary Grass (*Echinochloa crus-galli*), and Pennsylvania Smartweed (*Polygontoum pensylcanicum*). Hydrology of the wetland appear to be supplied by the runoff from the surrounding landscape and overflow from the Platter River and the small lakes to the north.
Non-Wetland (Upland) Description	
Upland Data Point(s)	S-5 Up
Was there a marked difference between the wetland and upland?	Data point was taken at a higher elevation closer to Bay Road. Vegetative cover was a markedly different between wetland to upland in ROW area. Upland ROW was approximately 3-4 foot higher than wetland ponded area. No wetlands identified in ROW.

Wetland Description	
Wetland ID	Wetland Area 5 PEMA
Size	0.002 acres
Sampling Point(s)	S-6 Wet
Photo ID	P-6,
Association w/ other waters	No surface water connection was observed. Wetland appears to be isolated within the ROW.
Jurisdictional Opinion	Likely non-jurisdictional due to the lack of connection to another wetland or WOUS.
Wetland Description	Wetland Area 5 is a small depression on the south side of Bay Road. Dominant vegetation at this wetland is Reed Canary Grass (*Phalaris arudinacea*), Hydrology of the wetland appear to be supplied by the runoff from the surrounding area.

Non-Wetland (Upland) Description	
Upland Data Point(s)	S-6 Up
Was there a marked difference between the wetland and upland?	Data point was taken on the hillside. Vegetative cover was a markedly different between wetland to upland slope. Upland slope was approximately 2-3 foot higher than wetland area. No wetlands identified on the slope.

Wetland Description	
Wetland ID	Wetland Area 6 PEMA
Size	0.03 acres
Sampling Point(s)	S-7 Wet
Photo ID	P-7
Association w/ other waters	No surface water connection was observed. Wetland appears to be isolated within the ROW.
Jurisdictional Opinion	Likely non-jurisdictional due to the lack of connection to another wetland or WOUS.
Wetland Description	Wetland Area 6 is a small depression on the south side of Bay Road. Dominant vegetation at this wetland is Narrowleaf Cattail (*Typha angustifolia*), Hydrology of the wetland appear to be supplied by the runoff from the surrounding area via several culverts.

Non-Wetland (Upland) Description	
Upland Data Point(s)	S-7 Up
Was there a marked difference between the wetland and upland?	Data point was taken on the hillside. Vegetative cover was a markedly different between wetland to upland slope. Upland slope was approximately 2-3 foot higher than wetland area. No wetlands identified on the slope.

Wetland Description	
Wetland ID	Wetland Area 7 PSS
Size	1.5 acres
Sampling Point(s)	S-8 Wet & S-8A
Photo ID	P-9, P-10, & P-11
Association w/ other waters	Unnamed intermittent stream.
Jurisdictional Opinion	Likely jurisdictional due to the connection through culverts to another wetland or WOUS offsite. Water in the ponds and drainage did not have flow at time of site visit.

Wetland Description (cont.)	
Wetland Description	Wetland Area 7 is comprised of three shallow ponds connected by a narrow channel located on the west side of 6th Street. Dominant vegetation at this wetland is Reed Canary Grass (*Phalaris arudinacea*), and Peachleaf Willow (Salix *amygdaloids)* Hydrology of the wetland appear to be supplied by the runoff from the surrounding areas and overflow from the ponds.
Non-Wetland (Upland) Description	
Upland Data Point(s)	S-8 Up
Was there a marked difference between the wetland and upland?	Data point was taken at a higher elevation closer to 6th Street. Vegetative cover was a markedly different between wetland to upland in ROW area. Upland ROW was approximately 3-4 foot higher than wetland area. No wetlands identified on ROW slope.

Wetland Description	
Wetland ID	Wetland Area 8 PEMA
Size	0.002 acres
Sampling Point(s)	S-3
Photo ID	P-16
Association w/ other waters	Wetland bench fringe associated with an Intermittent tributary to the Platte. Drainage.
Jurisdictional Opinion	Likely jurisdictional due to the connection to an unnamed tributary to the Platte River. The tributary appears to be a RPW within the Platte River Basin as discussed below.
Wetland Description	Wetland Area 8 is comprised of a shallow drainage located east of Bay Hills Golf Club. Dominant vegetation at this wetland is Reed Canary Grass (*Phalaris arudinacea*). Hydrology of the wetland appear to be supplied by the runoff from the surrounding areas and road runoff.
Non-Wetland (Upland) Description	
Upland Data Point(s)	S-3 Up
Was there a marked difference between the wetland and upland?	Data point was taken at a higher elevation along a slope closer to Bay Hills Road. Vegetative cover was a markedly different between wetland to upland. Upland was approximately 1 foot higher than wetland area. No wetlands identified on slope.

Wetland Description	
Wetland ID	Wetland Area 9 PSS
Size	0.015 acres
Sampling Point(s)	S-9 Wet
Photo ID	P-17
Association w/ other waters	Vegetated Drainage
Jurisdictional Opinion	Likely non-jurisdictional at the site due being supplied by a nearby parking lot and road runoff into an ephemeral drainage.
Wetland Description	Wetland Area 9 is comprised of a shallow drainage located on the north side of Oak Hill Road. Dominant vegetation at this wetland is Reed Canary Grass (*Phalaris arudinacea*) and Peachleaf Willow (Salix *amygdaloids* Hydrology of the wetland appear to be supplied by the runoff from the parking lot and road runoff.
Non-Wetland (Upland) Description	
Upland Data Point(s)	S-9 Up
Was there a marked difference between the wetland and upland?	Data point was taken at a higher elevation. Vegetative cover was a markedly different between wetland to upland. Upland was approximately 1-2 foot higher than wetland area. No wetlands identified at higher elevation.

3.2 Streams and other Waters of the United States (WOUS)

Unnamed Tributary Description	
Waterway ID	Stream - 1
Approximate Length Onsite	4200 feet on Site
Name of Water Body	Unnamed tributary
Location	East of MUD plant and within the well field. Tributary flows to Zwieble Creek (Stream 2).
Waterway Type	Manmade drainage with a berm on either side.
Flow Characteristics	Intermittent – Likely from an artificial source. The MUD plant processes and treats stormwater runoff from MUD Water Treatment building into this unnamed drainage.
Ordinary High-Water Mark (OHWM)	No
Defined Bed & Bank	Yes
Channel Width Across OHWM	NA
Channel Width Across Bank Top	3-5 feet in the northern reach, 4 to 6 feet in southern reach.
Channel Width Across Water Surface or Dry Bottom	3 to 6 feet
Water Depth	3 inches to 6 inches
Water Clarity	Clear
Water Color	Light brown

Unnamed Tributary Description	
Waterway ID	Stream - 1
Stream Flow	Slow
Stream Flow Direction	South
Bank Height	Left Bank: 3 feet to 5 feet
	Right Bank: 3 feet to 5 feet
% Slope on Banks	Left Bank: 45% slope
	Right Bank: 45% slope
Bank Substrate	90% Vegetation; 10% Soil
Bed Substrate	Crushed limestone fill to the north, in woodlands Silty/Clay and some vegetation in sections
Riparian Vegetation Descr. & Width	Mowed grass to along the northern reach and wooded upland along the southern reach.
Wetland Fringe	No,
Aquatic Organisms	Aquatic invertebrates and frogs
Aquatic Habitat Discussion	Modest habitat, some sedimentation in the southern portion, wooded area in the northern portion. A manicured lawn was observed west of the drainage. A road crossing was observed in the southern portion.

Zweible Creek Description	
Waterway ID	Stream - 2
Approximate Length Onsite	300 feet
Name of Water Body	Zwieble Creek,
Location	Parallel to Platte River, within Platte River Floodplain. Road crossing providing access to MUD well field which is located upstream of site.
Waterway Type	Stream with defined bed and bank. Creek appears to be a RPW.
Flow Characteristics	Perennial eventually flows into the Platte River.
Ordinary High-Water Mark (OHWM)	Yes
Defined Bed & Bank	Yes
Channel Width Across OHWM	15 to 20 feet
Channel Width Across Bank Top	20 to 30 feet
Channel Width Across Water Surface or Dry Bottom	15 to 20 feet
Water Depth	6 inches to 1 foot, at the time of site inspection. Normal conditions 2-4 feet.
Water Clarity	Silty/Cloudy
Water Color	Muddy brown
Stream Flow	Slow

Zweible Creek Description	
Waterway ID	Stream - 2
Stream Flow Direction	East
Bank Height	Left Bank: 8 feet to 10 feet
	Right Bank: 8 feet to 10 feet
% Slope on Banks	Left Bank: 80% slope
	Right Bank: 80% slope
Bank Substrate	25% Vegetation; 75% Soil
Bed Substrate	Silty/Clay and minimal vegetation in sections.
Riparian Vegetation Descr. & Width	Herbaceous, invasive and opportunistic species for approximately 40 feet on both sides. With woodlands further outward. Japanese Hops (*Humulus japonicus)* and Reed Canary Grass (*Phalaris arudinacea).*
Wetland Fringe	No, Japanese Hops (*Humulus Japonicus).*
Aquatic Organisms	Aquatic invertebrates, fish.
Aquatic Habitat Discussion	Fair habitat, some fish in the channel. Seasonal high water events scour banks regularly. Recent flood of 2019 significantly cleared out debris from riparian area and scoured new banks. Stream inaccessible to terrestrial species due to high stream bank.

Platte River Description	
Waterway ID	Stream – 3
Approximate Length Onsite	1,200 feet on Site
Name of Water Body	Platte River
Location	Large channel in northern portion of site, northwest of the bridge that carries I-75 across the Platte River.
Waterway Type	Large River, possibly Traditional Navigable Waterway TNW
Flow Characteristics	Perennial
Ordinary High-Water Mark (OHWM)	Yes
Defined Bed & Bank	Yes
Channel Width Across OHWM	1,200 feet
Channel Width Across Bank Top	1,200 feet
Channel Width Across Water Surface or Dry Bottom	1,200 feet
Water Depth	Varies
Water Clarity	Muddy
Water Color	Muddy dark brown
Stream Flow	Moderate
Stream Flow Direction	East

Platte River Description	
Waterway ID	Stream – 3
Bank Height	Left Bank: 3 feet to 5 feet
	Right Bank: 5 feet to 10 feet
% Slope on Banks	Left Bank: 80% slope
	Right Bank: 80% slope
Bank Substrate	0% Vegetation; 100% Silty sandy soil
Bed Substrate	Sandy/Clay
Riparian Vegetation Descr. & Width	Mature Forested wetlands. See Wetland Two description
Wetland Fringe	Yes
Aquatic Organisms	Aquatic invertebrates, fish
Aquatic Habitat Discussion	Habitat varies depending on water flows. Some fish in the channel.

Unnamed Tributary Description	
Waterway ID	Stream – 4
Approximate Length Onsite	300 feet on Site
Name of Water Body	Unnamed Tributary
Location	Crosses Buccaneer Boulevard approximately 1,500 feet east of its intersection with Becker Court.
Waterway Type	Natural stream with some areas of artificial bed and bank near road crossing.
Flow Characteristics	Intermittent
Ordinary High-Water Mark (OHWM)	Yes
Defined Bed & Bank	Artificial, flexible concrete blanket upstream and broken concrete downstream.
Channel Width Across OHWM	3 to 4 feet
Channel Width Across Bank Top	6 to 8 feet
Channel Width Across Water Surface or Dry Bottom	1 to 3 feet
Water Depth	1 to 6 inches
Water Clarity	Silty
Water Color	Light brown
Stream Flow	Slow
Stream Flow Direction	North-Northeast
Bank Height	Left Bank: 2 feet to 3 feet
	Right Bank: 2 feet to 3 feet
% Slope on Banks	Left Bank: 80% slope
	Right Bank: 80% slope
Bank Substrate	90% Vegetation; 10% Soil
Bed Substrate	Stabilized with Concrete at the site. Likely silt upstream

Unnamed Tributary Description	
Waterway ID	Stream – 4
Riparian Vegetation Descr. & Width	Small herbaceous wetland bench approximately 3 to 4 foot wide on upstream north side of stream. Wooded riparian area throughout the rest.
Wetland Fringe	Yes, See wetland 8
Aquatic Organisms	Aquatic invertebrates
Aquatic Habitat Discussion	Water was shallow. Frogs were observed but no fish.

Fourmile Creek Description	
Waterway ID	Steam - 5
Approximate Length Onsite	300 feet on Site
Name of Water Body	Fourmile Creek
Location	Crossed Bay Road approximately 1,300 feet east of its intersection with Buccaneer Boulevard.
Waterway Type	Stream with defined bed and bank, RPW
Flow Characteristics	Perennial flows into the Platte River
Ordinary High-Water Mark (OHWM)	Yes
Defined Bed & Bank	Yes
Channel Width Across OHWM	30 to 50 feet
Channel Width Across Bank Top	60 to 70 feet
Channel Width Across Water Surface or Dry Bottom	20 to 30 feet
Water Depth	1 to 2 foot
Water Clarity	Silty/Cloudy
Water Color	Muddy brown
Stream Flow	Moderate
Stream Flow Direction	North
Bank Height	Left Bank: 10 feet to 15 feet
	Right Bank: 20 feet to 30 feet
% Slope on Banks	Left Bank: 80% slope
	Right Bank: 80% slope
Bank Substrate	80% Vegetation; 20% Soil
Bed Substrate	Silty/Clay and minimal vegetation in sections
Riparian Vegetation Descr. & Width	Shrubby, 100 foot wide
Wetland Fringe	No, Bank is too steep
Aquatic Organisms	Aquatic invertebrates, fish
Aquatic Habitat Discussion	Fair habitat, some fish in the channel. Access limited for some wildlife due steep bank.

Unnamed Tributary Description	
Waterway ID	Stream - 7
Approximate Length Onsite	300 feet on Site
Name of Water Body	Unnamed Drainage
Location	North of side of Oak Hill Road
Waterway Type	Drainage without a defined bed and bank
Flow Characteristics	Ephemeral
Ordinary High-Water Mark (OHWM)	NO
Defined Bed & Bank	NO
Channel Width Across OHWM	NA
Channel Width Across Bank Top	NA
Channel Width Across Water Surface or Dry Bottom	NA
Water Depth	2 to 4 inches
Water Clarity	Silty/Cloudy
Water Color	Cloudy
Stream Flow	Slow
Stream Flow Direction	North
Bank Height	NA
	NA
% Slope on Banks	NA
	NA
Bank Substrate	NA
Bed Substrate	NA
Riparian Vegetation Descr. & Width	Small herbaceous wetland ranging from approximately 3 to 4 foot wide on upstream north side of Oak Hill Road.
Wetland Fringe	Yes, Reed Canary Grass (*Phalaris arundinacea)* see Wetland 9
Aquatic Organisms	Aquatic invertebrates, frogs
Aquatic Habitat Discussion	Modest habitat, channel was narrow and shallow, no fish observed.

Unnamed Tributary Description	
Waterway ID	Stream - 8
Approximate Length Onsite	2000 feet on Site
Name of Water Body	Unnamed Drainage
Location	West side of 6th Street
Waterway Type	Drainage without a defined bed and bank
Flow Characteristics	Intermittent
Ordinary High-Water Mark (OHWM)	NO
Defined Bed & Bank	NO

Unnamed Tributary Description	
Waterway ID	Stream - 8
Channel Width Across OHWM	NA
Channel Width Across Bank Top	NA
Channel Width Across Water Surface or Dry Bottom	8 to 10 inches
Water Depth	3 to 6 inches
Water Clarity	Clear
Water Color	Semi Cloudy
Stream Flow	Slow
Stream Flow Direction	North
Bank Height	12 inches
	12 inches
% Slope on Banks	90
	90
Bank Substrate	100% soil
Bed Substrate	100% soil
Riparian Vegetation Descr. & Width	Small herbaceous wetland ranging from approximately 1 to 2 foot wide to 10 to 15 foot wide in the northern portion near culvert.
Wetland Fringe	Yes, Reed Canary Grass (*Phalaris arundinacea)* see Wetland 7.
Aquatic Organisms	Aquatic invertebrates, frogs, small fish in ponded areas.
Aquatic Habitat Discussion	Modest habitat, channel was narrow and shallow, no fish observed in narrow channel.

S6, is an unnamed drainage located along the north side of Oak Hill Road was evaluated but was determined to be offsite.

4.0 AQUATIC RESOUCE SUMMARY

This report describes the methods and procedures used to delineate wetlands and other WOUS on the subject site in accordance with the field procedures and methods accepted by the USACE for the Midwest Region. Nine wetland and seven water pathways were identified on the site. The wetlands total approximately 3.809 acres on the project site and would be generally classified as a PEMA, with the exception of the forested wetland (PFO) identified along the Platte River and an area of shrub scrub wetland PSS wetlands along the perennial streams. In the PFO mature Silver Maple, Ash, and Cottonwood trees were observed. These were the most natural wetlands due the mature vegetative cover and location in the floodplain. The remaining wetlands on the site are dominated by typical wetland plants found within drainages or stream corridors found throughout the region and would not be considered unique due to the ongoing mowing, the vegetative make up, and their position in the land scape.

Eight streams were identified within or near the project boundaries. Three of the streams appears to flow perennially, Fourmile Creek, the Platte River, and Zweible Creek. Although, the USGS Quadrangle map documents has the Zweible Creek as an intermittent tributary. Of the eight streams identified four appear to be unnamed drainages and tributaries. The unnamed drainages appear to be manipulated to accommodate roadways and parking lot drainage. The flow direction of these tributaries is generally north towards the Platte River. The streams are primarily located within a rural or suburban setting. Many of the intermittent streams are culverted beneath roads and have some sort of maintenance work, including channel shaping, or rock placed for stabilization. The intermittent streams have somewhat fair water quality and habitat value given the condition of the landscape that drain to them and moderate wildlife use. S6 is an unnamed drainage identified within close proximity of this site but is mapped outside of the project boundaries.

The following tables summarize the aquatic resources delineated on the site and our opinion regarding potential justification under the CWA. Please note that wetland boundaries and stream locations were surveyed in the field using a Trimble GPS Unit (submeter accuracy). The stream measurements were estimated using aerial photographs and the field survey points, with onsite confirmation of their approximate location, width and characteristics.

Wetland Table

	Wetland Area (acres)	Wetland Classification[1]	Wetland Latitude / Longitude	Nebraska Wetland Subclass[2]	Potentially Jurisdiction
Wetland 1	0.07	PEMA	41.05905/ - 95.97184	Floodplain Depression	Yes
Wetland 2	1.5	PFO	41.05874/ - 95.97108	Broad-leaved Deciduous	Yes
Wetland 3	0.17	PEMAf	41.04583/ - 95.94916	Floodplain Depression	Yes
Wetland 4	0.12	PEMA	41.04587/ - 95.94252	Floodplain Depression	Yes
Wetland 5	0.002	PEMA	41.04482/ - 95.92400	Floodplain Depression	No
Wetland 6	0.03	PEMA	41.04448/ - 95.92229	Floodplain Depression	No
Wetland 7	1.9	PEMA	41.03756/ - 95.91977	Sloped	Yes
Wetland 8	.002	PEMA	41.05072/ - 95.96197	Floodplain Depression	Yes
Wetland 9	0.015	PSS	41.01357/ - 95.91038	Broad-leaved Deciduous	No
Total	**3.809 acres**				

[1]PEMA – Palustrine Emergent Temporarily flooded; [2]PEMAf – Palustrine Emergent Temporarily Flooded farmed; [3]PFO – Palustrine Forested; [4]PSS – Palustrine Scrub Shrub

Stream - Drainage Table

Streams	**Length on Site (feet)**	Flow Class	Width avg (feet)	Potentially Jurisdictional	State Water Quality Classification
Stream 1 Unnamed	**4200**	Intermittent	3-6	Likely non jurisdictional	Not Listed
Stream 2 Zwieble Creek	**300**	Perennial	15-20	Likely jurisdictional	Not Listed
Stream 3 Platte River	**1200**	Perennial	1200	Likely Jurisdictional	Not Listed
Stream 4 Unnamed	**300**	Intermittent	1-3	Likely jurisdictional	Not Listed
Stream 5 Fourmile	**300**	Perennial	30-50	Likely Jurisdictional	Not Listed
Steam 6 Unnamed	**0 Off Site**	NA	NA	NA	NA
Stream 7 Unnamed	**300**	Ephemeral	.5-1	Likely non jurisdictional	Not Listed
Stream 8 Unnamed	**2000**	Intermittent	1-2	Likely jurisdictional	Not Listed
Total	**8600 feet**				

The approximate wetland boundaries and the location of potential WOUS are depicted on the Wetland Delineation Map (Exhibit 4, Appendix A). Please note that *only* the USACE can make the final determination on the jurisdictional status of wetlands and WOUS, and on the need for permit processing and compensatory mitigation.

5.0 CONCLUSIONS

According to our field observation and wetland survey results, approximately 3.809 acres of wetlands and 8,300 feet of perennial stream and/or intermittent streams were identified on the site. These aquatic resources may be regulated by the USACE under Section 404 of the CWA. However, only the USACE can make the final determination on the limits of and the jurisdictional status of wetlands, streams or other waterbodies, and on the need for permit processing and compensatory mitigation if impacts to the jurisdictional areas are proposed.

If you require documentation that a USACE permit may or may not be required for your project, you should submit a copy of this report to the USACE at the following address, with a request to perform an approved jurisdictional determination and a copy of the site plans for development.

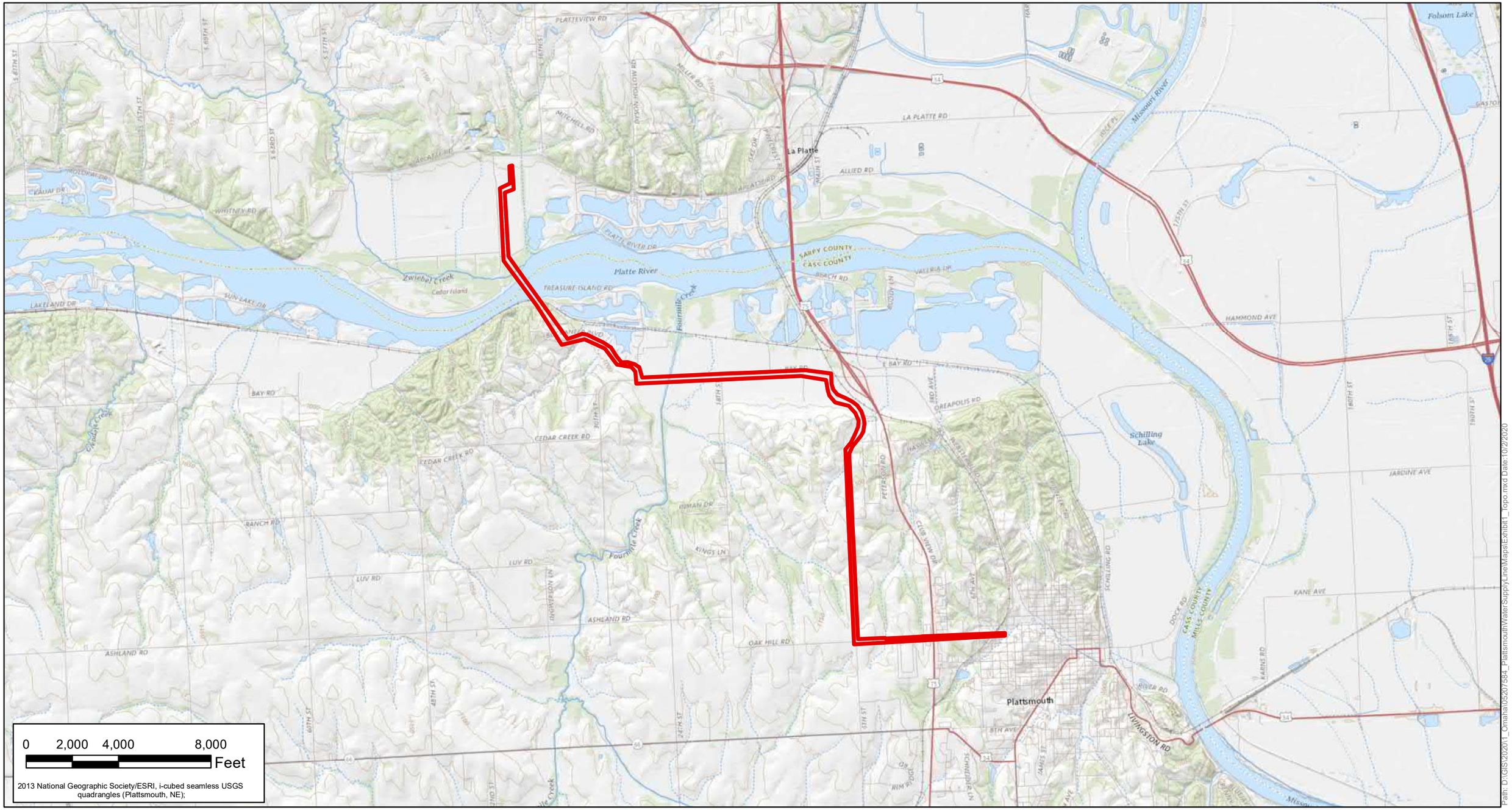
United States Army Corps of Engineers
Omaha Regulatory Office – Wehrspann
8901 South 154th Street
Omaha, NE 68138-3635

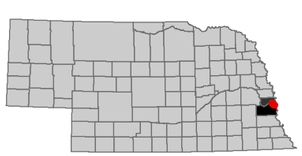
6.0 GENERAL COMMENTS

The wetland delineation was conducted using the 1987 USACE Manual and the 2010 Midwest Supplement. The manuals provide assistance for delineating wetlands based on the three criteria discussed for sites that have natural conditions and other methods for sites where the landscape is disturbed. However, the manual alone may not have provided enough information to document whether or not the three criteria were met. Various physical properties or other visual signs used to evaluate whether the three wetland criteria areas were satisfied may not be straightforward, especially in disturbed or problem areas. The manual also allows the user to visually estimate certain indicators such as the percentage of area covered by dominant species for the entire community. Terracon did not attempt to identify every possible plant species and did not classify soil type by laboratory methods. Due to seasonal changes and or site disturbances, Terracon cannot guarantee the area to exhibit or not to exhibit wetland characteristics at all times of the year. The limitations of this wetland delineation should be recognized.

This report has been prepared in accordance with generally accepted scientific and engineering evaluation practices. This report is for the exclusive use of the client for the project being discussed. No warranties, either express or implied, are intended or made.

APPENDIX A
Exhibits





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File Name:	Exhibit1_Topo
Date:	October 2020

Terracon

15080 A Circle Omaha, NE 68144

Phone: (402) 384-7009 Fax: (402) 330-7606

Topographic Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

1

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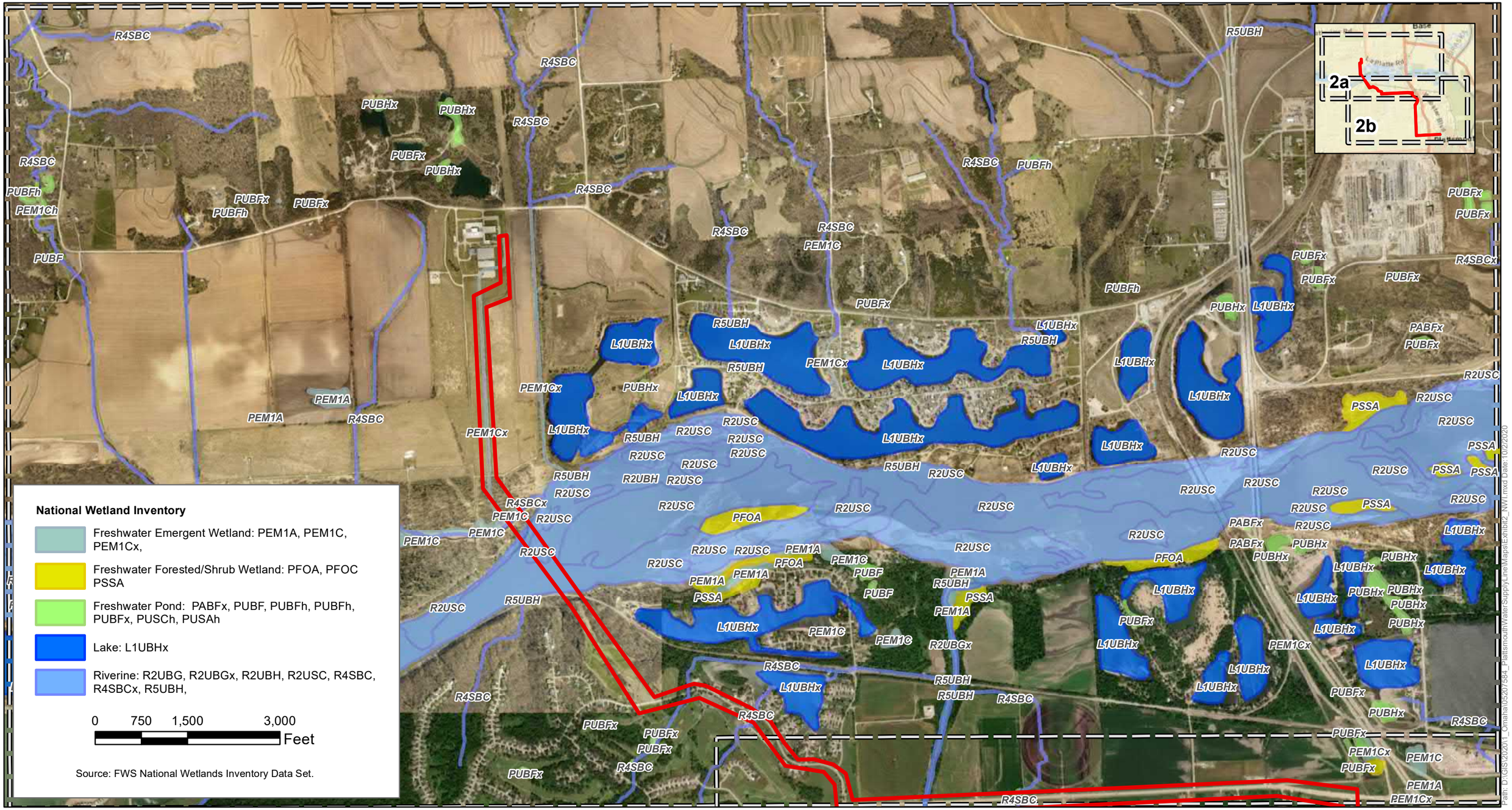

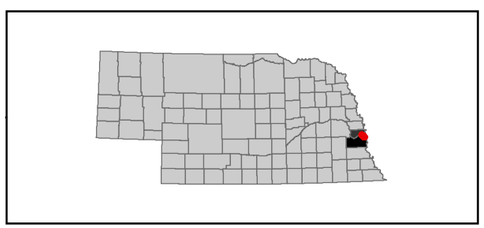

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File Name:	Exhibit2_NWI
Date:	October 2020

Terracon

15080 A Circle Omaha, NE 68144

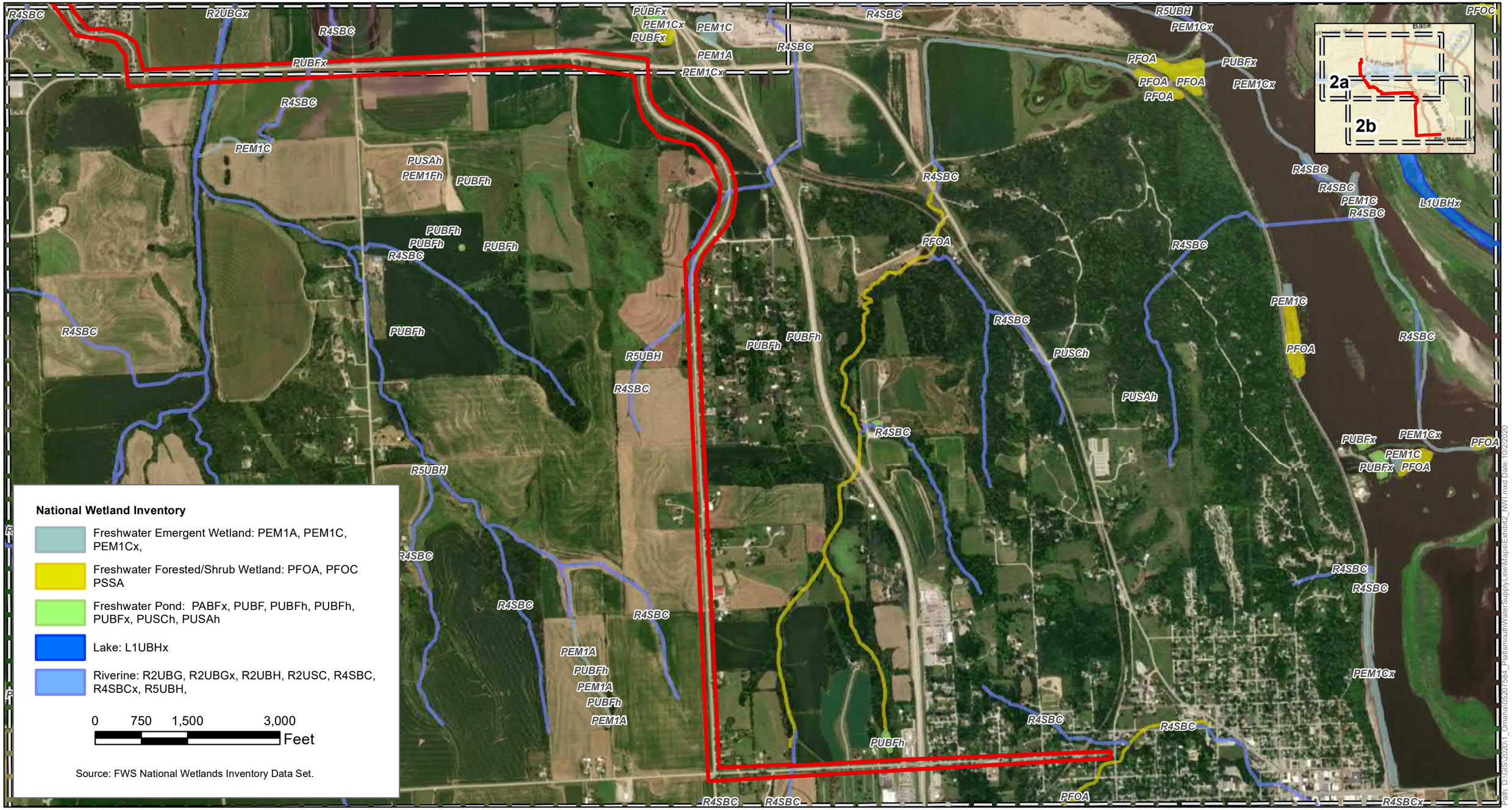
Phone: (402) 384-7009 Fax: (402) 330-7606

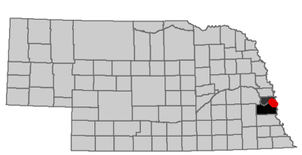
National Wetland Inventory (NWI) Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

2a





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File Name:	Exhibit2_NWI
Date:	October 2020

Terracon

15080 A Circle Omaha, NE 68144
Phone: (402) 384-7009 Fax: (402) 330-7606

National Wetland Inventory (NWI) Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

2b

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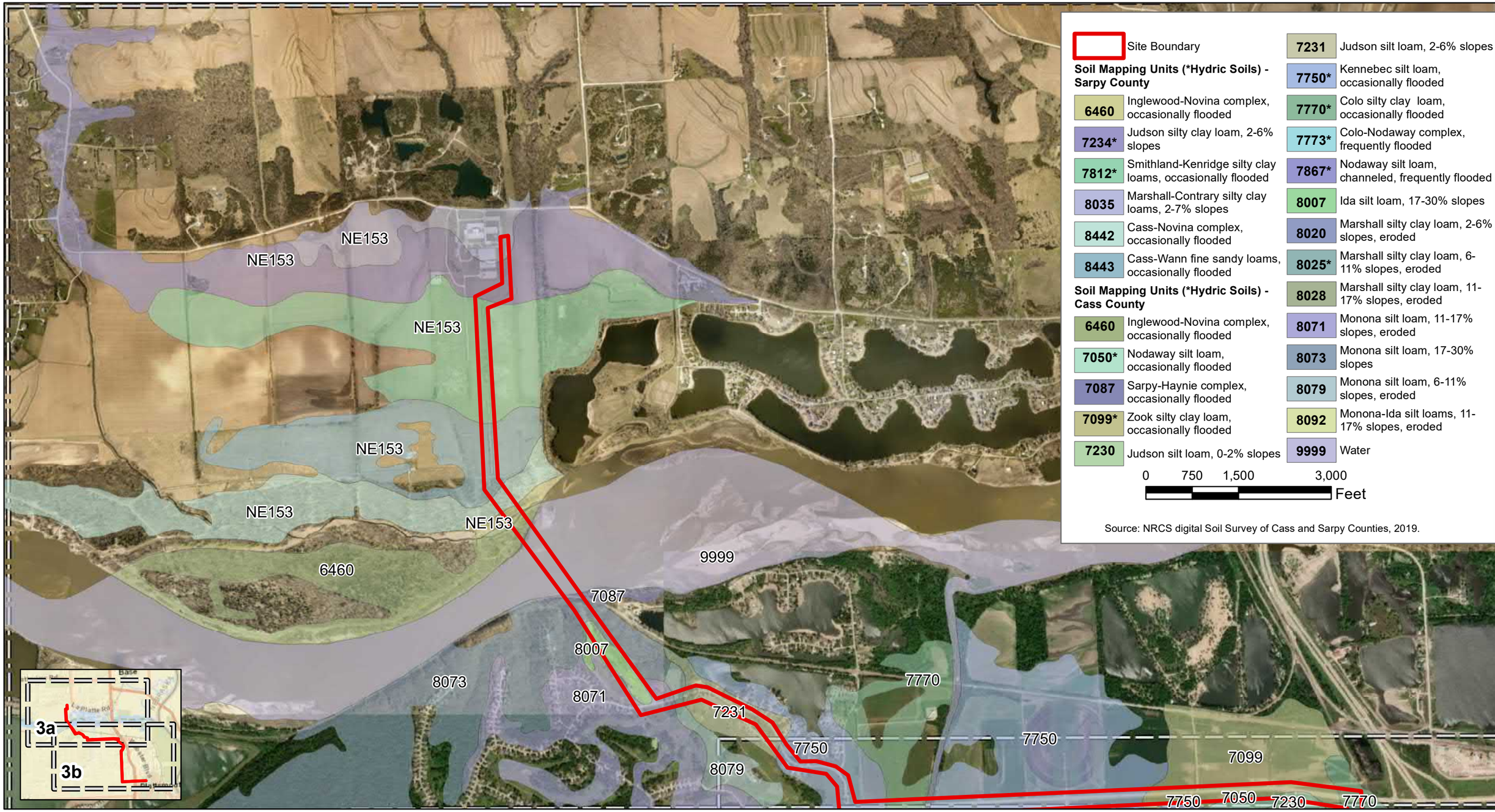

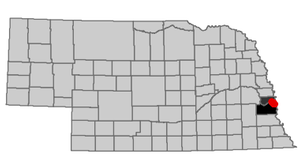

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Date:	October 2020

Terracon

15080 A Circle Omaha, NE 68144
Phone: (402) 384-7009 Fax: (402) 330-7606

Soil Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

3a

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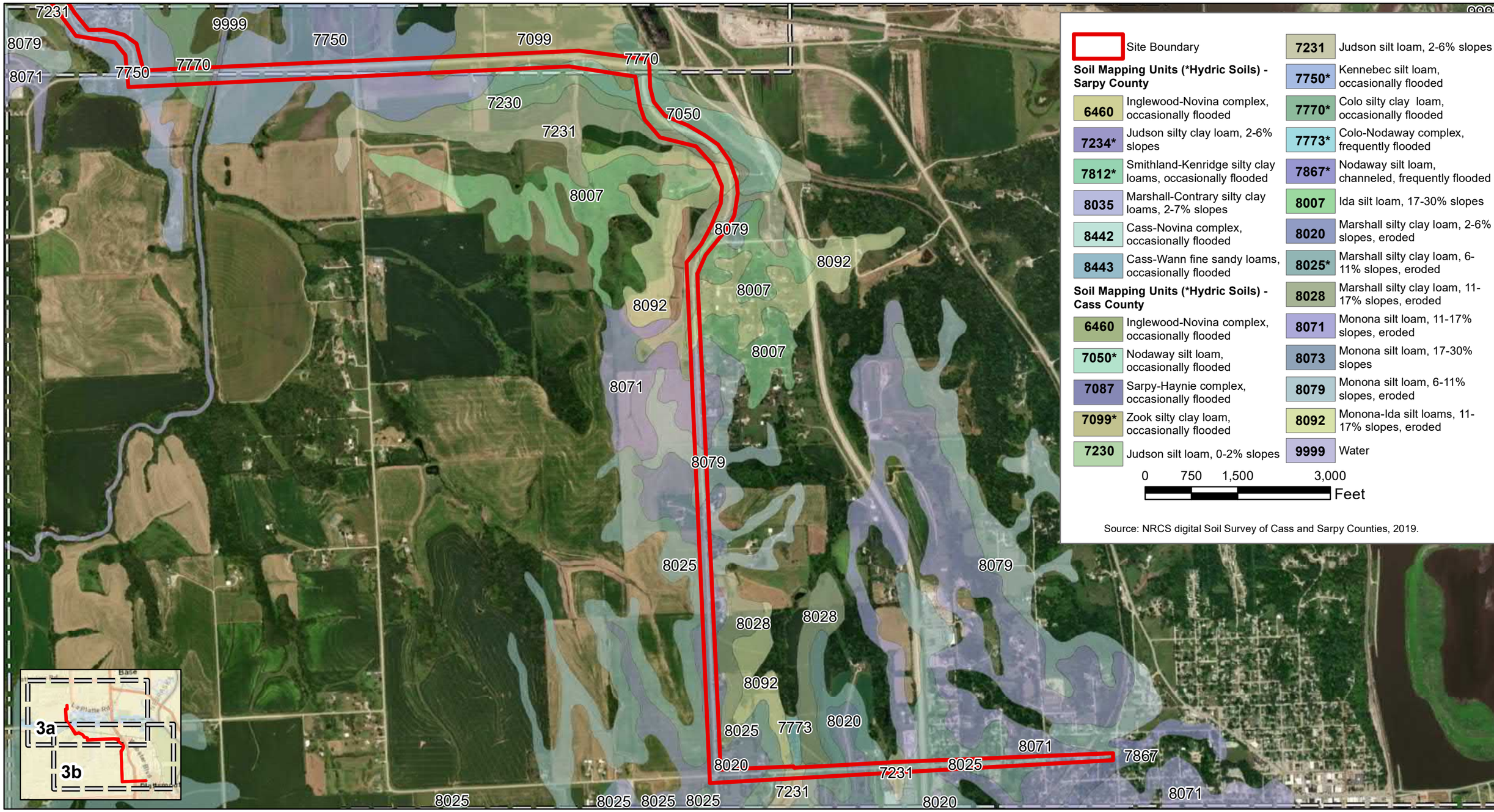

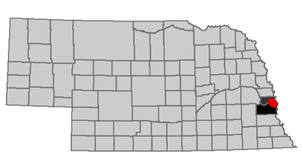

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File Name:	Exhibit3_Soils
Date:	October 2020

Terracon

15080 A Circle Omaha, NE 68144
Phone: (402) 384-7009 Fax: (402) 330-7606

Soil Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

3b

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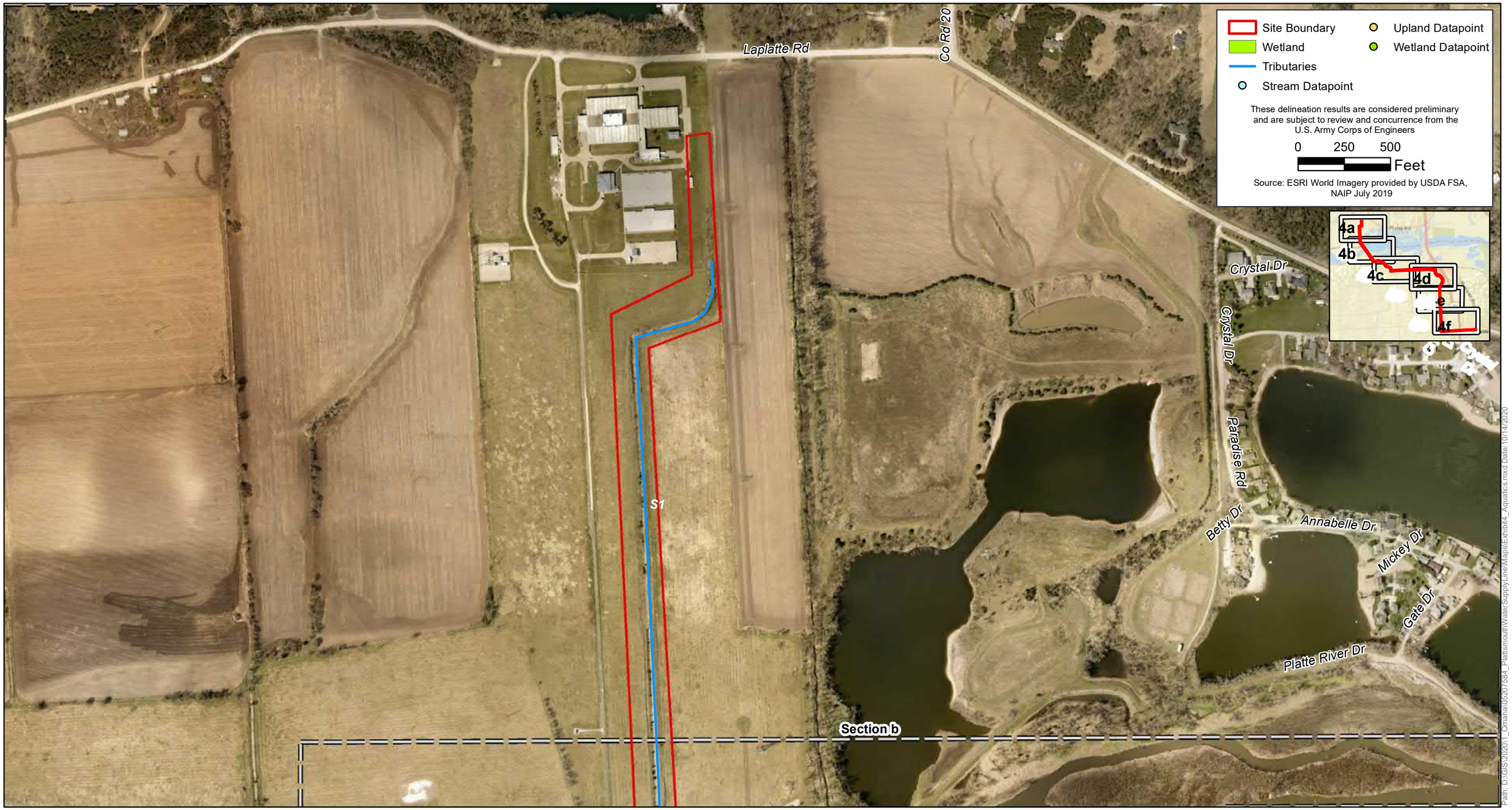

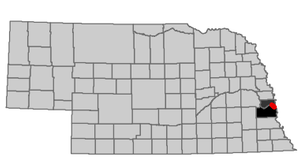

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File Name:	Exhibit4_Aquatics
Date:	October 2020

Terracon

15080 A Circle Omaha, NE 68144
Phone: (402) 384-7009 Fax: (402) 330-7606

Aquatic Resource Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

4a

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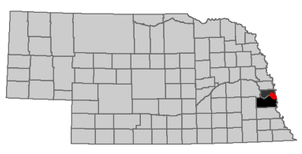

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File Name:	Exhibit4_Aquatics
Date:	October 2020

Terracon

15080 A Circle Omaha, NE 68144

Phone: (402) 384-7009 Fax: (402) 330-7606

Aquatic Resource Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

4b

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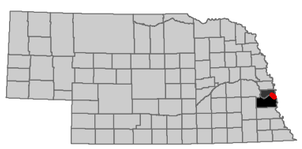

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Date:	October 2020

Terracon

15080 A Circle Omaha, NE 68144

Phone: (402) 384-7009 Fax: (402) 330-7606

Aquatic Resource Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

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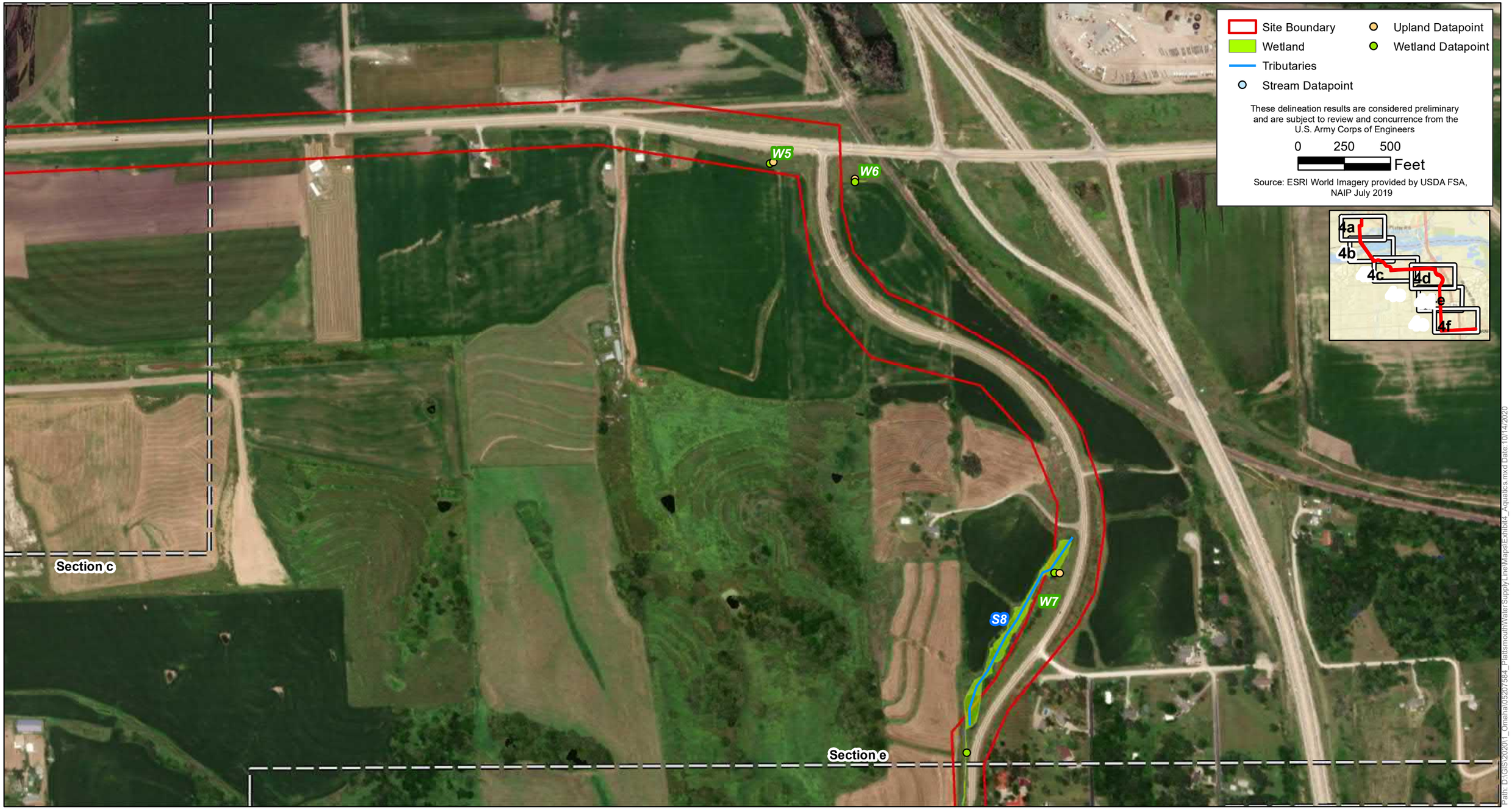

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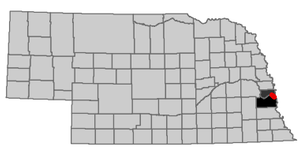


N

Project No:	05207584
Scale:	1 in = 500 ft
File Name:	Exhibit4_Aquatics
Date:	October 2020

Terracon

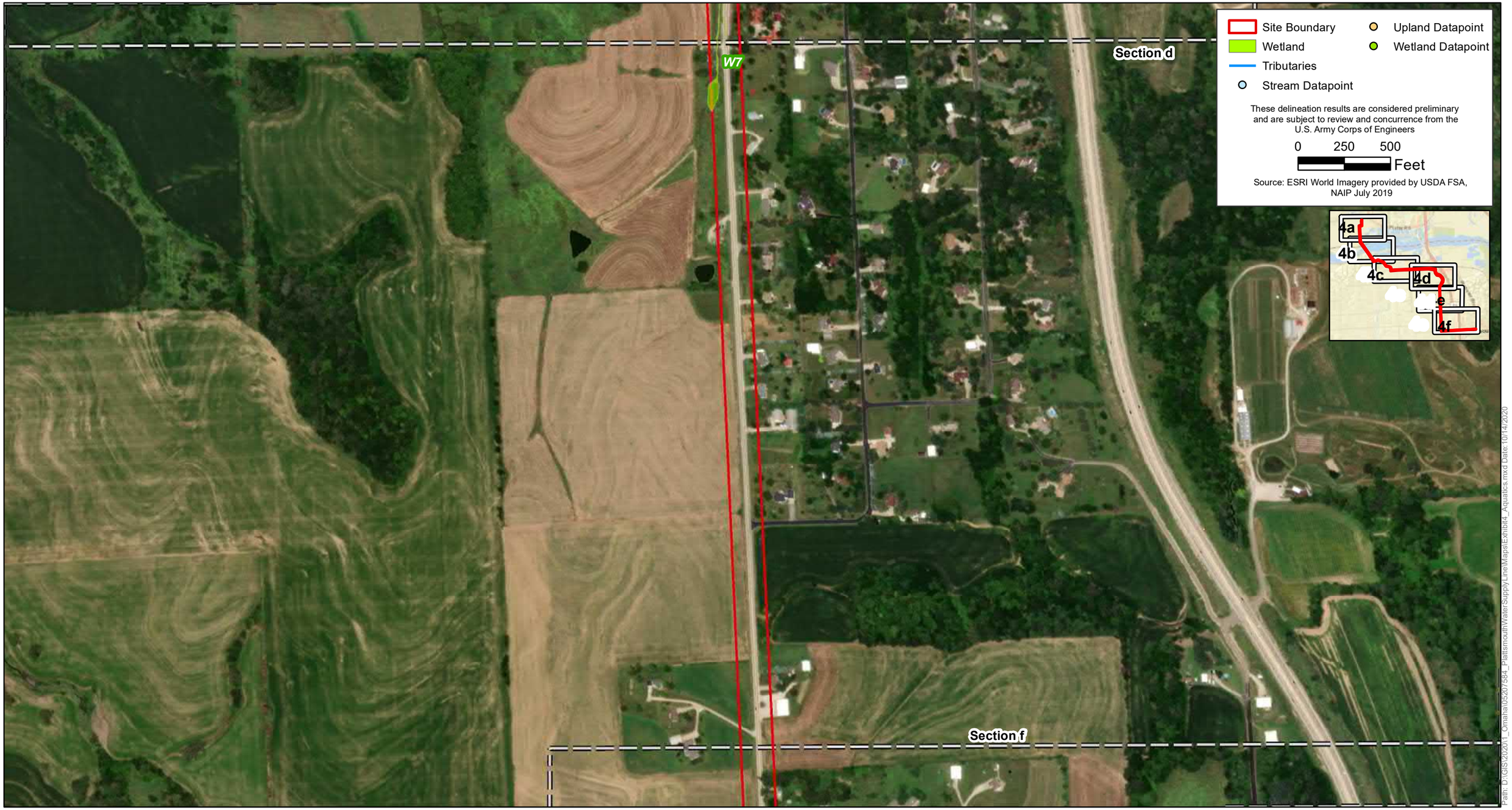
15080 A Circle Omaha, NE 68144
Phone: (402) 384-7009 Fax: (402) 330-7606

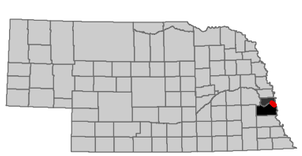
Aquatic Resource Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

4d





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Project No:	05207584
Scale:	1 in = 500 ft
File Name:	Exhibit4_Aquatics
Date:	October 2020

Terracon

15080 A Circle Omaha, NE 68144
Phone: (402) 384-7009 Fax: (402) 330-7606

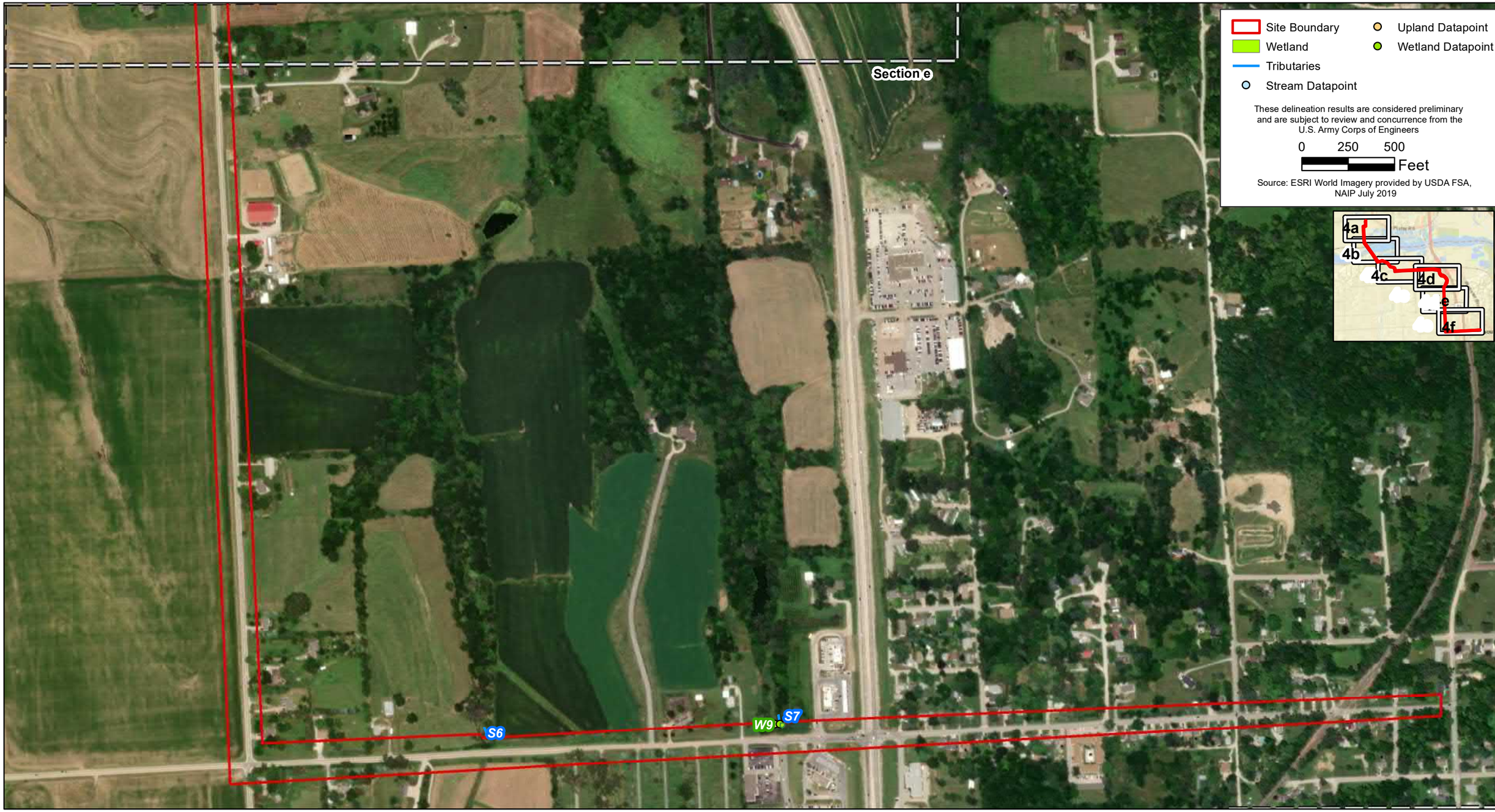
Aquatic Resource Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

4e

Path: D:\GIS\202011_Omaha\05207584_PlattsmouthWaterSupplyLine\Maps\Exhibit4_Aquatics.mxd Date:10/14/2020



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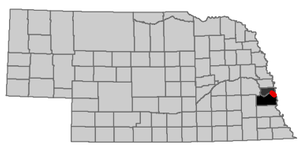


N

Project No:	05207584
Scale:	1 in = 500 ft
File Name:	Exhibit4_Aquatics
Date:	October 2020

Terracon

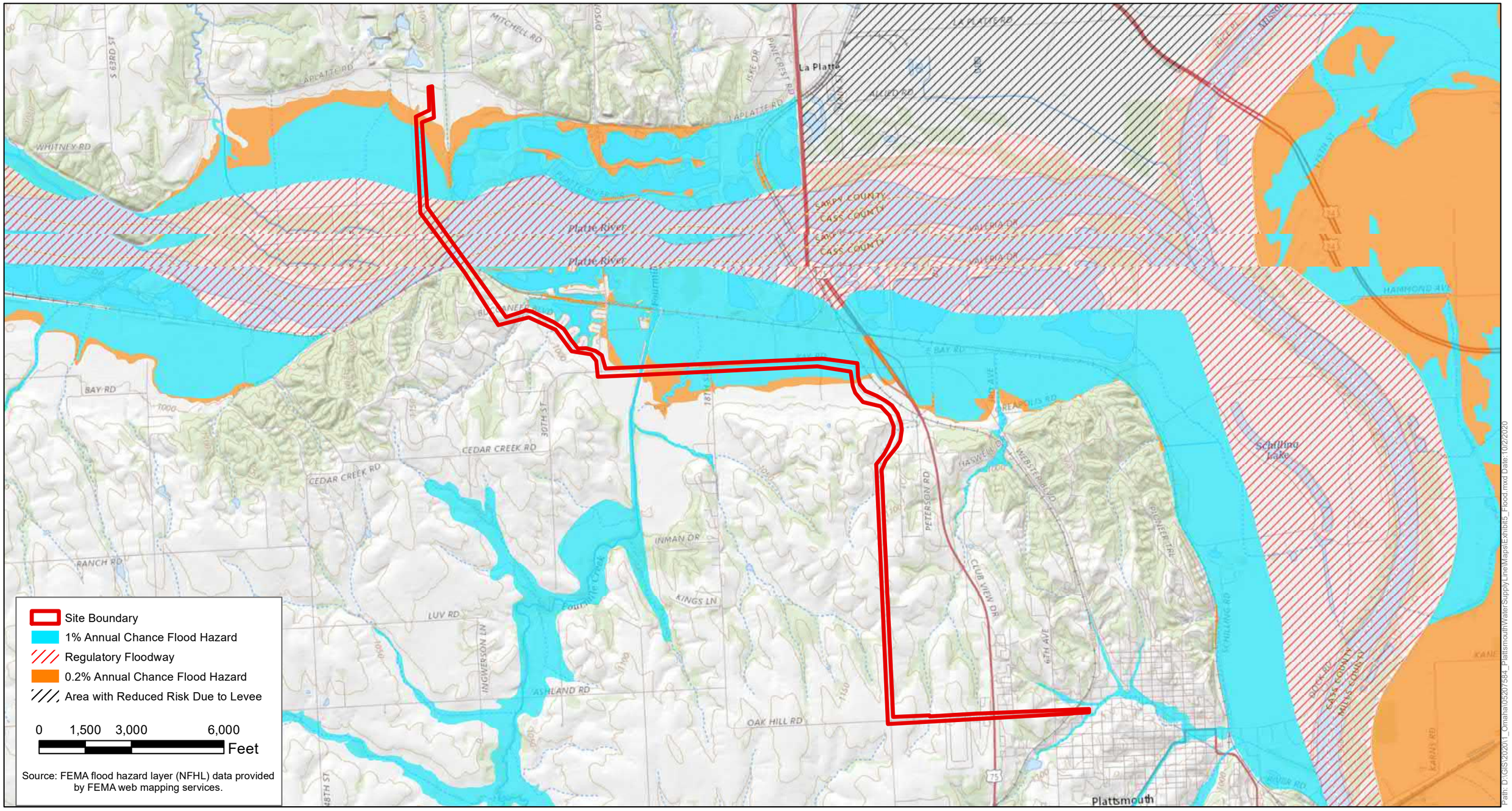
15080 A Circle Omaha, NE 68144
Phone: (402) 384-7009 Fax: (402) 330-7606

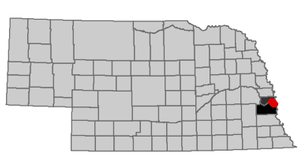
Aquatic Resource Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

4f





N

Project No:	05207584
Scale:	1 in = 3,000 ft
File Name:	Exhibit5_Flood
Date:	October 2020

Terracon

15080 A Circle Omaha, NE 68144
Phone: (402) 384-7009 Fax: (402) 330-7606

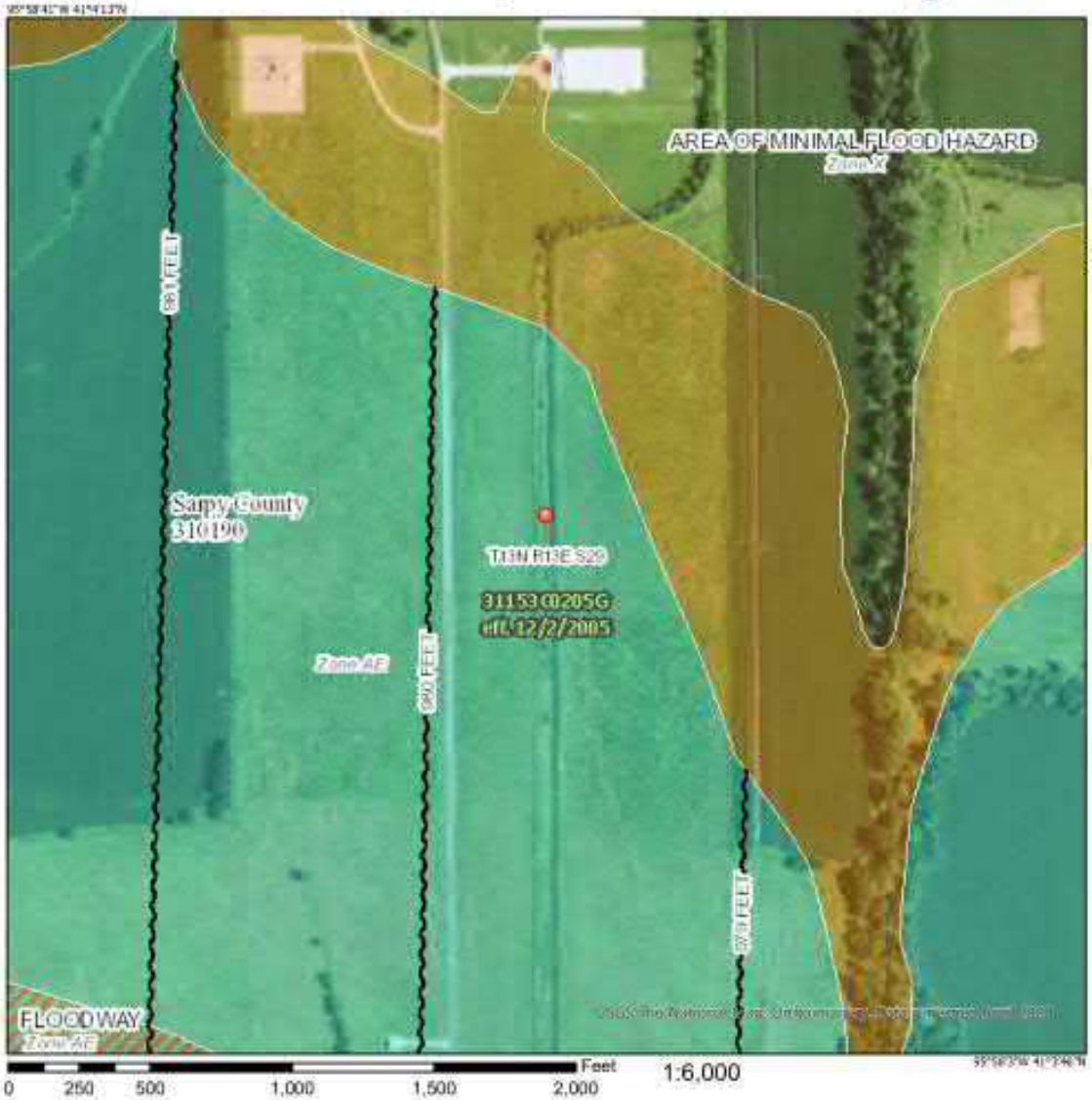
Flood Hazard Zone Map

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

5A

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE)
- With BFE or Depth
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Flood Risk due to Levee. See Notes.
- Area with Flood Risk due to Levee

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard
- Effective LOMRs
- Area of Undetermined Flood Hazard

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- Cross Sections with 1% Annual Chance
- Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/30/2020 at 8:39 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

N

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https://msc.fema.gov/portal/home

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: PEL	Project No. 05207584
Drawn by: PEL	Scale: 1"=2,000'
Checked by: KAC	File Name: FEMA Maps
Approved by: JH	Date: 10/12/202

Terracon
15080 A Cir
Omaha, NE 68144-5558

Flood Hazard Zone Map

Watermain ROW to MUD So. Plant Plattsmouth Water Supply Relocation Project
Sarpy And Cass Counties, Nebraska

Exhibit
5B

National Flood Hazard Layer FIRMette

FEMA

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/30/2020 at 8:41 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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N

FEMA MAP IMAGE COURTESY OF https://msc.fema.gov/portal/home

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: PEL	Project No. 05207584	Terracon	**Flood Hazard Zone Map**
Drawn by: PEL	Scale: AS SHOWN	15080 A Cir	Watermain ROW to MUD So. Plant Plattsmouth Water Supply Relocation Project
Checked by: KAC	File Name: FEMA Maps	Omaha, NE 68144-5558	**Sarpy And Cass Counties, Nebraska**
Approved by: JH	Date: 10/12/202		

Exhibit

5C

National Flood Hazard Layer FIRMette

FEMA

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/30/2020 at 8:47 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

N

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DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	PEL
Drawn by:	PEL
Checked by:	KAC
Approved by:	JH
Project No.	05207584
Scale:	1"=2,000'
File Name:	FEMA Maps
Date:	10/12/202

Terracon

15080 A Cir

Omaha, NE 68144-5558

Flood Hazard Zone Map

Watermain ROW to MUD So. Plant Plattsmouth Water Supply Relocation Project

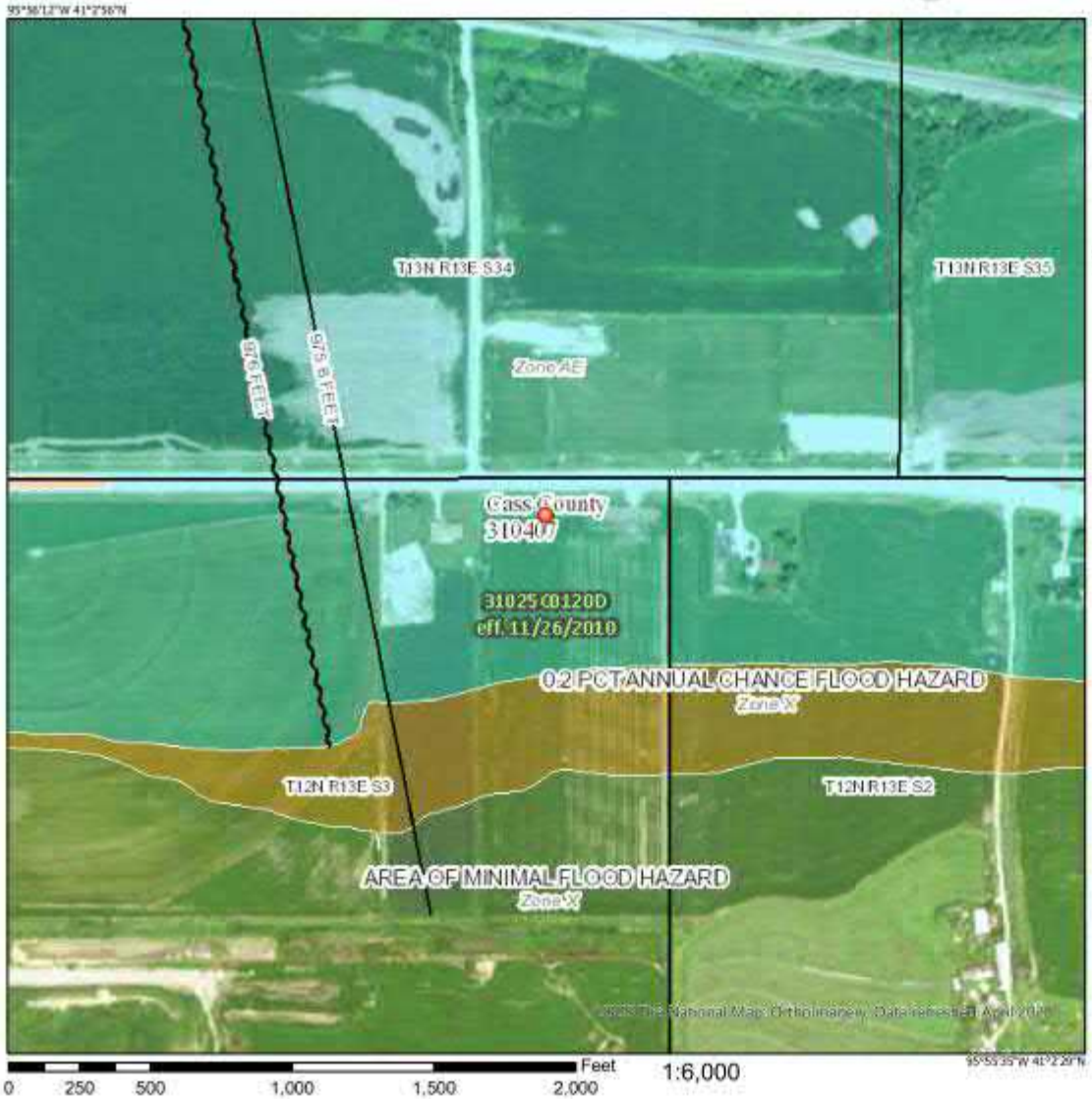
Sarpy And Cass Counties, Nebraska

Exhibit

5D

National Flood Hazard Layer FIRMette

FEMA



N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/30/2020 at 8:49 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: PEL	Project No. 05207584
Drawn by: PEL	Scale: AS SHOWN
Checked by: KAC	File Name: FEMA Maps
Approved by: JH	Date: 10/12/202

Terracon
15080 A Cir
Omaha, NE 68144-5558

Flood Hazard Zone Map

Watermain ROW to MUD So. Plant Plattsmouth Water Supply Relocation Project

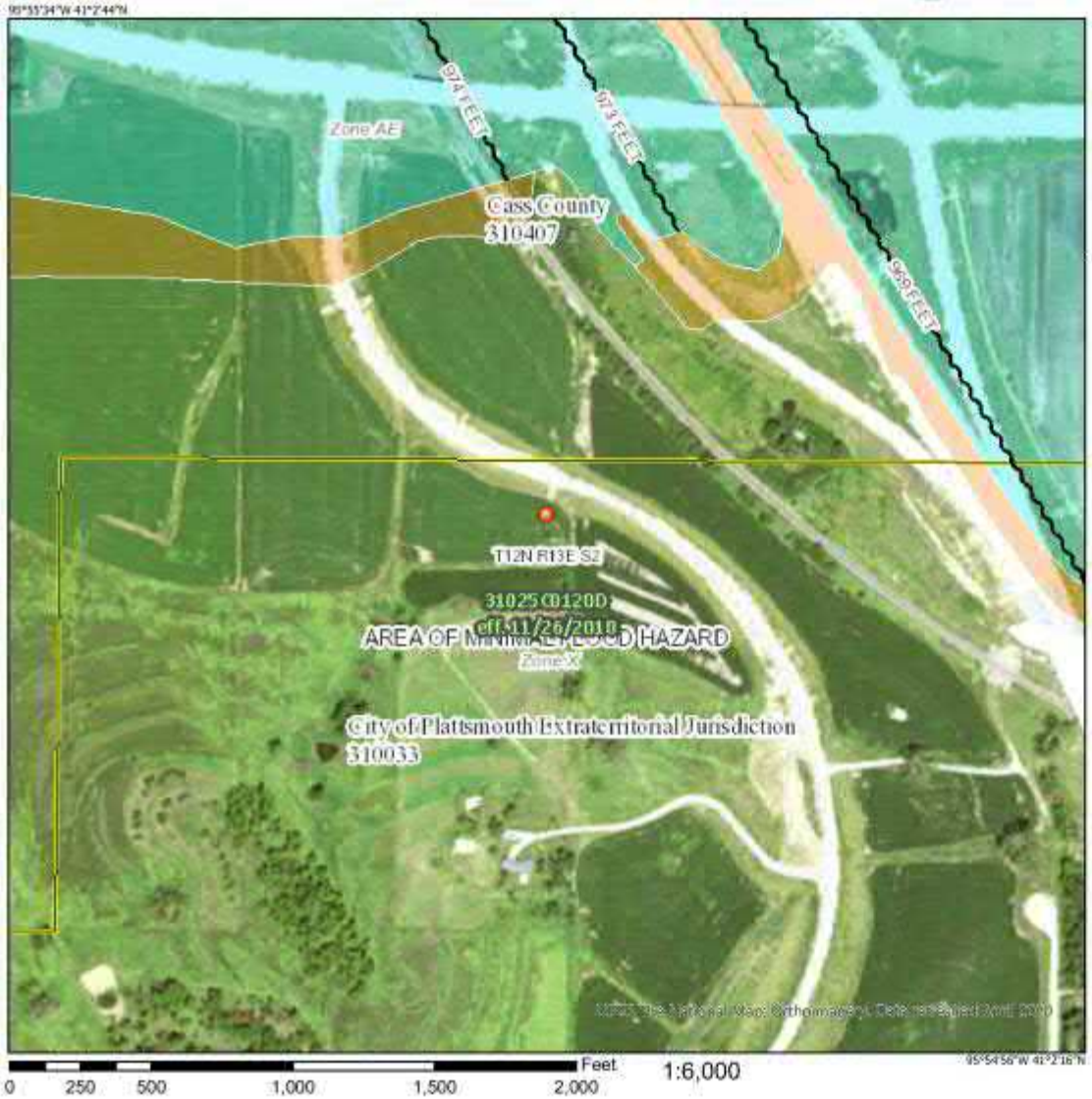
Sarpy And Cass Counties, Nebraska

Exhibit

5E

National Flood Hazard Layer FIRMette

FEMA



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk due to Levee. See Notes. Zone X
- Area with Flood Risk due to Levee Zone D

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/30/2020 at 8:51 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

N

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DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	PEL
Drawn by:	PEL
Checked by:	KAC
Approved by:	JH
Project No.	05207584
Scale:	1"=2,000'
File Name:	FEMA Maps
Date:	10/12/202

Terracon

15080 A Cir

Omaha, NE 68144-5558

Flood Plain Map

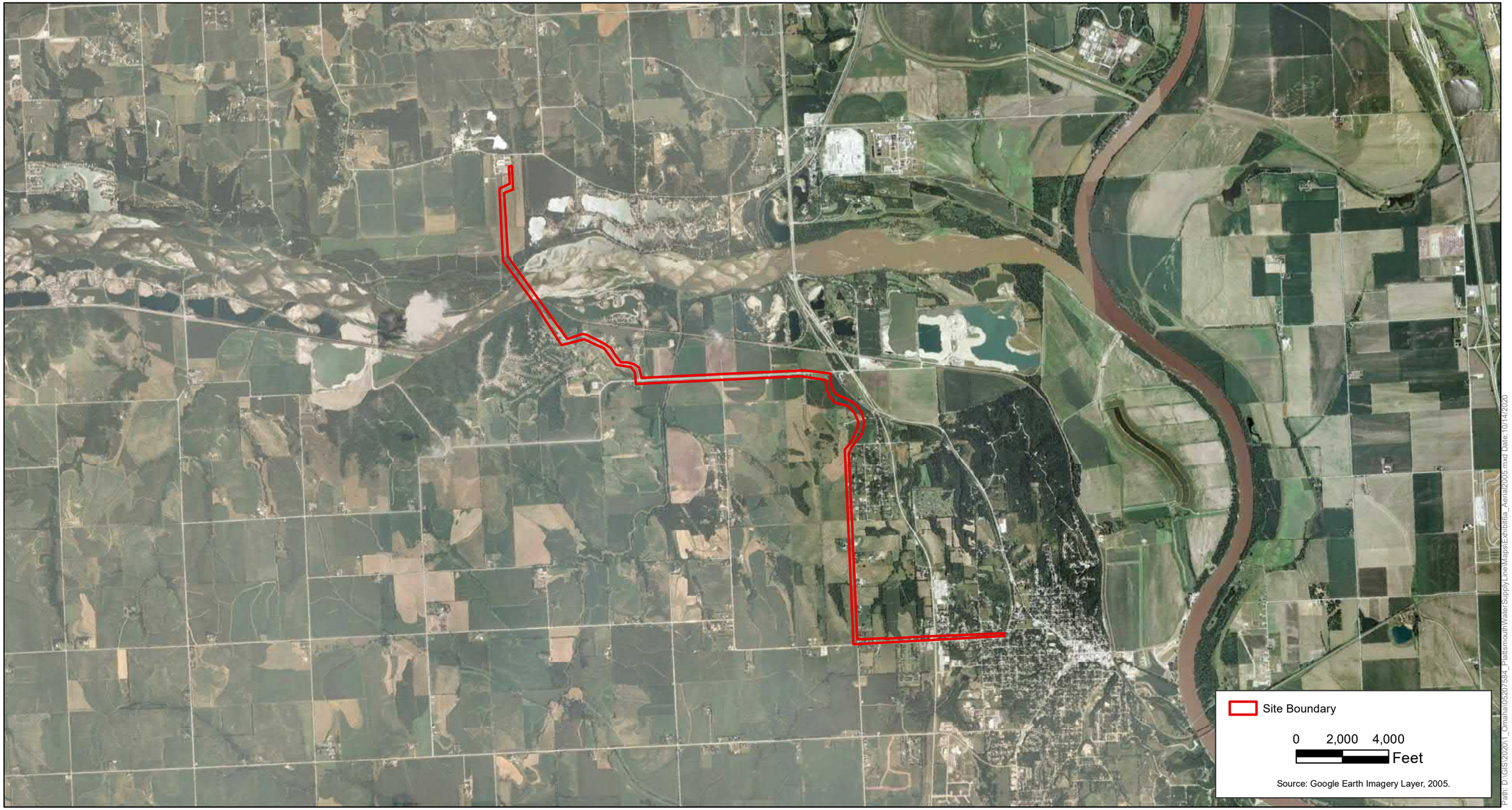
Watermain ROW to MUD So. Plant Plattsmouth Water Supply Relocation Project

Sarpy And Cass Counties, Nebraska

Exhibit

5F

APPENDIX B
Aerial Photographs



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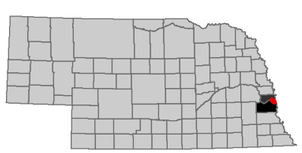


N

Project No: 05207584

Scale: 1 in = 4,000 ft

File Name: Exhibit6a_Aerial2005

Date: October 2020

Terracon

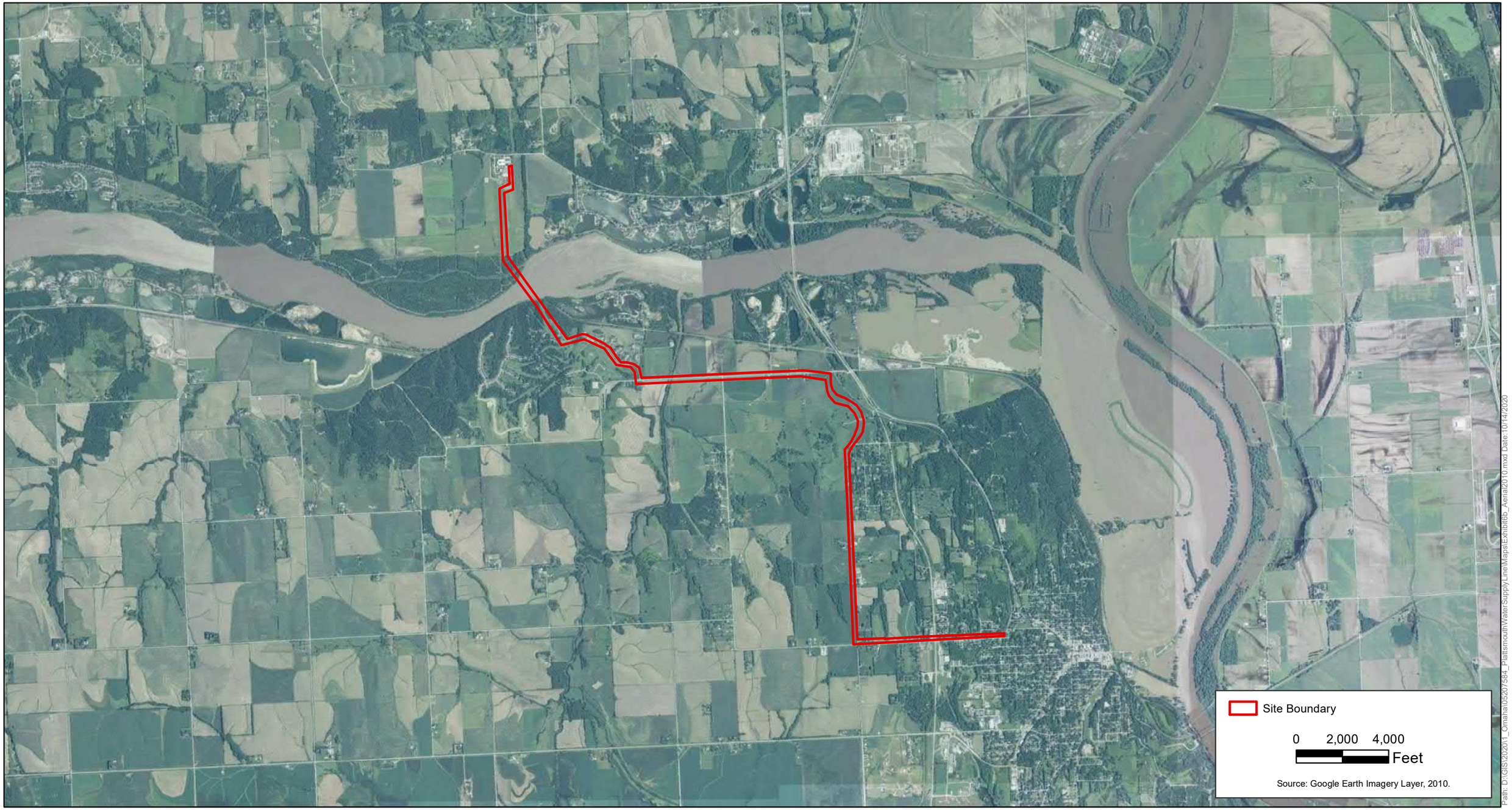
15080 A Circle
Omaha, NE 68144
Phone: (402) 384-7009
Fax: (402) 330-7606

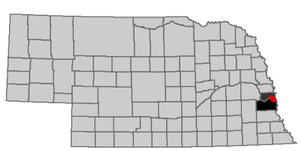
2005 Google Earth Imagery

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

B1





N

Project No:	05207584
Scale:	1 in = 4,000 ft
File Name:	Exhibit6b_Aerial2010
Date:	October 2020

Terracon

15080 A Circle
Omaha, NE 68144
Phone: (402) 384-7009
Fax: (402) 330-7606

2010 Google Earth Imagery

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

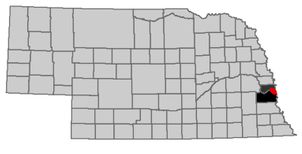
B2

Site Boundary

0 2,000 4,000 Feet

Source: Google Earth Imagery Layer, 2015.

Path: D:\GIS\2020\1_Omaha\05207584_PlattsmouthWaterSupplyLine\Maps\Exhibit6c_Aerial2015.mxd Date:10/14/2020



N

Project No:	05207584
Scale:	1 in = 4,000 ft
File Name:	Exhibit6c_Aerial2015
Date:	October 2020

Terracon

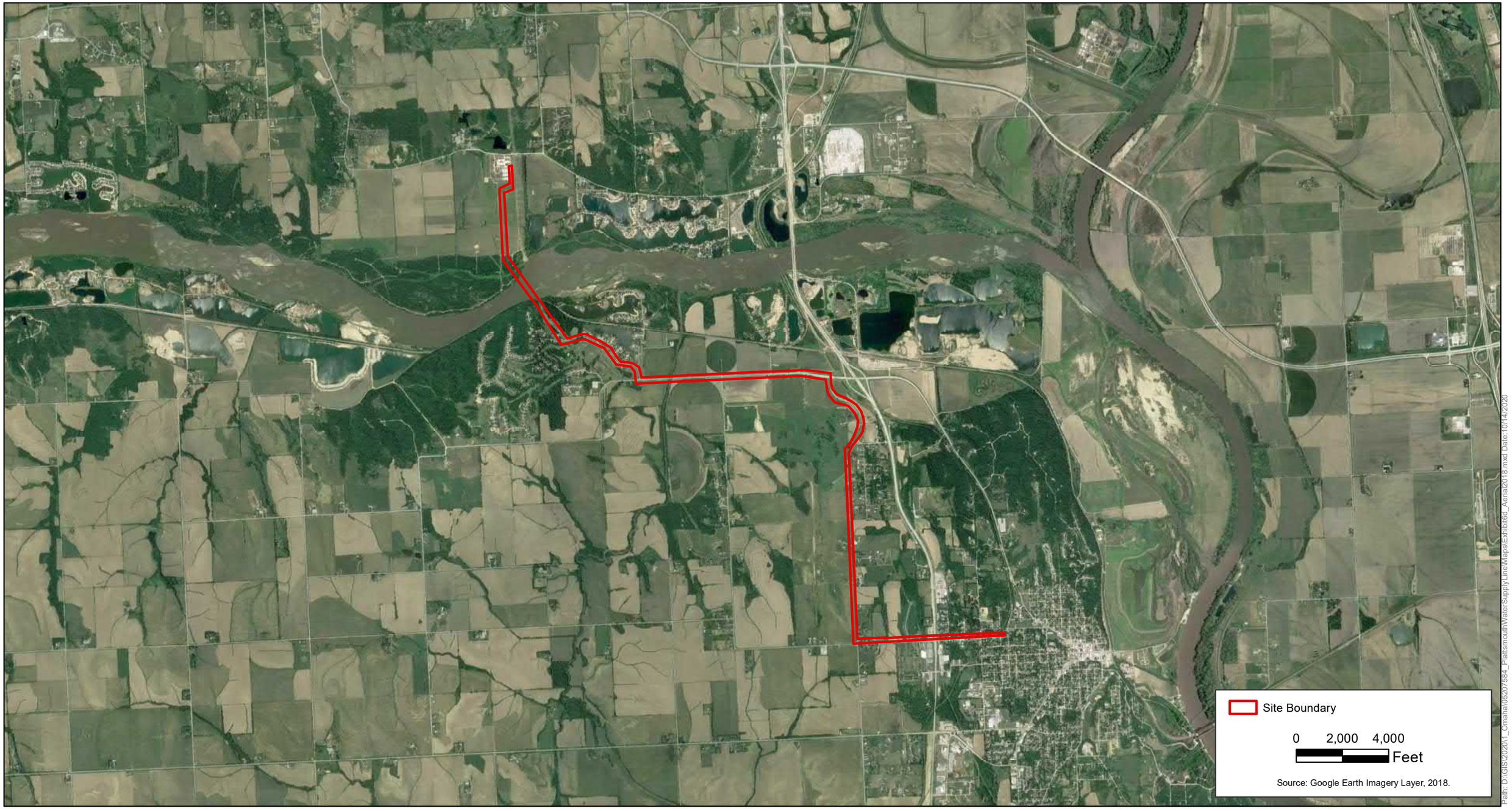
15080 A Circle Omaha, NE 68144
Phone: (402) 384-7009 Fax: (402) 330-7606

2015 Google Earth Imagery

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

B3



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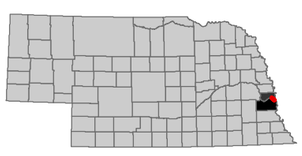


N

Project No:	05207584
Scale:	1 in = 4,000 ft
File Name:	Exhibit6d_Aerial2018
Date:	October 2020

Terracon

15080 A Circle Omaha, NE 68144

Phone: (402) 384-7009 Fax: (402) 330-7606

2018 Google Earth Imagery

Watermain ROW to MUD So. Plant
Plattsmouth Water Supply Relocation Project
Sarpy and Cass Counties, Nebraska

EXHIBIT NO.

B4

APPENDIX C
Ground Photographs

Ground Photos – City of Plattsmouth Water Supply Relocation
Plattsmouth, Nebraska
Terracon Project No. 05207584
Photos taken September 15 & 22, 2020

Photo 1 (P1): View of point S-1 Wet within Wetland 1 facing east.

P-2: View of S-1 Up and Zwiebel Creek (Stream 2) facing southwest.

P-3: View of point S-4 Wet facing west within Wetland 3.

P-4: View of point S-4 Up facing west, within the ROW along the north side of Bay Road.

P-5: View of point S-5 facing north, within Wetland 4.

P-6: View of point S-6 Wet within the small depressional Wetland 5 facing west.

P-7: View of point S-7 Wet within Wetland 6 facing north.

P-8: View of point S-7 Up facing east. Point is an upland point for S-7 Wet.

P-9: View of point S-8 Wet within the northern portion of Wetland 7.

P-10: View of one of three ponds within Wetland 7.

3

P-11: View point S-8A facing south in the southern portion of Wetland 7.

P-12: View of the northern portion of Stream 1 facing south.

P-13: View of the southern portion of Stream 1 facing north.

P-14: View of Zweible Creek (Stream 2) facing east.

P-15: View of the Platte River (Stream 3) facing west.

P-16: View of Stream 4 facing north.

P-17: View of the unnamed tributary (Stream 6) facing south.

P-18: View of drainage way into Stream 6 from upland point S-9 Up facing south.

P-19: View of the offsite intermittent Stream 7 facing north from Oak Hill Road.

P-20: View of mature trees within Wetland 3.

P-21: View of mature trees within Wetland 3.

APPENDIX D
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Sarpy Sampling Date: 9/15/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: 1Wet

Investigator(s): K. Copenhaver, Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): depression

Slope (%): 0-1 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation n , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes x	No ____	
Wetland Hydrology Present?	Yes x	No ____	

Remarks:
Drought conditions. Wetland area in floodplain, Large regional well field located immeadiatly adjacent to site. Drawdown of water table highly likely. Site is within Large river floodplain area of the Platte River, Not regularly flooded but recent 2019 flood brought big deposists. Wellfield has existed for many years.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Phalaris arundinacea*	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
Fluvial area Reed grass

SOIL

Sampling Point: 1Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/2	100					Sandy	sandy loam no redox
11-15	10YR 8/2	100					Sandy	sand, no redox
15-20	10YR 3/2	70					Sandy	sandy loam
	10YR 3/1	20	5YR 5/6	10	RM	PL/M		sandy loam
	10YR 8/2	10						sandy loam no redox
20-24	10YR 8/2	100					Sandy	sand no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): _____

Hydric Soil Present? **Yes** x **No** ___

Remarks:
fluvial soils, recent sand deposites, hydric soil indicators just below normal root zone however recent flood deposits from 2019 were significant
.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
x Geomorphic Position (D2)
X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No x Depth (inches): ___
Water Table Present? Yes ___ No x Depth (inches): ___
Saturation Present? Yes ___ No x Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Fluvial area, not regularly flooded and water table consistently lowered due to municpal well draw down. Secondary indicators not strong. Geomorphic position not strong given the creek depths and alterated groundwater, saturation visitble on aerial photos during flood events prior to growing season.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Platsmouth / sarpy Sampling Date: SP1 up

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: 1up

Investigator(s): K. Copenhaver, Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): depression

Slope (%): 0-1 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation n , Soil N , or Hydrology y significantly disturbed? Are "Normal Circumstances" present? Yes ___ No x

Are Vegetation N , Soil y , or Hydrology y naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No x	
Wetland Hydrology Present?	Yes x	No ___	

Remarks:
Drought conditions. Upland area in floodplain, Large regional well field located immeadiatly adjacent to site, Drawdown of water table highly likely. Large river flood plain area of the Platte River, Not regularly flooded, 2019 flood brought big deposists. Wellfield has existed for many years.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ___)			
1. *Phalaris arundinacea*	70	Yes	FACW
2. *Humulus lupulus*	30	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	100 (A)		260 (B)

Prevalence Index = B/A = 2.60

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Vegetation changing outside of depression.

SOIL

Sampling Point: 1up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100					Sandy	sandy loam no redox
12-18	10YR 8/2	100					Sandy	sand, no redox
18-24	10YR 3/2	60					Sandy	sandy loam
	10YR 3/1	20	5YR 5/6	10	RM	PL/M		sandy loam
	10YR 8/2	10						sandy loam no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** x

Remarks:
fluvial soils, recent sand deposites, hydric soil indicators below normal root zone

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
fluvial area, not regularly flooded and water table consistently lowered due to municpal well draw down. Secondary indicators not strong. geomorphic position not strong given the creek elevation (10 feet below site) and alterated groundwater, innundation visitble on aerial photos during flood events but prior to growing season. Fluvial area, important but not wetland.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: papillion sarpy Sampling Date: 9/15/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: sp2

Investigator(s): K. Copenhaver, Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): depression

Slope (%): 1 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation n , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation N , Soil N , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes x	No ____	

Remarks:
Mature floodplain wetland, Large regional well field located immeadiatly adjacent to site. Drawdown of water table highly likely. Site is within Large river flood plain area of the Platte River, Not regularly flooded but recent 2019 flood significant up to 3 feet of water or more.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	100	Yes	FACW
2. *Populus deltoides*	10	No	FAC
3.			
4.			
5.			
	110	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Phalaris arundinacea*	70	Yes	FACW
2. *Echinochloa crus-galli*	30	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. *Vitis vulpina*			FAC
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	200	x 2 =	400
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	210 (A)		430 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
vegetation changing outside of depression.

SOIL

Sampling Point: sp2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					Sandy	sandy loam no redox
10-20	10YR 8/2	40					Sandy	sand, no redox
	10YR 3/1	60	5YR 5/6	10	RM	PL/M		sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- x Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Fluvial soils, Recent sand deposites, hydric soil indicators some organic streaking in sand.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- x Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- x Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sand moist below 10" ,fluvial area, not regularly flooded and water table consistently lowered due to municpal well draw down. saturation visitble on aerial photos during flood events prior to growing season. some organic streaking.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 9/15/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: SP3 wet

Investigator(s): K. Copenhaver, Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): depression

Slope (%): 0-1 Lat: Long: Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation n , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes x No ___

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes x	No ___	

Remarks:
Drought conditions. Mature floodplain wetland, Large regional well field located immeadiatly adjacent to site. Drawdown of water table highly likely. Site is within Large river flood plain area of the Platte River, Not regularly flooded but recent 2019 flood significant up to 3 feet of water or more.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. Green Ash	60	Yes	
2.			
3.			
4.			
5.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ___)			
1. *Phalaris arundinacea*	70	Yes	FACW
2. *Echinochloa crus-galli*	30	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Wetland plants observed close to the river.

SOIL

Sampling Point: SP3 wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					Loamy/Clayey	
10-15	10YR 4/1	80	5YR 5/6	10	RM	M	Sandy	
	10YR 4/2	20						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** x

Remarks:

Site adajcent to small stream some fluvial deposists expected on surface

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil moist at 15 inches. Stream adjacent. Bench wetland due to culvert just downstream.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 9/15/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: SP3 UP

Investigator(s): K. Copenhaver, Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): depression

Slope (%): 0-1 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation n , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes x No ___

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No x	
Wetland Hydrology Present?	Yes ___	No x	

Remarks:
Drought Conditions, Mature floodplain wetland, Large regional well field located immediately adjacent to site. Draw down of water table highly likely. Site is within Large river flood plain area of the Platte River, Not regularly flooded but recent 2019 flood significant up to 3 feet of water or more.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	30	Yes	FACW
2. *Ulmus americana*	10	Yes	FACW
3.			
4.			
5.			
	40	=Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ___)			
1. *Bromus inermis*	60	Yes	FACU
2. *Echinochloa crus-galli*	20	No	FACW
3. *Plantago major*	20	No	FAC
4. *Laportea canadensis*	2	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	102	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	62	x 2 =	124
FAC species	20	x 3 =	60
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	142 (A)		424 (B)

Prevalence Index = B/A = 2.99

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Mixed vegetation

SOIL

Sampling Point: SP3 UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/3	100					Loamy/Clayey	
8-12	10YR 3/2	10					Loamy/Clayey	
	10YR 3/3	90						
12-18	10YR 3/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** x

Remarks:
Sloped land, No motteling found, no reducing.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No x Depth (inches): ___
Water Table Present? Yes ___ No x Depth (inches): ___
Saturation Present? Yes ___ No x Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Not enough secondary indicators to meet hydrology.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 9/15/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: SP 4 up

Investigator(s): K. Copenhaver, Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): roadside slope Local relief (concave, convex, none): slope

Slope (%): 30 Lat: Long: Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation n , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No x	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No x	
Wetland Hydrology Present?	Yes ____	No x	

Remarks:
Drought conditions. Roadside sloped landscape

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	

Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	

Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		=Total Cover	

Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** x

Remarks: (Include photo numbers here or on a separate sheet.)
Agricultural area closer to the road.

SOIL

Sampling Point: SP 4 up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/3	100					Loamy/Clayey	
15-18	10YR 3/2	80					Loamy/Clayey	
	10YR 3/3	20						
18-24	10YR 3/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** x

Remarks:
Roadside fill material, road raised above grade by approximately 5 feet.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
no hydrology indicators observed.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Sarpy Sampling Date: 9/15/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: SP 4 wet

Investigator(s): K. Copenhaver, Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): roadside slope Local relief (concave, convex, none): slope

Slope (%): 30 Lat: Long: Datum: 1984

Soil Map Unit Name: NWI classification: PEMAf

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation n , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ____	**Is the Sampled Area within a Wetland?** **Yes** x **No** ____
Hydric Soil Present?	Yes x	No ____	
Wetland Hydrology Present?	Yes x	No ____	

Remarks:
Drought conditions, wetlands are in field , agricultural methods.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** x

Remarks: (Include photo numbers here or on a separate sheet.)
Bare ground in field.

SOIL

Sampling Point: SP 4 wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-24	10YR 3/1	100					Loamy/Clayey	silt clay loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** x **No** ___

Remarks:
Field area has no vegetation. Soil is dark and deep.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- x Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- x Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Low area within field.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 9/15/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: SP 5 up

Investigator(s): K. Copenhaver, Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): slope Local relief (concave, convex, none): slope

Slope (%): 20 Lat: 41.0444 Long: -95.7223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation n , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No x	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No x	
Wetland Hydrology Present?	Yes ____	No x	

Remarks:
Drought conditions, Brushy upland adjacent to roadside irrigation pond.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. *Cornus rugosa*	30	Yes	UPL
2.			
3.			
4.			
5.			
	30	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Bromus inermis*	20	Yes	FACU
2. *Digitaria sanguinalis*	10	No	FACU
3. *Phleum pratense*	20	Yes	FACU
4. *Polygonum erectum*	5	No	FACU
5. *Taraxacum officinale*	5	No	FACU
6. *Panicum virgatum*	30	Yes	FAC
7.			
8.			
9.			
10.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	60	x 4 =	240
UPL species	30	x 5 =	150
Column Totals:	120 (A)		480 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** x

Remarks: (Include photo numbers here or on a separate sheet.)
upland slope adjacent to pond, brushy

SOIL

Sampling Point: SP 5 up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/4	100					Loamy/Clayey	
12-18	10YR 3/3	80					Loamy/Clayey	
	10YR 3/2	20						
18-24	10YR 3/2	100	5yr 4/6	1	rm		Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** x

Remarks:
Hydric soils not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
no hydrology evidence found.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 9/15/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: SP 5 wet

Investigator(s): K. Copenhaver, Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): roadside slope Local relief (concave, convex, none): slope

Slope (%): 30 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation n , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ____	**Is the Sampled Area within a Wetland?** **Yes** x **No** ____
Hydric Soil Present?	Yes x	No ____	
Wetland Hydrology Present?	Yes x	No ____	

Remarks:
Drought Conditions. Old farm irrigation pond. Sparsely vegetated sloped banks, some standing water in center of pond.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Polygonum*	20	Yes	FAC
2. *Echinochloa crus-galli*	30	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	30	x 2 =	60
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	50 (A)		120 (B)

Prevalence Index = B/A = 2.40

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** x **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
Approximately 50% bare ground

SOIL

Sampling Point: SP 5 wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	100					Loamy/Clayey	
8-12	10YR 3/2	85	5YR 4/6	15	C	PL	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- x Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** x **No** ___

Remarks:

Old farm pond adjacent to road.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- x Inundation Visible on Aerial Imagery (B7)
- x Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- x Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- x Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- x FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes x	No ___	Depth (inches): 5

Wetland Hydrology Present? **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Shows as a tributary on usgs Topo Map.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 09/28/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: P6 Wet

Investigator(s): P. Lind Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): Bottom of slope Local relief (concave, convex, none): concave

Slope (%): 0-2 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No x (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N, Soil N, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes x	No ___	
Wetland Hydrology Present?	Yes x	No ___	

Remarks:
Drought, upland point for P6 wet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1. *Fraxinus pennsylvanica*	10	Yes	FACW
2.			
3.			
4.			
5.			
	10	=Total Cover	
Herb Stratum (Plot size: ___)			
1. *Phalaris arundinacea*	85	Yes	FACW
2. *Lobelia inflata*	5	No	FACU
3. *Abutilon theophrasti*	5	No	FACU
4. *Helianthus maximiliani*	10	No	UPL
5.			
6.			
7.			
8.			
9.			
10.			
	105	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	10	x 5 =	50
Column Totals:	115 (A)		280 (B)

Prevalence Index = B/A = 2.43

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Wetland plants dominant

SOIL

Sampling Point: P6 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/2	90	5YR 4/6	10	C	PL	Loamy/Clayey	Prominent redox concentrations
10-15	10YR 4/2	50					Loamy/Clayey	
	10YR 2/1	50						
15-20	10YR 2/1	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:
Redox at surface in depression.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Soil damp at surface, likely from recent rain.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 09/28/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: P6 up

Investigator(s): P. Lind Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): concave

Slope (%): 0-10 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No x (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No x	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No x	
Wetland Hydrology Present?	Yes ____	No x	

Remarks:
Drought, upland point for P6 wet

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. *Fraxinus pennsylvanica*			FACW
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Helianthus maximiliani*	75	Yes	UPL
2. *Lobelia inflata*	10	No	FACU
3. *Panicum virgatum*	25	Yes	FAC
4. *Solidago canadensis*	15	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	125	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	25	x 4 =	100
UPL species	75	x 5 =	375
Column Totals:	125 (A)		550 (B)

Prevalence Index = B/A = 4.40

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** x

Remarks: (Include photo numbers here or on a separate sheet.)
Wetland plants not on slope.

SOIL

Sampling Point: P6 up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 2/1	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** x

Remarks:
Soils dry and no redox observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
none.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 09/28/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: P7 Wet

Investigator(s): P. Lind Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): bottom of slope Local relief (concave, convex, none): concave

Slope (%): 0-1 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No x (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N, Soil N, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes x	No ___	
Wetland Hydrology Present?	Yes x	No ___	

Remarks:
Drought conditions, dense typha in small area

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	

Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	

Herb Stratum (Plot size: ___)			
1. *Typha latifolia*	90	Yes	OBL
2. *Echinochloa crus-galli*	10	No	FACW
3. *Panicum virgatum*	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105	=Total Cover	

Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	10	x 2 =	20
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	105 (A)		125 (B)

Prevalence Index = B/A = 1.19

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Wetland plants dominant.

SOIL

Sampling Point: P7 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	85	5YR 4/6	15	C	M	Loamy/Clayey	Prominent redox concentrations
6-15	10YR 3/2	95	5YR 4/6	25	C	M	Loamy/Clayey	Prominent redox concentrations
15-20	10YR 3/2	40	5YR 4/6	20	C	M	Loamy/Clayey	Prominent redox concentrations
	10YR 4/2	40						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:
Redox observed at surface.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- x Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes x	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Soil saturated at surface, possibly from recent rain.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 09/28/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: P7 Up

Investigator(s): P. Lind Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): Concave

Slope (%): 0-5 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No x (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No x	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No x	
Wetland Hydrology Present?	Yes ____	No x	

Remarks:
Drought, point taken near bottom of slope at slightly higher elevation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Helianthus maximiliani*	10	No	UPL
2. *Panicum virgatum*	75	Yes	FAC
3. *Setaria viridis*	5	No	UPL
4. *Setaria faberi*	5	No	FACU
5. *Echinochloa crus-galli*	10	No	FACW
6. *Solidago altiplanities*	5	No	UPL
7.			
8.			
9.			
10.			
	110	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	75	x 3 =	225
FACU species	5	x 4 =	20
UPL species	20	x 5 =	100
Column Totals:	110 (A)		365 (B)

Prevalence Index = B/A = 3.32

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** x

Remarks: (Include photo numbers here or on a separate sheet.)
Mostly upland plants at this elevation

SOIL

Sampling Point: P7 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 5/3	85					Loamy/Clayey	
	10YR 4/2	15						
12-20	10YR 2/2	90					Loamy/Clayey	
	10YR 5/3	10						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** x

Remarks:
Redox not observed on slope.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
None.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 09/28/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: P8 Wet

Investigator(s): P. Lind Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): Ditch Local relief (concave, convex, none): Concave

Slope (%): 0-5 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No x (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N, Soil N, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ___	**Is the Sampled Area within a Wetland?** **Yes** x **No** ___
Hydric Soil Present?	Yes x	No ___	
Wetland Hydrology Present?	Yes x	No ___	

Remarks:
point taken near in a low area. Wetland apears to be fed by small pond.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	30	Yes	OBL
2.			
3.			
4.			
5.			
	30	=Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1. *Populus deltoides*	20	Yes	FAC
2.			
3.			
4.			
5.			
	20	=Total Cover	
Herb Stratum (Plot size: ___)			
1. *Phalaris arundinacea*	100	Yes	FACW
2. *Typha latifolia*	10	No	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	110	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	100	x 2 =	200
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	160 (A)		300 (B)

Prevalence Index = B/A = 1.88

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** x **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Only wet plants.

SOIL

Sampling Point: P8 Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 7/2	100					Loamy/Clayey	
6-20	10YR 3/1	90	5YR 4/6	10	C	PL	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:
Redox observed in upper 12 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- x Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- x Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- x Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Portions of wetland had flowing water, likely from recent rain. Frogs observed.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 09/28/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: P8.A Wet

Investigator(s): P. Lind Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): ditch Local relief (concave, convex, none): concave

Slope (%): 0-5 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No x (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N, Soil N, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes x	No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes x	No ___	
Wetland Hydrology Present?	Yes x	No ___	

Remarks:
northern portion of ponded wetland. Drought conditions.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	

Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	

Herb Stratum (Plot size: ___)			
1. *Phalaris arundinacea*	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	=Total Cover	

Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
No upland plants in area.

SOIL

Sampling Point: P8.A Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	95	5YR 4/6	5	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** x **No** ___

Remarks:
Hole filled with water at 4", redox at surface.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- x High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- x Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- x Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- x Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes x	No ___	Depth (inches): 4
Saturation Present? (includes capillary fringe)	Yes x	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Saturated at surface with frogs in area.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth's Water Supply Relocation City/County: Plattsmouth / Cass Sampling Date: 09/28/2020

Applicant/Owner: Olmsted & Perry State: NE Sampling Point: P8 Up

Investigator(s): P. Lind Section, Township, Range: S2, T12N, R113E

Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): Concave

Slope (%): 15-20 Lat: 41.0444 Long: -95.9223 Datum: 1984

Soil Map Unit Name: Marshall silty clay loam 2/6% slopes NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No x (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No x	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No x	
Wetland Hydrology Present?	Yes ____	No x	

Remarks:
point taken on slope between wetland and road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	10	Yes	OBL
2.			
3.			
4.			
5.			
	10	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Bromus inermis*	80	Yes	FACU
2. *Helianthus maximiliani*	10	No	UPL
3. *Symphyotrichum pilosum*	10	No	FACU
4. *Trifolium pratense*	15	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	115	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	105	x 4 =	420
UPL species	10	x 5 =	50
Column Totals:	125 (A)		480 (B)

Prevalence Index = B/A = 3.84

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** x

Remarks: (Include photo numbers here or on a separate sheet.)
Wetland plants not observed on slope.

SOIL

Sampling Point: P8 Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 5/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None.

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** x

Remarks:
Hydric soils not observed on slope.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
None

Terracon

January 8, 2021

Alternative 3
WTP Site

Olmsted & Perry Consulting Engineers Inc
10730 Pacific Street
Suite 232
Omaha, Nebraska 68114

Attn: Mr. Steve Perry
P: (402)-399-8552
E: stevep@olmstedperry.com

Re: Addendum to the Wetland Delineation Report for the Fourmile Industrial Park for Plattsmouth Wastewater Treatment Plant Relocation
Plattsmouth, Cass County, Nebraska
Terracon Project No. 05207234, USACE Project No. NOW-2020-01561-WEH

Dear Mr. Perry:

Terracon Consultants Inc. (Terracon) appreciates the opportunity to submit this Addendum to the Wetland Delineation Report dated August 16, 2016, delineating wetlands and other potential Waters of the United States (WOUS) located on the Fourmile Industrial Park, located in Plattsmouth, Cass County, Nebraska. This addendum addresses approximately 18 acres of land located with the 68-acre Fourmile Industrial Park that is proposed for development of a new Wastewater Treatment Plant and access/utility Right of Ways. Additional lands on the Fourmile Industrial Park site were not revisited and are not addressed in this addendum.

A reconnaissance inspection of the 18+/--acre project site was completed on September 28, 2020, by Kim Copenhaver of Terracon to review the delineation completed on the project site. The project site consists of the access road ROW and WWTP development site and a small area of utility line ROW to the south, totaling approximately 18 acres of land shown on the revised delineation map. The majority of the project site continues to be used for agricultural production. A narrow band of wood and shrub scrub land is located along the southern portion of the access road corridor, where wetlands and a stream corridor are located.

Overall conditions at the site have not changed from the original delineation map (Exhibit A). In the north, the wetlands are dominated primarily by a dense growth of horsetail equisetum with an area phragmites to the west. Other native field and hedgerow species dominate the remaining wetlands. A shrub scrub wetland is dominated with young populous deltoids trees and dogwood shrubs along with other opportunistic field species. Wetland data sheets taken during this inspection (Exhibit B), along with a photo log (Exhibit C) are attached to this document for the record.

The existing stream on the site appears to be an intermittent waterway that is deeply entrenched within its banks. The bed of the stream is approximately 3 feet wide and banks estimated to be

between 4-6 feet in height. The stream bed was dry at the time of the inspection with a silt bottom. Wetlands located along the south side of riparian area near the fields have not changed from the original delineation. Aerial photographs of the site are also included with this report (Exhibit D).

Based on the results of the recent site visit the wetland conditions at the site have not changed from the original findings. The wetland delineation map prepared for the project and attached herein as Exhibit A appears to accurately represent the conditions at the site. Please note that only the U.S. Army Corps of Engineers (USACE) can make the final determination on the jurisdictional status of wetlands or WOUS, and on the need for permit processing and compensatory mitigation for any proposed impacts those jurisdictional waters.

If you have questions regarding this report, please contact Kim Copenhaver at 402-384-7009 or by email at Kim.copenhaver@terracon.com.

Sincerely,
Terracon Consultants, Inc.

Kim Copenhaver
Senior Environmental Scientist

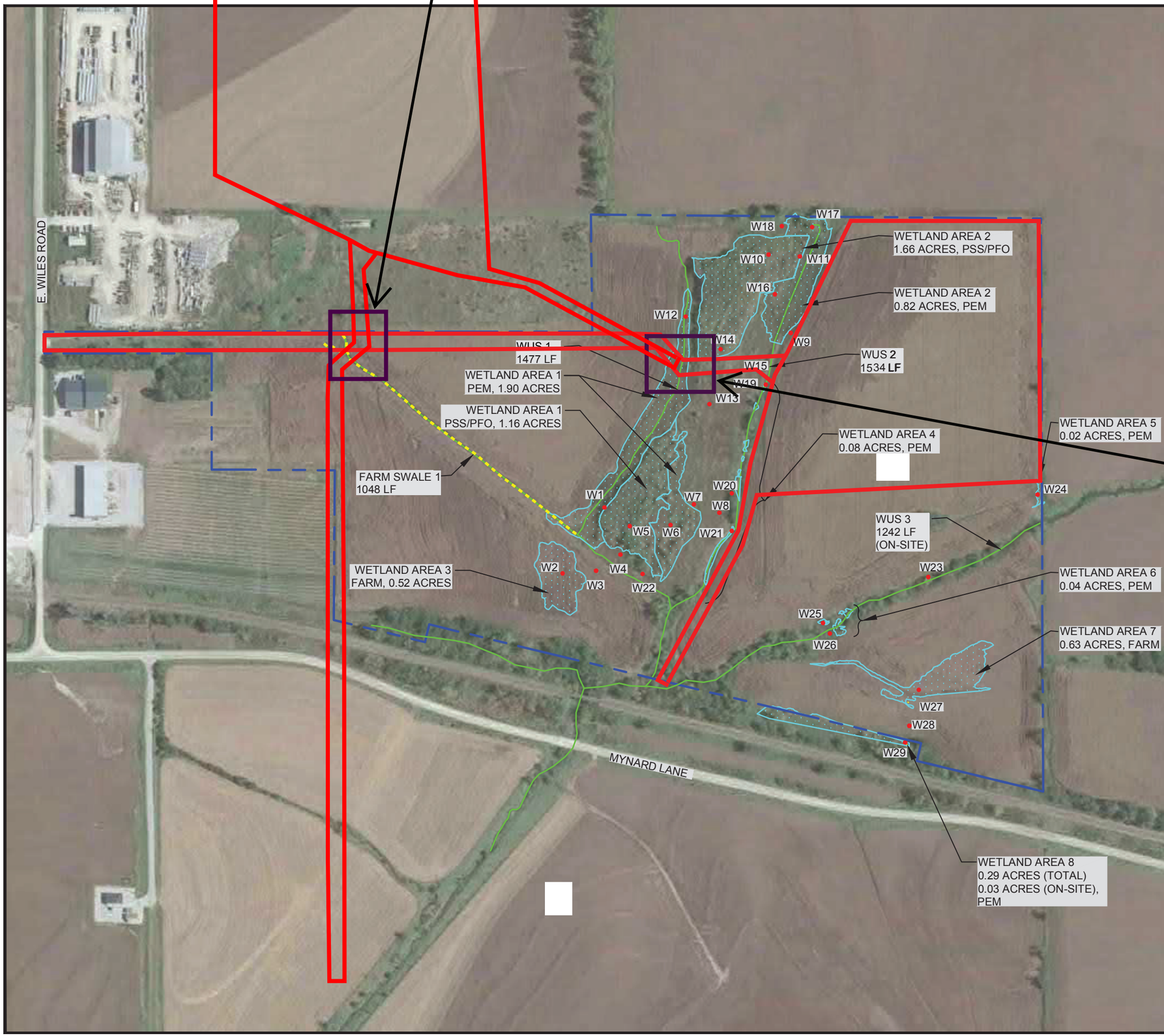
Jerry Hentges, PG
Senior Hydrologist

Exhibits: A – Delineation Map
B – Wetland Data Sheets
C – Photo Log
D – Aerial Photographs

Distribution: Addressee (pdf via email)

APPENDIX A

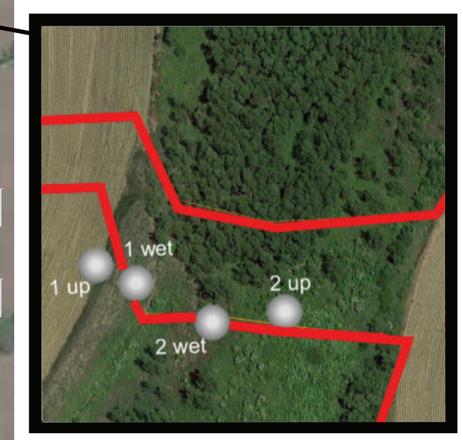
Delineation Map



LEGEND

- BOUNDARY OF ASSESSED AREA
- WATERS OF THE U.S. (WUS)
- WETLAND AREA
- DATA POINT
- FARM SWALE
- WWTP SITE Boundary/Review Area

Data Point Locations



N

0 100 200 300

SCALE IN FEET

DESIGNED BY:	BLJ
DRAWN BY:	JAL
APP'VD. BY:	DCJ
SCALE:	AS SHOWN
DATE:	10/5/15
JOB NO.	05157284
ACAD NO.	05157284C02
EXHIBIT:	A

WETLAND DELINEATION

FOURMILE INDUSTRIAL PARK

S26, T12N, R13E

PLATTSMOUTH NEBRASKA

Terracon
Consulting Engineers and Scientists
15080 A CIRCLE OMAHA, NE 68144
PH. (402) 330-2202 FAX. (402) 330-7606

REV.	DATE	BY	DESCRIPTION
1	12/20	kac	add WWTP review area

APPENDIX B

Wetland Forms

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth WWTP Access Rd, Fourmile Ind Pk City/County: Plattsmouth / Cass Sampling Date: 9/28/2020

Applicant/Owner: City of Plattsmouth State: NE Sampling Point: 1up

Investigator(s): K. Copenhaver, Section, Township, Range: S26, T12N R 13E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): none

Slope (%): 1 Lat: 40.980104 Long: -95.917395 Datum: 1984

Soil Map Unit Name: judson silt loam NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation x , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ____ No x

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No 0	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No x	
Wetland Hydrology Present?	Yes ____	No x	

Remarks:
Corn field, agricultural conditions and methology, Lack of hydrophytic vegetgation and hydric soils inbetween corn rows basis. No hydrology evidence.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Equisetum arvense*	2	Yes	FAC
2.	0		
3.	0		
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	2	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	2	x 3 =	6
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	2 (A)		6 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
Corn field, vegetation only used as an indicator of stresses or lack there of. Equiseetum higher percentage near wetland line.

SOIL

Sampling Point: 1up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 4/3	100						loam, no redox
10-15	10YR 4/2	90						loam, no redox
	10YR 4/3	10						loam, no redox
15-20	10YR 4/2	100						loam, no redox
20-24	10YR 4/2	100						loam, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ 2 cm Muck (A10)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 5 cm Mucky Peat or Peat (S3)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ Coast Prairie Redox (A16)
___ Iron-Manganese Masses (F12)
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** x

Remarks:
no redox, slightly depleted matrix at base of plow zone, but then brightens up afterwards

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)
___ High Water Table (A2)
___ Saturation (A3)
___ Water Marks (B1)
___ Sediment Deposits (B2)
___ Drift Deposits (B3)
___ Algal Mat or Crust (B4)
___ Iron Deposits (B5)
___ Inundation Visible on Aerial Imagery (B7)
___ Sparsely Vegetated Concave Surface (B8)
___ Water-Stained Leaves (B9)
___ Aquatic Fauna (B13)
___ True Aquatic Plants (B14)
___ Hydrogen Sulfide Odor (C1)
___ Oxidized Rhizospheres on Living Roots (C3)
___ Presence of Reduced Iron (C4)
___ Recent Iron Reduction in Tilled Soils (C6)
___ Thin Muck Surface (C7)
___ Gauge or Well Data (D9)
___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

___ Surface Soil Cracks (B6)
___ Drainage Patterns (B10)
___ Dry-Season Water Table (C2)
___ Crayfish Burrows (C8)
___ Saturation Visible on Aerial Imagery (C9)
___ Stunted or Stressed Plants (D1)
___ Geomorphic Position (D2)
___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No x Depth (inches): ___
Water Table Present? Yes ___ No x Depth (inches): ___
Saturation Present? Yes ___ No x Depth (inches): ___
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Soil was dry and powdery

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth WWTP Access Rd, Fourmile Ind Pk City/County: Plattsmouth / Cass Sampling Date: 9/28/2020

Applicant/Owner: City of Plattsmouth State: NE Sampling Point: 1Wet

Investigator(s): K. Copenhaver, Section, Township, Range: S26, T12N R 13E

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): none

Slope (%): 1 Lat: 40.980018 Long: -95.917518 Datum: 1984

Soil Map Unit Name: Jusdson silt Loam NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ___ No X (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N, Soil N, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes X	No ___	

Remarks:
Farm field edge wetland filled with equisetum; phragmites very close with some areas of sparse tree cover to the south. Agricultural methodology considered but not used, except along edge of field where corn is sparse.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	

Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	

Herb Stratum (Plot size: ___)			
1. *Equisetum arvense*	100	Yes	FAC
2. *Symphyotrichum lancelolatum*	5	No	
3.	0		
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105	=Total Cover	

Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		300 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Only wetland plants observed. Dense coverage with equisetum.

SOIL

Sampling Point: 1Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100					Loamy/Clayey	
4-8	10YR 4/2	97	5YR 4/6	3	C	M	Loamy/Clayey	redox
8-14	10YR 4/2	55	5YR 4/6	5	c	m	Loamy/Clayey	Prominent redox concentrations
	10YR 3/1	40						
14-24	10YR 3/1	90	5YR 4/6	10	c	m		Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:
redox and depleted matrix present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- x Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- x Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Soil was moist at 10" along lowland drainage area

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth WWTP Access Rd, Fourmile Ind Pk City/County: Plattsmouth / Cass Sampling Date: 9/28/2020

Applicant/Owner: City of Plattsmouth State: NE Sampling Point: 2wet

Investigator(s): K. Copenhaver, Section, Township, Range: S26, T12N R 13E

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): slight slope

Slope (%): 2 Lat: 40.979744 Long: -95.917476 Datum: 1984

Soil Map Unit Name: Colo-Nodaway complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes x	No ____	
Wetland Hydrology Present?	Yes x	No ____	

Remarks:
brushy area adjacent to wetland, some tree canopy

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	10	Yes	FAC
2. *Acer saccharinum*	10	Yes	FACW
3.			
4.			
5.			
	20	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. *Cornus foemina*	40	Yes	FACW
2.			
3.			
4.			
5.			
	40	=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Toxicodendron radicans*	10	Yes	FAC
2. *Ambrosia trifida*	5	No	FAC
3. *Plantago major*	30	Yes	FAC
4. *Hackelia virginiana*	10	Yes	FACU
5. *Taraxacum officinale*	10	Yes	FACU
6. *Phragmites australis*	10	Yes	FACW
7.			
8.			
9.			
10.			
	75	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. *Vitis vulpina*	10	Yes	FAC
2.			
	10	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 77.8% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	65	x 3 =	195
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	145 (A)		395 (B)

Prevalence Index = B/A = 2.72

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
mixed open forested area,

SOIL

Sampling Point: 2wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	100						loam, no redox
8-18	10YR 4/2	80	10YR 5/6	2	rm			loam some redox
	10YR 4/3	20						loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- x Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:
minor redox below surface samples

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- x Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** x **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Hydrology evidence by reduced iron in soil was the primary indicator. Drought conditions this year. Dense vegetative growth. Plant stresses not evident.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth WWTP Access Rd, Fourmile Ind Pk City/County: Plattsmouth / Cass Sampling Date: 9/28/2020

Applicant/Owner: City of Plattsmouth State: NE Sampling Point: 2up

Investigator(s): K. Copenhaver, Section, Township, Range: S26, T12N R 13E

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): slight slope

Slope (%): 2 Lat: 40.979744 Long: -95.917476 Datum: 1984

Soil Map Unit Name: Colo-Nodaway complex NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No x	
Wetland Hydrology Present?	Yes ____	No **X**	

Remarks:
brushy area adjacent to wetland, some tree canopy

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	50	Yes	FAC
2. *Acer saccharinum*	10	No	FACW
3.			
4.			
5.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Toxicodendron radicans*	10	No	FAC
2. *Ambrosia trifida*	5	No	FAC
3. *Plantago major*	40	Yes	FAC
4. *Hackelia virginiana*	30	Yes	FACU
5. *Taraxacum officinale*	30	Yes	FACU
6.			
7.			
8.			
9.			
10.			
	115	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. *Vitis vulpina*	10	Yes	FAC
2.			
	10	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	115	x 3 =	345
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	185 (A)		605 (B)

Prevalence Index = B/A = 3.27

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
mixed open forested area,

SOIL

Sampling Point: 2up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/3	100						loam, no redox
8-12	10YR 4/2	100						loam, no redox
12-20	10YR 4/3	10						loam, no redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** x

Remarks:
no redox, no recent plowing, naturalized ara

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Soil was dry and powdery, adjacent to low lying area, trees likely uptake hydrology. No drainage patterens. Marginal plants.

APPENDIX C

Photo Log

Looking south road within northern portion of road corridor small farm ditch in foreground.

Dense Horsetail Equisetum at northern wetland boundary near road crossing looking west

Northern wetland boundary Looking east. Few thistle in the foreground.

Sample point 1 wet, Looking south toward stream corridor in distant woodland

Sample point 1 up upland corn field

West of access road wooded wetland looking north towards dense phragmites patch.

Woodland vegetation close up.

Typical Wooded area,

S2 point wetland/Upland line typical wooded land fringe

Stream corridor upland banks

Typical Woodland

APPENDIX D

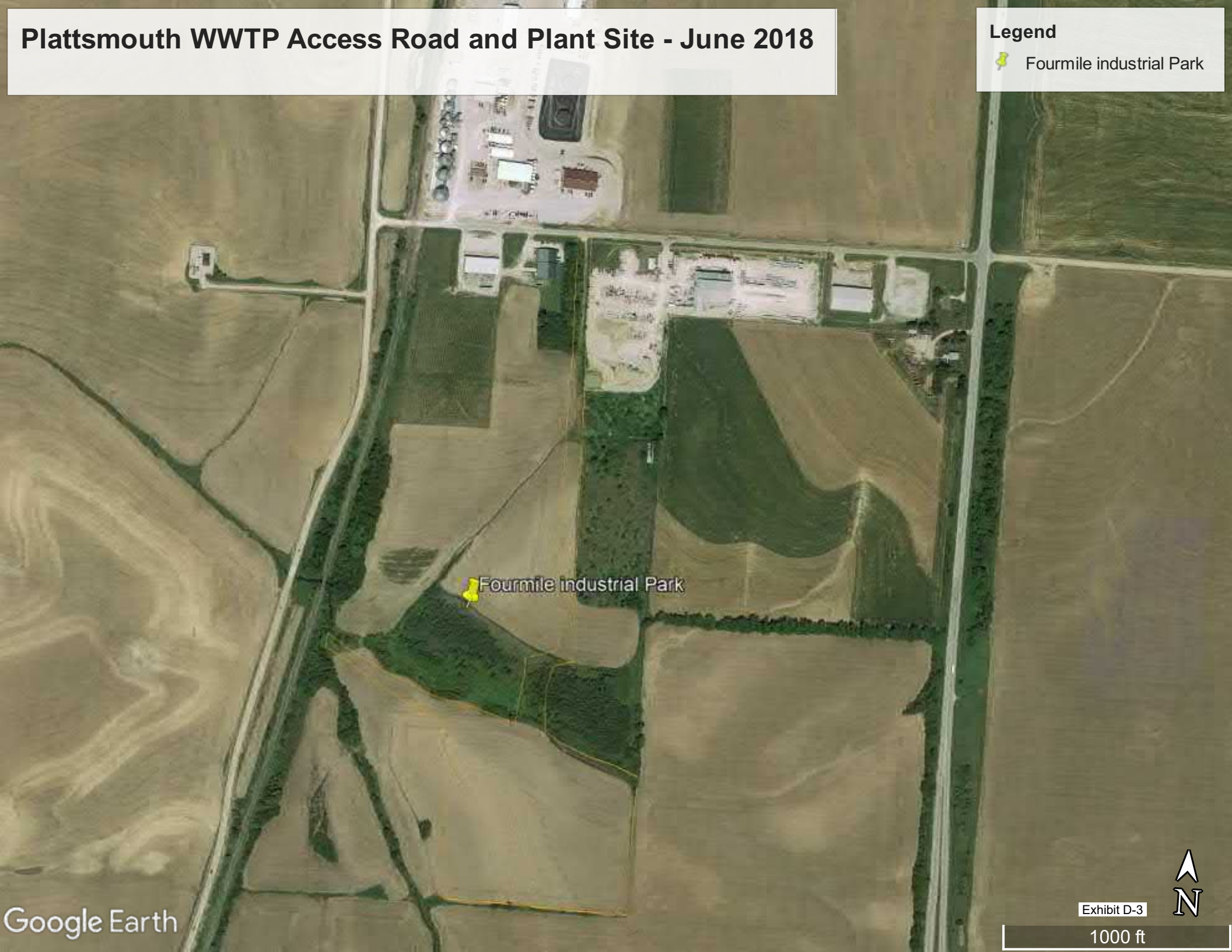
Aerial Photographs

Plattsmouth WWTP Access Road and Plant Site - March 2019

Exhibit D-1

Plattsmouth WWTP Access Road and Plant Site - May 2017

Plattsmouth WWTP Access Road and Plant Site - June 2018



2016 Alternative 3
WTP Site

Wetland and Waters of the U.S. Delineation Report

FOURMILE INDUSTRIAL PARK

PLATTSMOUTH, CASS COUNTY, NEBRASKA

August 1, 2016
Terracon Project No. 05157284

Prepared for:
Olmsted and Perry Consulting Engineers
Omaha, Nebraska

Prepared by:
Terracon Consultants, Inc.
Omaha, Nebraska

terracon.com
Terracon
Environmental ■ Facilities ■ Geotechnical ■ Materials

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APPENDIX E – GROUND PHOTOGRAPHS

WETLAND AND WATERS OF THE U.S. DELINEATION REPORT

FOURMILE INDUSTRIAL PARK
SOUTHEAST OF MYNARD STREET AND WILES ROAD
PLATTSMOUTH, CASS COUNTY, NEBRASKA

Terracon Project No. 05157284
August 1, 2016

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by Olmsted and Perry Consulting Engineers to conduct a Wetland and Waters of the United States (WUS) delineation for the Fourmile Industrial Park (site). The purpose of the delineation was to evaluate the presence and extent of wetlands and WUS. The delineation was conducted prior to the earthwork activities.

The site is approximately 2 miles southwest of Plattsmouth, Nebraska in Section 26, Township 12 North, Range 13 East in Cass County, Nebraska as shown on Exhibit 1, Appendix A. The site includes approximately 68 acres of land currently owned by the City of Plattsmouth. Access to the site is provided along a gravel drive southward from East Wiles Road. With the exception of the gravel drive, the site includes undeveloped agricultural cropland, fallow land, and low areas. An ephemeral farm swale and several intermittent drainages converge near the western boundary of the site and drain off-site to Fourmile Creek, which is about 4,000 feet to the northwest. Surrounding properties are commercial properties to the north along East Wiles Road, agricultural croplands to the east and south, a railroad track to the west, and Mynard Lane, beyond the tracks.

The delineation was conducted in general accordance with the 1987 United States Army Corps of Engineers (USACE) Wetlands Delineation Manual and the 2010 Regional Supplement to the USACE Wetland Delineation Manual: Midwest Region.

2.0 SCOPE OF SERVICES

Terracon conducted the following scope of work:

- Reviewed map and aerial photograph resources to assist with locating suspect wetland and WUS areas at the site.
- Mobilized to the site to conduct the delineation.

- Prepared a delineation map showing wetland and WUS areas observed during the site visit.
- Prepared a Wetland and WUS Delineation Report that included delineation rationale, a discussion of applicable data, and recommendations for the site.

3.0 PRELIMINARY DATA GATHERING AND ANALYSIS

Prior to conducting the delineation, several map and aerial photograph resources were reviewed to assist with evaluating wetland and WUS areas at the site. Each resource is described below.

3.1 Topographic Map

Based on review of the U.S. Geological Survey (USGS) *Murray*, *Nebraska,* 7.5-Minute Series, Topographic Quadrangle Map, the general topography of the site includes moderately rolling hills and two unnamed intermittent streams. The intermittent streams drain northwesterly toward the western property boundary and connect to Fourmile Creek which is approximately 4,000 feet to the northwest. Elevation on the site ranges from approximately 1,040 to 1,190 feet above sea level (ASL). The western property boundary is bordered by a railroad track. Other wetland or WUS features were not identified by the topographic map. A portion of the USGS topographic map for the site and vicinity is included as Exhibit 1, Appendix A.

3.2 National Wetland Inventory Map

National Wetland Inventory (NWI) data for the project site was reviewed to indicate potential wetland areas. The NWI map was published by the U.S. Department of the Interior's Fish and Wildlife Service (USWFS) and depicts probable wetland areas based on high altitude imagery. The NWI map for the project site can be accessed at USFWS Wetland Mapper internet site at http://www.fws.gov/wetlands/Data/Mapper.html.

According to the Federal Geographic Data Committee document, Wetlands Mapping Standard[1], factors affecting the accuracy of the NWI Map include the following:

- Scale of imagery,
- Mapping scale or base map scale,
- Quality of imagery,
- Season of imagery (leaf-off or leaf-on),

[1] *Federal Geographic Data Committee. 2013.* Classification of Wetlands and Deepwater Habitats of the United States. FGDC–STD-004-2013. http://www.fgdc.gov/standards/projects/FGDC-standards-projects/wetlands/nvcs-2013

- Type of imagery or emulsion of imagery,
- Environmental conditions when imagery was captured,
- Difficulty of identifying particular types of wetlands, and
- Availability and quality of ancillary or collateral data sources.

A review of the NWI map indicated one wetland area along the west-central portion of the site. The classification of the wetland was listed as "other". The NWI map for the site is included as Exhibit 2, Appendix A.

3.3 Web Soil Survey

Terracon reviewed the Web Soil Survey to indicate soil types at the site and surrounding areas. This web service is operated by the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), and can be accessed at www.websoilsurvey.nrcs.usda.gov. These maps provide generalized or widespread soil types, but may not depict each of the soil types that occur in an area. A portion of the Web Soil Survey map is provided as Exhibit 3, Appendix A.

Based on the Web Soil Survey results, the following soil types are listed within the site area, and based on the NRCS *National List of Hydric Soils,* the hydric soil rating is listed below.

Map Unit Symbol	Map Unit Name	National Hydric Soil
7231	Judson silt loam, 2 to 6 percent slopes	Yes
7750	Nodaway silt loam, occasionally flooded	Yes
7770	Colo silty clay loam, occasionally flooded	Yes
7773	Colo-Nodaway complex, frequently flooded	Yes
8019	Marshall silty clay loam, 2 to 6 percent slopes	No
8020	Marshall silty clay loam, 2 to 6 percent slopes, eroded	No
8025	Marshall silty clay loam, 6 to 11 percent slopes, eroded	No

3.4 Aerial Photographs

Aerial photographs were obtained from the Google Earth Pro website to indicate past property uses and suspected wetland and WUS resources. Aerial photographs were reviewed from the years 1993, 1999, 2003, 2006, 2009, 2010, 2012, and 2014.

Each of the aerial photographs shows that the site is largely undeveloped agricultural cropland or fallow land with several well-defined drainages that converge near the west-central portion of the property. A railroad track and roadway (Mynard Lane) are west of the site. A gravel drive is shown on each aerial photograph extending southward from East Miles Road.

The aerial photographs were also reviewed for areas of possible inundation, saturation, or potential wetlands, based on darker and/or lighter shading. The darker shading can be suggestive of inundation or soil saturation. Light and dark shading can be suggestive of vegetation exposed to periods of inundation or saturation or a sparsely vegetated concave position. The drainage that crosses the southern site boundary and flows northwest shows inundation on several aerial photographs. Additionally, indications of saturated soil or suspected wetland areas include those areas with different colored vegetation especially in areas that are not used for cropland. A selection of the reviewed aerial photographs has been included as Appendix B.

3.5 Weather Data

Site visits for this delineation were conducted on August 5, 7, and 13, 2015. According to the Weather Underground weather history for Plattsmouth, Nebraska, the average high and low monthly temperatures in August 2015 were 80 and 62 degrees Fahrenheit (^{o}F), respectively. The high and low temperatures in August 2015 were 89 ^{O}F and 48°F. The precipitation over this time period was 6.45 inches with a maximum precipitation event of 2.72 inches occurring on August 9, 2015, approximately 4 days prior to the last site visit. Additionally 0.71 inches of rain was recorded on August 4, 2015, approximately 1 and 3 days before the first two site visits. Weather data for the area is included in Appendix C.

4.0 FIELD TECHNIQUES

An experienced Terracon wetland scientist conducted the delineation and used technical criteria, field indicators, historic aerial photographs, and other sources of information to evaluate the site. The evaluation methods generally followed the routine on-site determination method referenced in the 1987 USACE Manual and 2010 Midwest Supplement.

Wetlands generally have three essential characteristics: hydrophytic (wetland) vegetation, hydric soils, and wetland hydrology. Vegetation, soils, and hydrology were characterized within each suspect areas to evaluate for the presence of wetland characteristics. The techniques for evaluating the plant community, soils, and hydrology are described in the following sections.

4.1 Plant Community Assessment

Suspect areas were visually observed to identify the plant species and estimate the percentage of ground cover for four strata of plant community types. Herbs were generally observed within a five-foot radius, shrubs/saplings within a fifteen-foot radius, and trees and vines within a thirty-foot radius of the observation location. The vegetation for the selected area was identified using experienced personnel and several reference manuals that may include Weeds of the Great Plains (Stubbendieck, et al, 2003), Grasses, An Identification Guide (Brown, 1979),

National Audubon Society A Field Guide to Wildflowers, Eastern Region, revised edition (Thieret, et al, 2001), A Manual on Aquatic Plants (Fassett, 1957), Midwestern Wetland Flora, A Field Office Guide to Plant Species (Mohlenbrock and Mohlenbrock), and Wildflowers and Other Plants of Nebraska Wetlands (Runkel and Roosa, 1999).

For each species of vegetation observed, the wetland indicator status was evaluated using the National List of Plant Species that Occur in Wetlands (USACE, 2014). Indicator categories for vegetation are presented below:

- **Obligate Wetland (OBL)** - occur almost always (estimated probability greater than 99%) under natural conditions in wetlands.
- **Facultative Wetland (FACW)** - usually occur in wetlands (estimated probability 67% - 99%) but occasionally found in non-wetlands.
- **Facultative (FAC)** - equally likely to occur in wetlands or non-wetlands (estimated probability 34% - 66%).
- **Facultative Upland (FACU)** - usually occur in non-wetlands (estimated probability 67% - 99%) but occasionally found in wetlands.
- **Obligate Upland (UPL)** – rarely occur in wetlands, but occur almost always (estimated probability greater than 99%) under natural conditions in non-wetlands.

The percent cover of each stratum was estimated and dominance was evaluated. Dominant species were the most abundant species that accounted for more 20 percent of each stratum. The number of dominant species with an indicator status of OBL, FACW, and/or FAC was compared to the total number of dominant species across the strata. Typically, when more than 50 percent of the dominant species had an indicator status of OBL, FACW, and/or FAC, hydrophytic vegetation was present.

If the percentage of dominant species with an indicator status of OBL, FACW, and/or FAC was less than 50 percent, prevalence index and morphological adaptations may have been evaluated to indicate if hydrophytic vegetation was present or absent.

4.2 Hydric Soils Assessment

After Terracon evaluated wetland vegetation, subsurface soil samples were collected using a soil probe. Samples were collected to various depths below ground surface and were visually compared to Munsell Soil Color Charts (Munsell, 2009), which aided in the evaluation of hydric soil characteristics. The soil samples were further examined for hydric soil indicators including, but not limited to, histosol, thick dark surface, sandy gleyed matrix, sandy redox, loamy gleyed

matrix, redox dark surface, and/or redox depressions. If these or other hydric soil indicators were observed in the subsurface soil sample, the observation location was considered to have hydric soil. Soil profile data was recorded on the Determination Data Forms in Appendix D.

4.3 Wetland Hydrology Assessment

Visual indicators of primary and secondary wetland hydrology indicators were evaluated. Examples of these indicators include, but are not limited to, surface water, high water table, soil saturation, water marks, sediment deposits, drift deposits, iron deposits, inundation or saturation visible on aerial imagery, sparsely vegetated concave surface, water-stained leaves and geomorphic position. If at least one primary or two secondary indicators were observed, the observation location was considered to have wetland hydrology. Hydrology indicators were recorded on the Determination Data Forms in Appendix D.

4.4 Classification of Wetlands

After evaluation of the three wetland criteria at each observation location, a wetland determination was made. Under normal circumstances, if one or more of the wetland criteria were not present, the area was not considered to be a wetland. If the three wetland indicators were present, the area was classified as wetland. Additional observations were made throughout the wetland area to outline the wetland/non-wetland boundary, which was mapped with GPS technology or flagged and surveyed by traditional methods. Vegetation, soil, and hydrology assessment data from at least one location within and one outside the wetland were recorded on the Wetland Determination Data Forms. The recorded data forms for the site are provided in Appendix D and the data point locations are shown on Exhibit 4, Appendix A.

4.5 WUS Observations

Terracon also made observations of site features such as drainages or streams that may be considered a WUS. The following definitions were used when describing the WUS:

- Flow Characteristics:
  - Perennial: contains water at all times except during extreme drought.
  - Intermittent: carries water a considerable portion of the time, but ceases to flow occasionally or seasonally.
  - Ephemeral: carries water only during and immediately after periods of rainfall or snowmelt.

- Ordinary High Water Mark: The limit line on the shore established by the fluctuation of the water surface. It is shown by such things as a clear line impressed on the bank, shelving, changes in soil character, destruction of terrestrial vegetation, the presence of litter and debris or other features influenced by the surrounding area.

- Bank Shape Descriptions:
  - Undercut: banks that overhang the stream channel
  - Steep: bank slope of approximately greater than 30 degrees
  - Gradual: bank slope of approximately 30 degrees or less

- Aquatic Habitat Descriptions:
  - Pool: deeper portion of a stream where water flows slower than in neighboring, shallower portions, smooth surface, and finer substrate
  - Riffle: shallow area in a stream where water flows swiftly over gravel and rock or other coarse substrate resulting in a rough flow and a turbulent surface
  - Run: section of a stream with a low or high velocity and with little or no turbulence on the surface of the water.

5.0 FIELD OBSERVATIONS

On August 5, 7, and 13, 2015, Terracon observed the site for possible wetlands and WUS and conducted the wetland delineation field work. The findings of the field work are summarized on the Wetland Determination Data Forms in Appendix D. Ground photographs of the site and data points are shown in Appendix E.

Based on field observations eight wetland areas (Wetland Areas 1 through 8) were evaluated. The wetland locations are shown on Exhibit 4, Appendix A. A summary of the wetlands areas are presented in the tables below:

5.1 Wetland Area 1

Wetland Description	
Wetland ID	Wetland Area 1
Size	PEM is about 1.90 acres and PSS / PFO is about 1.16 acres
Sampling Point(s)	W-1, W-5, W-6, W-12
Photo ID	1-5, 23-26, 27-31,
Association w/ WUS	WUS 1 and WUS 3
Jurisdictional Opinion	Possibly jurisdictional, connection to WUS-1
Wetland Description	Wetland Area 1 is adjacent to and south of agricultural cropland. Wetland Area 1 includes PEM areas along drainage and in a flat area. Wetland Area 1 also includes a forested (PSS/PFO) wetland.

Non-Wetland (Upland) Description	
Data Point(s)	W-3, W-4, W-7, W-8, W-13, and W-22,
Was there a marked difference between the wetland and upland?	Yes
Was there a gradual change in vegetation between the wetland and upland creating a “transition zone”?	Vegetation appeared defined.
Was there an abrupt topographic change between the wetland and upland?	Yes, the wetland is at the toe of the hillslope.

5.2 Wetland Area 2

Wetland Description	
Wetland ID	Wetland Area 2
Size	PEM is about 0.82 acres and PSS / PFO is about 1.66 acres
Sampling Point(s)	W-10, W-11, W-14, W-16, and W-17
Photo ID	47-50, 51-54, 59-61, 65-69, and 70-72
Association w/ WUS	WUS 2
Jurisdictional Opinion	Jurisdictional, connection with a WUS
Wetland Description	Wetland Area 2 is adjacent to and north of agricultural cropland. Wetland Area 2 includes emergent areas along the drainage and adjoining flat areas. Wetland Area 2 also includes a forested wetland.

Non-Wetland (Upland) Description	
Data Point(s)	W-18, W-15
Was there a marked difference between the wetland and upland?	Yes
Was there a gradual change in vegetation between the wetland and upland creating a “transition zone”?	No, vegetation was notably different.
Was there an abrupt topographic change between the wetland and upland?	Yes, wetland is at the base of the slope.

5.3 Wetland Area 3

Wetland Description	
Wetland ID	Wetland Area 3
Size	0.52 acres
Sampling Point(s)	W-2
Photo ID	12-17
Association w/ WUS	None
Jurisdictional Opinion	Non-jurisdictional. No connection to a WUS
Wetland Description	Wetland Area 3 is a farmed wetland. The area is in a topographic low area that appears to be farmed when possible.

Non-Wetland (Upland) Description	
Data Point(s)	W-3
Was there a marked difference between the wetland and upland?	Yes
Was there a gradual change in vegetation between the wetland and upland creating a “transition zone”?	Some boundaries are sharp change; others areas have a more gradual change.
Was there an abrupt topographic change between the wetland and upland?	No, the topography changes were subtle.

5.4 Wetland Area 4

Wetland Description	
Wetland ID	Wetland Area 4
Size	0.08 acres
Sampling Point(s)	W-19, W-21

Wetland Description	
Wetland ID	Wetland Area 4
Photo ID	80 and 87
Association w/ WUS	WUS-2
Jurisdictional Opinion	Jurisdictional, Connection to a WUS
Wetland Description	Wetland Area 4 is comprised of several bench wetlands along the drainage.
Non-Wetland (Upland) Description	
Data Point(s)	W-20
Was there a marked difference between the wetland and upland?	Yes
Was there a gradual change in vegetation between the wetland and upland creating a “transition zone”?	No
Was there an abrupt topographic change between the wetland and upland?	Yes, the wetland is on benches in the drainage.

5.5 Wetland Area 5

Wetland Description	
Wetland ID	Wetland Area 5
Size	0.02 acres
Sampling Point(s)	W-24
Photo ID	98-101
Association w/ WUS	WUS-3 is the intermittent stream shown on the USGS Map.
Jurisdictional Opinion	Jurisdictional, connection to a WUS
Wetland Description	Wetland Area 5 is along the southern property boundary about 35 feet from the intermittent stream.
Non-Wetland (Upland) Description	
Data Point(s)	W-23
Was there a marked difference between the wetland and upland?	Yes
Was there a gradual change in vegetation between the wetland and upland creating a “transition zone”?	No
Was there an abrupt topographic change between the wetland and upland?	Yes

5.6 Wetland Area 6

Wetland Description	
Wetland ID	Wetland Area 6
Size	0.04 acres
Sampling Point(s)	W-25
Photo ID	103-105
Association w/ WUS	WUS-3
Jurisdictional Opinion	Jurisdictional
Wetland Description	Wetland Area 6 is comprised of benches in the drainage
Non-Wetland (Upland) Description	
Data Point(s)	W-26
Was there a marked difference between the wetland and upland?	Yes
Was there a gradual change in vegetation between	No

Wetland Description	
Wetland ID	Wetland Area 6
the wetland and upland creating a "transition zone"?	
Was there an abrupt topographic change between the wetland and upland?	Yes

5.7 Wetland Area 7

Wetland Description	
Wetland ID	Wetland Area 7
Size	0.63
Sampling Point(s)	W-27
Photo ID	109-112
Association w/ WUS	None
Jurisdictional Opinion	Non-jurisdictional: No connection to a WUS
Wetland Description	Wetland Area 7 is a farmed wetland. The area is in a topographic low area that appears to be farmed when possible.
Non-Wetland (Upland) Description	
Data Point(s)	W-28
Was there a marked difference between the wetland and upland?	Yes
Was there a gradual change in vegetation between the wetland and upland creating a "transition zone"?	No
Was there an abrupt topographic change between the wetland and upland?	Yes

5.8 Wetland Area 8

Wetland Description	
Wetland ID	Wetland Area 8
Size	0.03 acres (on-site), total acres is 0.29 acres.
Sampling Point(s)	W-29
Photo ID	117-121
Association w/ WUS	Proximal to an off-site drainage, which was not evaluated as
Jurisdictional Opinion	Possibly jurisdictional because of the proximity to an off-site drainage.
Wetland Description	Wetland Area 8 is comprised of foested
Non-Wetland (Upland) Description	
Data Point(s)	W-28
Was there a marked difference between the wetland and upland?	Yes
Was there a gradual change in vegetation between the wetland and upland creating a "transition zone"?	No
Was there an abrupt topographic change between the wetland and upland?	Yes

5.9 Waters of the United States

Terracon observed one ephemeral farm swale and three intermittent drainages on the site. The farm swale is in the northern half of the project and slopes downward to the southwest. The farm swale indicated erosional features, but did not have a bed, bank, or ordinary high water

mark. The three drainages are in the southern portion of the site and drained to the northwest or west-northwest toward the western property boundary. These drainages appeared to have bed and bank features on at least a portion of the drainage. Also, an ordinary high water mark was observed at some locations along the three drainages. Because of the rain events prior to the field services, the ephemeral drainages contained surface water. No aquatic life was observed. Based on these criteria, Terracon considered three drainages to be WUS and designated them as WUS-1 through WUS-3. The farm swale was not considered to be a WUS. A description and a reference to photographs for each of the WUS and the farm swale are provided below:

The farm swale (Swale 1) occurs in the northern portion of the site and drains to the southwest. Swale 1 is surrounded by cropland to the east and west and appeared to be an ephemeral farm drainage. The lower portion of Swale 1 is associated with Wetlands Area 1, and converges with WUS-1. (See photographs 6, 8-11, Appendix E.)

Drainage 1 (WUS-1) is associated with Wetland Area 1, and flows from the east-central portion of the site westward. It is bounded by cropland to the north and fallow land to the south. (See photographs 7, 22 and 93-94, Appendix E.)

Drainage 2 (WUS-2) is associated with Wetland Areas 2 and 4, and flows from the east-central portion of the site to the western property boundary and beyond. Drainage 2 is several hundred feet south of WUS-1, and is bounded by fallow land to the north and cropland to the south. WUS-2 is shown on the USGS Topographic Map (Exhibit 1, Appendix A) as an intermittent stream. However the drainage may be considered ephemeral because only the western portion of the drainage contained surface water during the site visit. Additionally, several plants were observed in the inundated portion of drainage 2 (See photographs 78-82 and 87-88 and 91-92, Appendix E.)

Drainage 3 (WUS-3) is associated with Wetland Areas 5 and 6, and drains northwest from the southern to the western site boundaries. WUS-3 is surrounded by cropland to the east and west and was considered to be intermittent. WUS-3 and WUS-2 converge to the west of the site boundaries. WUS-3 is shown as an intermittent drainage on Exhibit 1, Appendix A, the USGS Topographic Map. (See photographs 41, 95-97, 102-105, Appendix E.)

6.0 WETLAND AND WUS SUMMARY

This report describes the procedures used to delineate wetlands on the site. In accordance with the field procedures described in this report, eight wetland areas were delineated on the site. The following table summarizes the size and type of the delineated wetland areas.

Wetland Designation	Emergent (PEM) Wetland Area Observed on-Site (Acres)	Forested (PSS / PFO) Wetland Area Observed on Site (Acres)	Farm Wetland Area Observed on Site (Acres)
Wetland Area-1	1.90	1.16	0.00
Wetland Area 2	0.82	1.66	0.00
Wetland Area 3	0.00	0.00	0.52
Wetland Area 4	0.08	0.00	0.00
Wetland Area 5	0.02	0.00	0.00
Wetland Area 6	0.04	0.00	0.00
Wetland Area 7	0.00	0.00	0.63
Wetland Area 8	0.03	0.00	0.00
Total	**2.89**	**2.82**	**1.15**

The total number of wetland acres delineated at the site is approximately 6.86 acres. The approximate wetland boundaries are depicted on the Wetland Delineation Map (Exhibit 4 in Appendix A).

The length of WUS delineated on site is 4253 feet as summarized on the table below.

Designation	Length of WUS Observed on Site (feet)
WUS 1	1,477
WUS 2	1,534
WUS 3	1,242
Total	**4,253**

Please note that only the USACE can make the final determination on the jurisdictional status of wetlands or WUS, and on the need for permit processing and compensatory mitigation.

Based on the engineering plans for this site dated June 29, 2016, most of the wetlands areas and WUS would be avoided for development of this site. Additionally, site development within the floodplain (Zone A) is avoided. However, some impacts to wetlands and WUS at the site are unavoidable.

A proposed road, Four Mile Road, is planned to provide access to the future building sites in the southern portion of the site. The road was designed to avoid most of the wetlands and minimize impacts to the existing wetlands. The road would impact a portion of Wetlands Areas 1 and 2, and would cross WUS 1 and WUS 2 as shown on the Exhibit 5, Appendix A. The road

right-of-way is designed as 66 feet wide, and the impact areas to the wetlands and WUS would be within the right-of-way. The proposed Four Mile Road would impact the following wetlands:

Wetland Designation and Classification	Impacted Wetlands (Acres)
Wetland Area 1 (PEM)	0.07
Wetland Area 2 (PSS / PFO)	0.02
Total	**0.09**

The proposed Four Mile Road would also impact WUS 1 and WUS 2 with the construction of culverts for the estimated lineal distances shown below:

WUS Designation	Length of WUS Impacted (feet)
WUS 1	70 (estimated)
WUS 2	70 (estimated)
Total	**140 (estimated)**

The development plans also include moving the existing farm swale to the east as shown on the Exhibit 5, Appendix A. The existing length of Swale 1 (at Point A) to the intersection with WUS 1 (at Point B) is approximately 820 feet. The proposed length that surface water would travel along the re-routed portion of Swale 1 to the same point on WUS 1 (from Point A to Point B) is approximately 1260 feet, which is approximately 440 feet longer than the existing flow path. Additionally, the proposed route of Swale 1 includes several bends in the flow path.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the delineation and the site plans, approximately 0.09 acres of wetlands (including 0.07 acres of PEM and 0.02 acres of PSS/PFO) and 140 feet of WUS would be impacted.

The delineated wetland areas should be avoided during construction and be protected with sediment control measures (i.e., silt fence, bale checks, etc.) in areas down-slope of disturbed soils. Sediments that would enter into a jurisdictional wetland or WUS not included as part of the permitted activity may be considered a non-authorized filling activity by the USACE.

This report should be submitted the USACE at the following address for concurrence of findings and the completion of a preliminary jurisdictional determination:

United States Army Corps of Engineers
Omaha Regulatory Office – Wehrspann
8901 South 154th Street
Omaha, NE 68138-3635

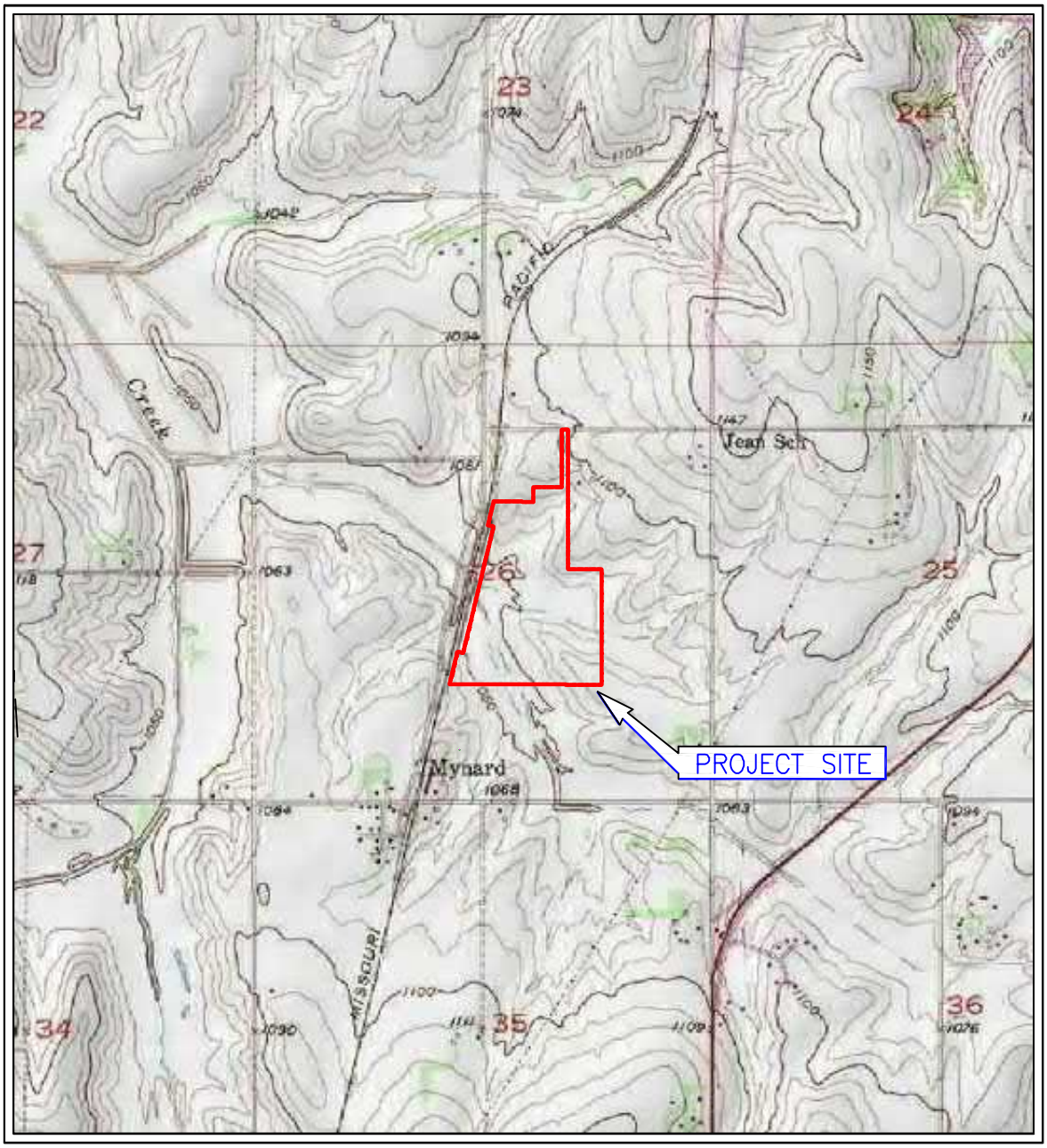
8.0 GENERAL COMMENTS

The wetland delineation was conducted using the 1987 USACE Manual and the 2010 Midwest Supplement. The manual provides assistance for delineating wetlands based on the three criteria discussed. However, the manual alone may not have provided enough information to document whether or not the three criteria were met. Various physical properties or other visual signs used to evaluate whether the three wetland criteria areas were satisfied may not be straightforward, especially in disturbed or problem areas. The manual also allows the user to visually estimate certain indicators such as the percentage of area covered by dominant species for the entire community. Terracon did not attempt to identify every possible plant species and did not classify soil type by laboratory methods. Due to seasonal changes, Terracon cannot guarantee the area to exhibit or not to exhibit wetland characteristics at all times of the year. The limitations of this wetland delineation should be recognized.

This report has been prepared in accordance with generally accepted scientific and engineering evaluation practices. This report is for the exclusive use of the client for the project being discussed. No warranties, either express or implied, are intended or made.

APPENDIX A
Exhibits

UNITED STATES — DEPARTMENT OF THE INTERIOR — GEOLOGICAL SURVEY



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METERS: 1000 0 1000 2000

MILES: 1 .5 0 1

FEET: 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

MURRAY, NEBRASKA
QUADRANGLE
1984
7.5 MINUTE SERIES (TOPOGRAPHIC)

N

Project Mngr: BLJ	Project No. 05157284	Terracon Consulting Engineers and Scientists	TOPOGRAPHIC LOCATION MAP
Drawn By: PAI	Scale: AS SHOWN	15080 A CIRCLE OMAHA, NE 68144	FOURMILE INDUSTRIAL PARK
Checked By: BLJ	File No. 05157284C01	PH. (402) 330-2202 FAX. (402) 330-7606	S26, T12N, R13E
Approved By: DCJ	Date: 10/1/15		PLATTSMOUTH NEBRASKA

EXHIBIT 1

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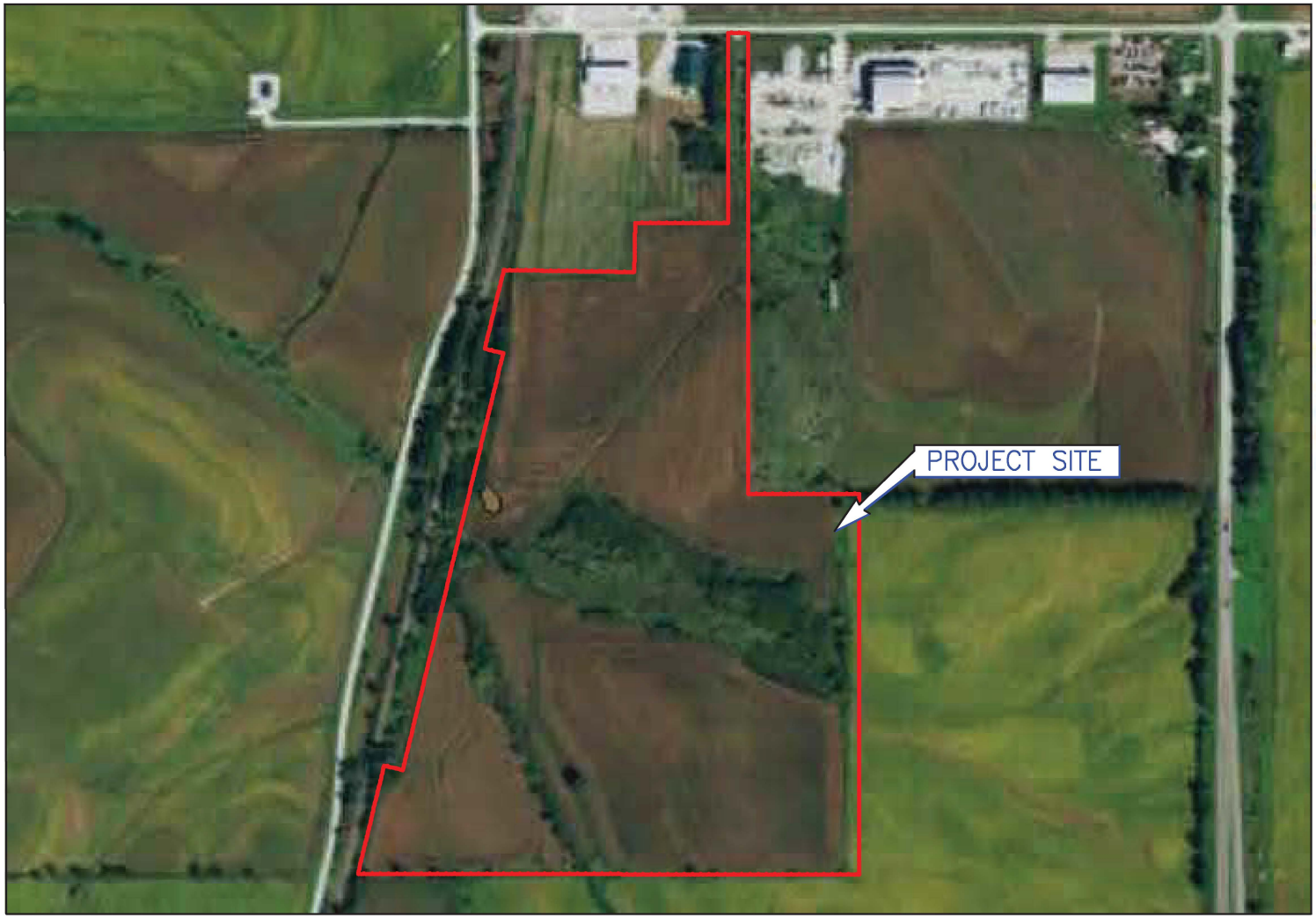


Wetlands

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

N

0 300 600

SCALE IN FEET

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.

IMAGE SOURCE: U.S. FISH & WILDLIFE SERVICE

Project Mngr: BLJ	Project No. 05157284
Drawn By: PAI	Scale: AS SHOWN
Checked By: BLJ	File No. 05157284C01
Approved By: DCJ	Date: 10/1/15

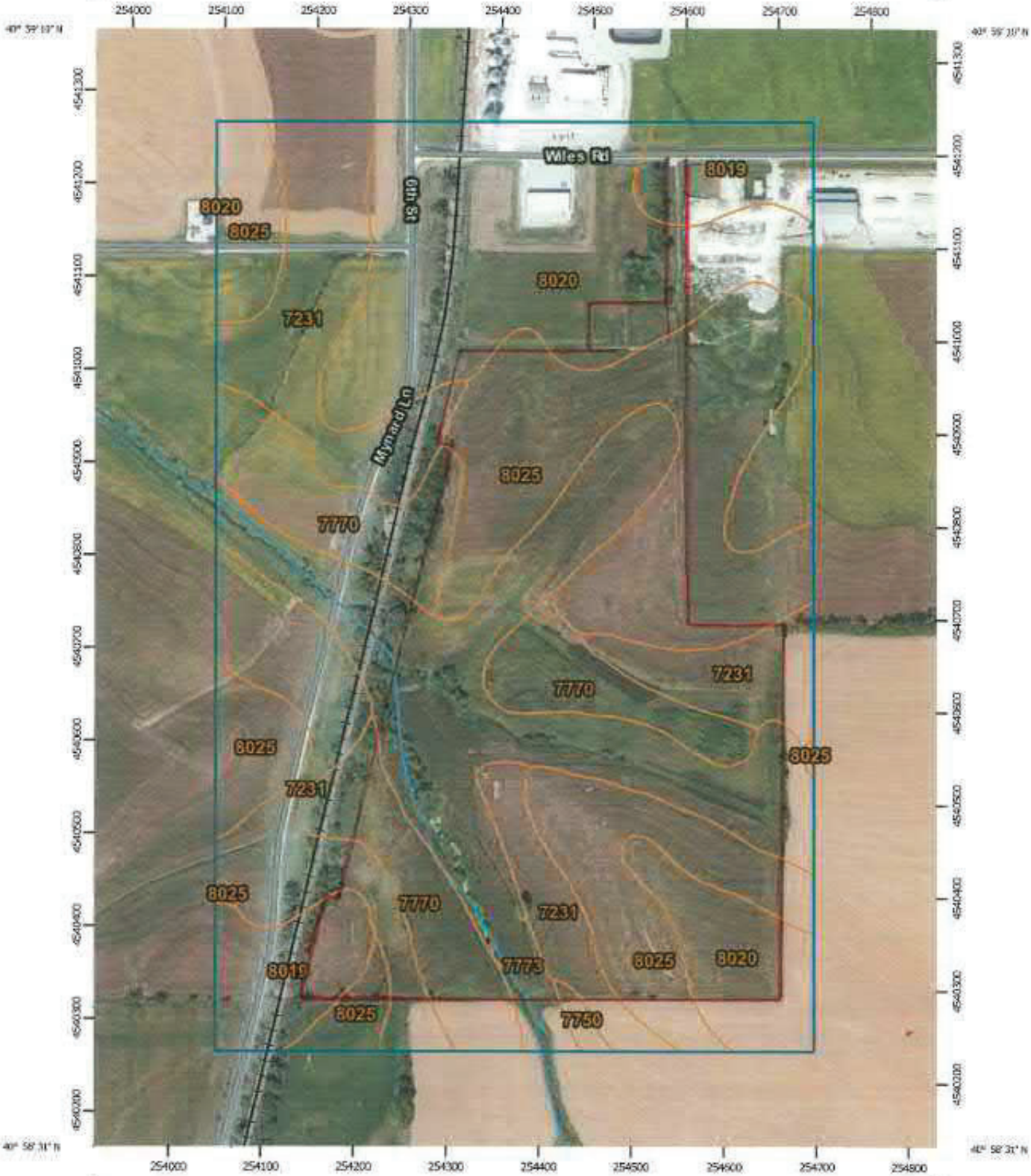
Terracon
Consulting Engineers and Scientists
15080 A CIRCLE OMAHA, NE 68144
PH. (402) 330-2202 FAX. (402) 330-7606

NATIONAL WETLANDS INVENTORY (NWI) MAP

FOURMILE INDUSTRIAL PARK
S26, T12N, R13E
PLATTSMOUTH NEBRASKA

EXHIBIT 2

Exhibit 3 – Soil Survey Map
Fourmile Industrial Park, Plattsmouth Nebraska

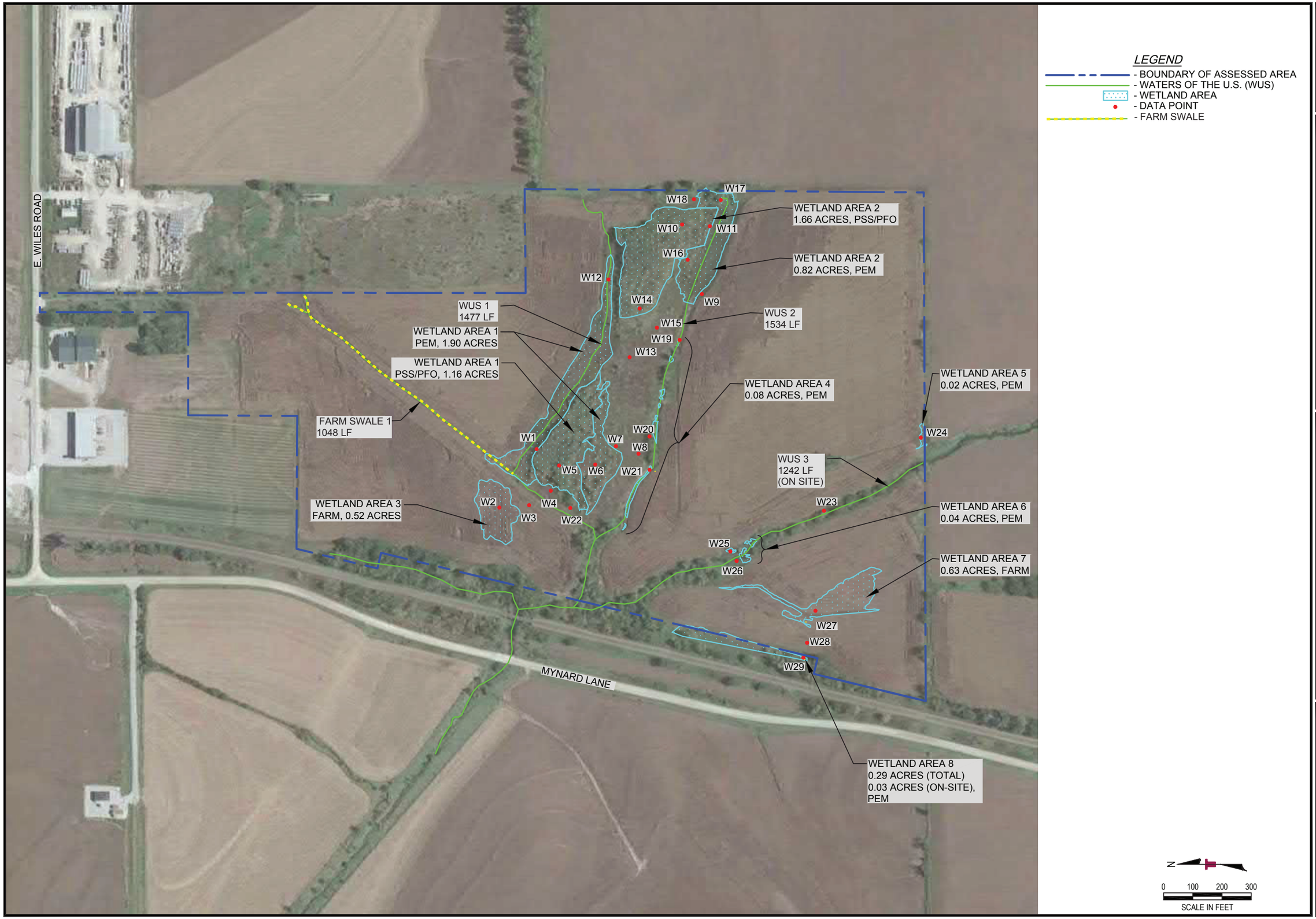


Map Scale: 1:5,870 if printed on A portrait (8.5" x 11") sheet.

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84



DESIGNED BY:	BLJ
DRAWN BY:	JAL
APPV'D. BY:	DCJ
SCALE:	AS SHOWN
DATE:	10/5/15
JOB NO.	05157284
ACAD NO.	05157284C02
EXHIBIT:	4

WETLAND DELINEATION

FOURMILE INDUSTRIAL PARK

S26, T12N, R13E

PLATTSMOUTH NEBRASKA

Terracon
Consulting Engineers and Scientists
15080 A CIRCLE
OMAHA, NE 68144
PH. (402) 330-2202
FAX: (402) 330-7606

REV.	DATE	BY	DESCRIPTION

OLMSTED & PERRY
CONSULTING ENGINEERS INC.
10730 PACIFIC STREET SUITE 232
OMAHA, NEBRASKA

REVISIONS

EXHIBIT 5 (FROM OLMSTEAD AND PERRY CONSULTING ENGINEERS)
FOUR MILE INDUSTRIAL PARK
PLATTSMOUTH, NEBRASKA

DESIGNED BY: SWP
CHECKED BY: SWP
DRAWN BY: MCZ

DEVELOPMENT
CONCEPT PLAN

PROJECT NO. 15011-03
DATE JUNE 29, 2016

SHEET NO. 1 of 1

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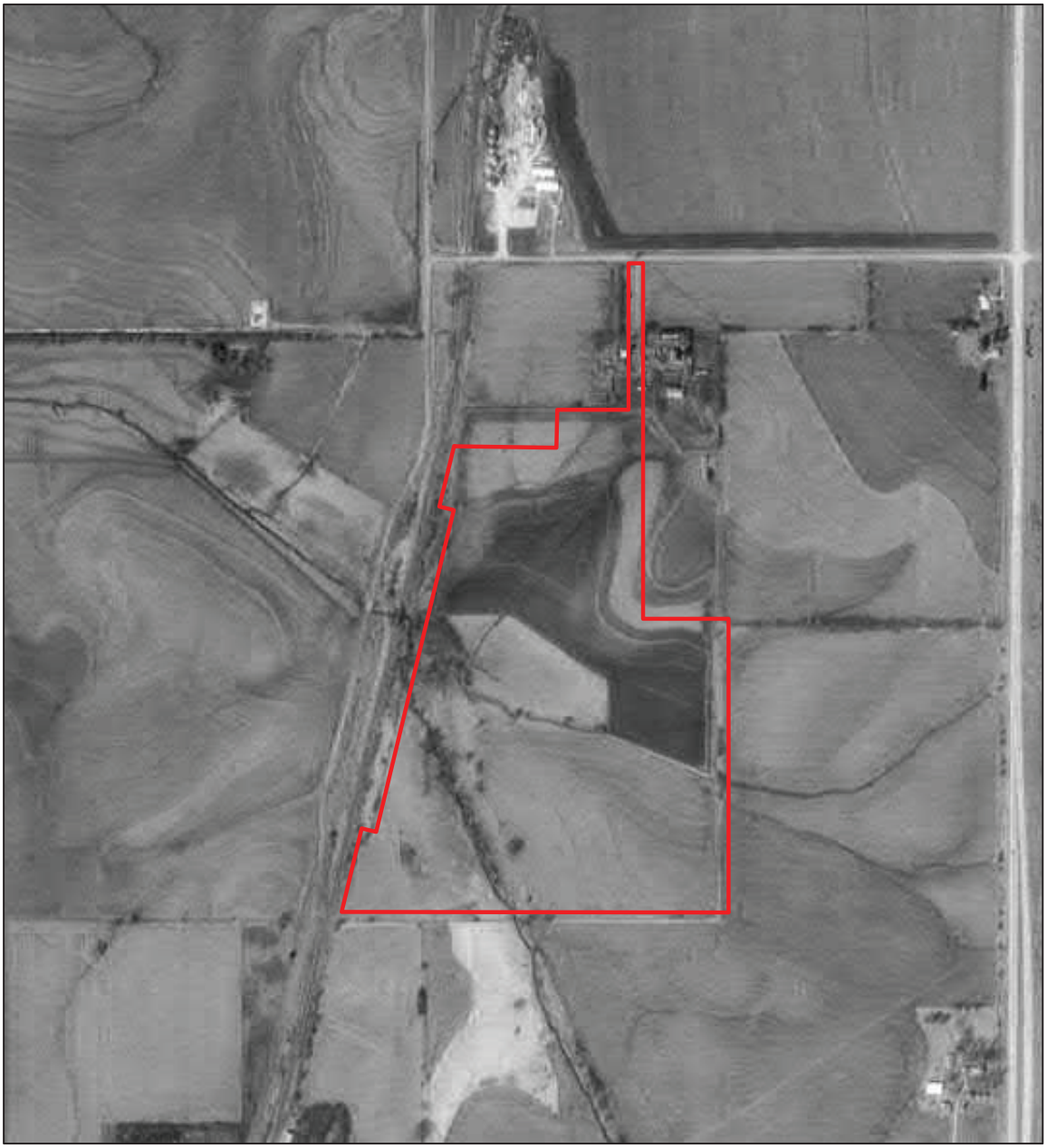
APPENDIX B
Aerial Photographs



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SCALE IN FEET

IMAGE SOURCE: GOOGLE EARTH PRO

Project Mngr: BLJ	Project No. 05157284	Terracon Consulting Engineers and Scientists	1993 AERIAL PHOTOGRAPH	FIGURE
Drawn By: PAI	Scale: AS SHOWN	15080 A CIRCLE OMAHA, NE 68144	FOURMILE INDUSTRIAL PARK	
Checked By: BLJ	File No. 05157284C01	PH. (402) 330-2202 FAX. (402) 330-7606	S26, T12N, R13E	
Approved By: DCJ	Date: 10/1/15		PLATTSMOUTH NEBRASKA	

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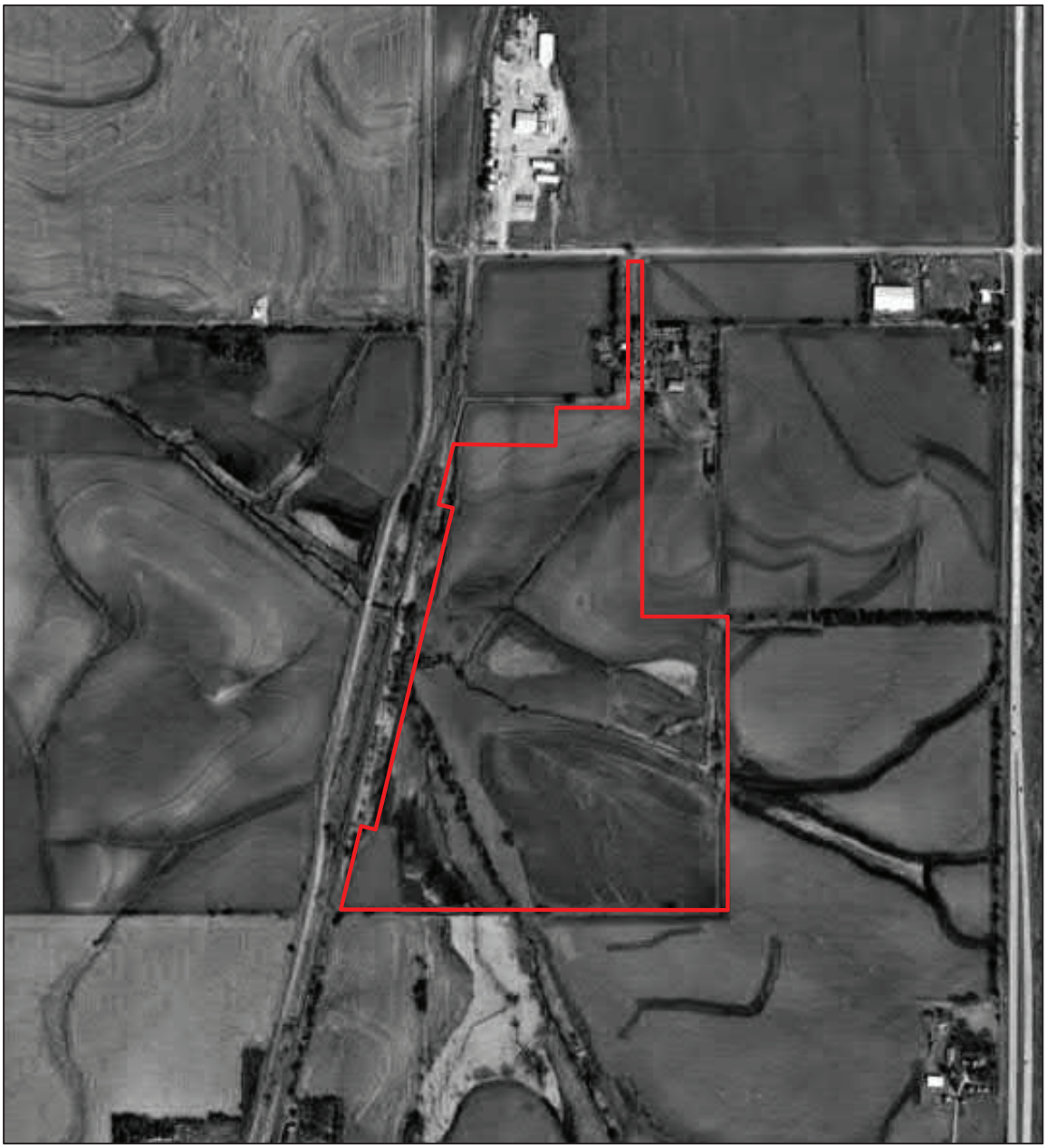

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0 200 400 800

SCALE IN FEET

IMAGE SOURCE: GOOGLE EARTH PRO

Project Mngr: BLJ	Project No. 05157284	Terracon Consulting Engineers and Scientists	1999 AERIAL PHOTOGRAPH	FIGURE
Drawn By: PAI	Scale: AS SHOWN	15080 A CIRCLE OMAHA, NE 68144	FOURMILE INDUSTRIAL PARK	
Checked By: BLJ	File No. 05157284C01	PH. (402) 330-2202 FAX. (402) 330-7606	S26, T12N, R13E	
Approved By: DCJ	Date: 10/1/15		PLATTSMOUTH NEBRASKA	

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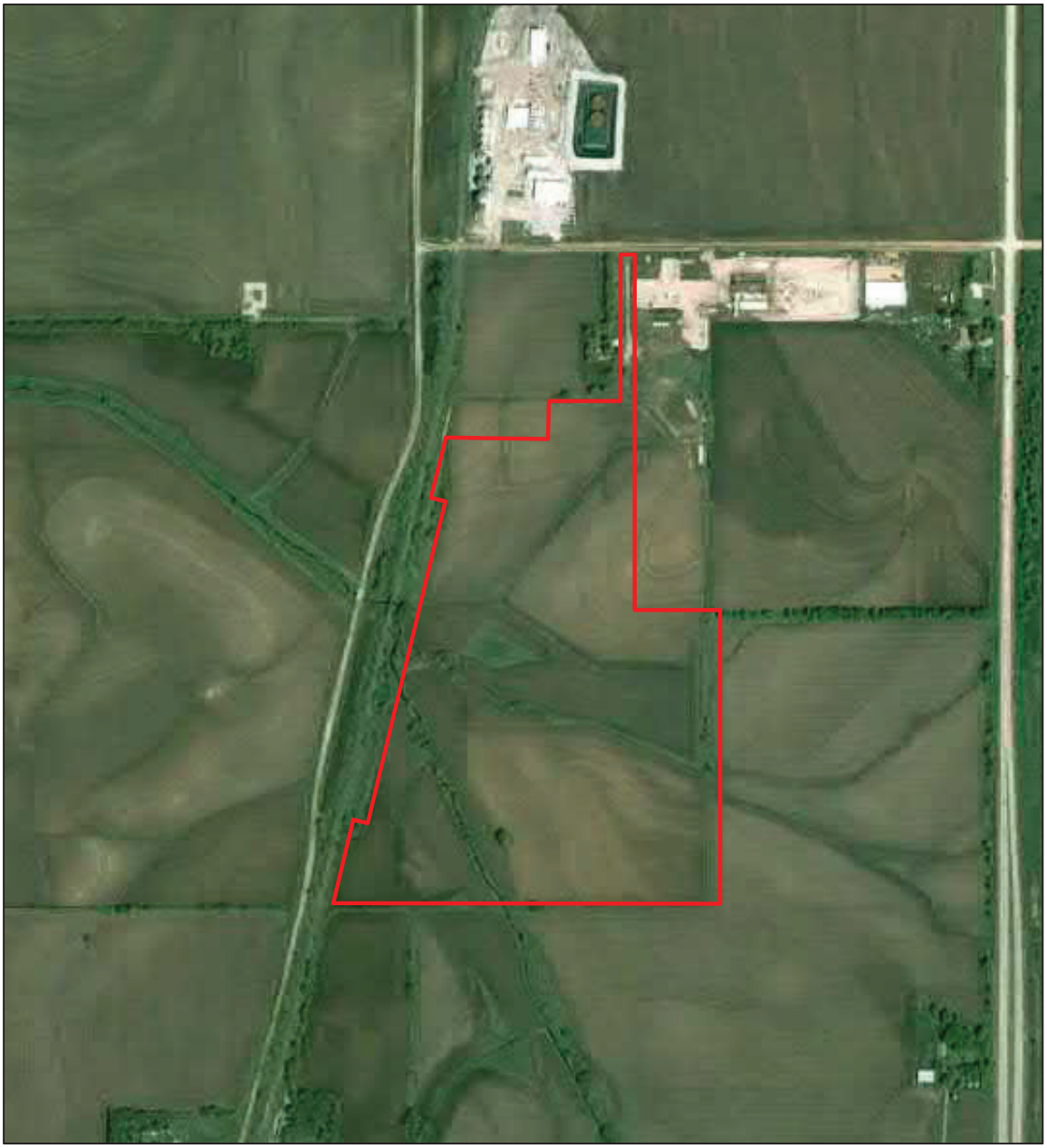

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0 200 400 800

SCALE IN FEET

IMAGE SOURCE: GOOGLE EARTH PRO

Project Mngr: BLJ	Project No. 05157284	Terracon Consulting Engineers and Scientists	2003 AERIAL PHOTOGRAPH	FIGURE
Drawn By: PAI	Scale: AS SHOWN	15080 A CIRCLE OMAHA, NE 68144	FOURMILE INDUSTRIAL PARK	
Checked By: BLJ	File No. 05157284C01	PH. (402) 330-2202 FAX. (402) 330-7606	S26, T12N, R13E	
Approved By: DCJ	Date: 10/1/15		PLATTSMOUTH NEBRASKA	

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SCALE IN FEET

IMAGE SOURCE: GOOGLE EARTH PRO

Project Mngr: BLJ	Project No. 05157284	Terracon Consulting Engineers and Scientists	2006 AERIAL PHOTOGRAPH	FIGURE
Drawn By: PAI	Scale: AS SHOWN	15080 A CIRCLE OMAHA, NE 68144	FOURMILE INDUSTRIAL PARK	
Checked By: BLJ	File No. 05157284C01	PH. (402) 330-2202 FAX. (402) 330-7606	S26, T12N, R13E	
Approved By: DCJ	Date: 10/1/15		PLATTSMOUTH NEBRASKA	

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SCALE IN FEET

IMAGE SOURCE: GOOGLE EARTH PRO

Project Mngr: BLJ	Project No. 05157284	Terracon Consulting Engineers and Scientists	2009 AERIAL PHOTOGRAPH
Drawn By: PAI	Scale: AS SHOWN	15080 A CIRCLE OMAHA, NE 68144	FOURMILE INDUSTRIAL PARK
Checked By: BLJ	File No. 05157284C01	PH. (402) 330-2202 FAX. (402) 330-7606	S26, T12N, R13E
Approved By: DCJ	Date: 10/1/15		PLATTSMOUTH NEBRASKA

FIGURE

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SCALE IN FEET

IMAGE SOURCE: GOOGLE EARTH PRO

Project Mngr: BLJ	Project No. 05157284	Terracon Consulting Engineers and Scientists	2010 AERIAL PHOTOGRAPH	FIGURE
Drawn By: PAI	Scale: AS SHOWN	15080 A CIRCLE OMAHA, NE 68144	FOURMILE INDUSTRIAL PARK	
Checked By: BLJ	File No. 05157284C01	PH. (402) 330-2202 FAX. (402) 330-7606	S26, T12N, R13E	
Approved By: DCJ	Date: 10/1/15		PLATTSMOUTH NEBRASKA	

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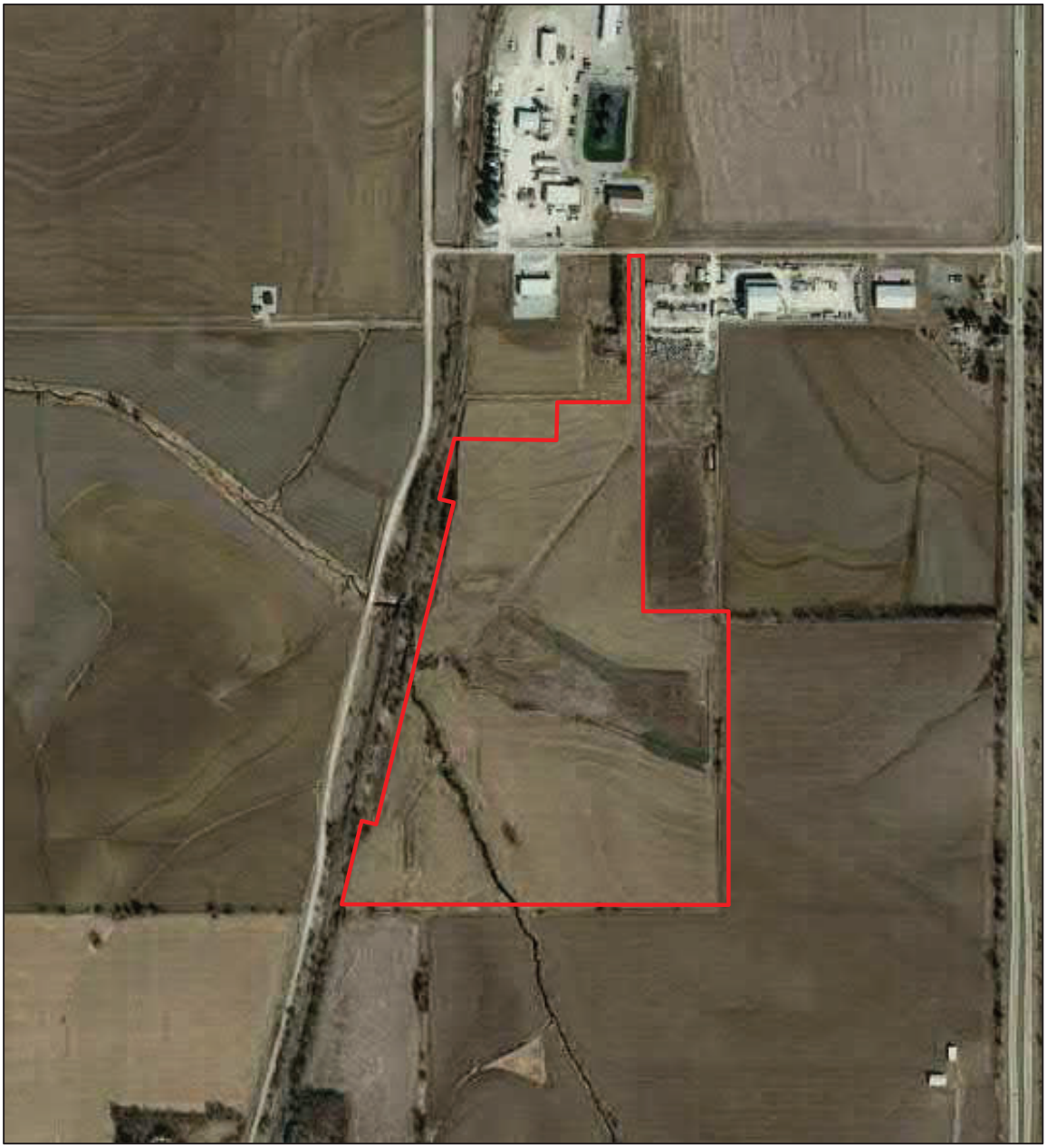

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SCALE IN FEET

IMAGE SOURCE: GOOGLE EARTH PRO

Project Mngr: BLJ	Project No. 05157284	Terracon Consulting Engineers and Scientists	2012 AERIAL PHOTOGRAPH
Drawn By: PAI	Scale: AS SHOWN	15080 A CIRCLE OMAHA, NE 68144	FOURMILE INDUSTRIAL PARK
Checked By: BLJ	File No. 05157284C01	PH. (402) 330-2202 FAX. (402) 330-7606	S26, T12N, R13E
Approved By: DCJ	Date: 10/1/15		PLATTSMOUTH NEBRASKA

FIGURE

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SCALE IN FEET

IMAGE SOURCE: GOOGLE EARTH PRO

Project Mngr: BLJ	Project No. 05157284	Terracon Consulting Engineers and Scientists	2014 AERIAL PHOTOGRAPH	FIGURE
Drawn By: PAI	Scale: AS SHOWN	15080 A CIRCLE OMAHA, NE 68144	FOURMILE INDUSTRIAL PARK	
Checked By: BLJ	File No. 05157284C01	PH. (402) 330-2202 FAX. (402) 330-7606	S26, T12N, R13E	
Approved By: DCJ	Date: 10/1/15		PLATTSMOUTH NEBRASKA	

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APPENDIX C
Weather Information

WEATHER HISTORY for NEAREST AIRPORT NEAR PLATTSMOUTH, NEBRASKA for AUGUST 2015

	Max	Avg	Min	Sum
Temperature				
Max Temperature	89 °F	80 °F	69 °F	
Mean Temperature	78 °F	71 °F	61 °F	
Min Temperature	71 °F	62 °F	48 °F	
Degree Days				
Heating Degree Days (base 65)	4	0	0	14
Cooling Degree Days (base 65)	13	6	0	188
Growing Degree Days (base 50)	28	21	11	641
Dew Point				
Dew Point	75 °F	63 °F	43 °F	
Precipitation				
Precipitation	2.72 in	0.21 in	0.00 in	6.45 in
Snowdepth	-	-	-	-
Wind				
Wind	22 mph	6 mph	0 mph	
Gust Wind	38 mph	19 mph	12 mph	
Sea Level Pressure				
Sea Level Pressure	30.25 in	29.99 in	29.69 in	

Data Obtained from :
http://www.wunderground.com/history/airport/KPMV/2015/8/9/MonthlyHistory.html

WEATHER HISTORY for NEAREST AIRPORT NEAR PLATTSMOUTH, NEBRASKA for AUGUST 2015

2015	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
Aug	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
1	83	74	65	72	68	64	96	83	62	30.1	30.01	29.91	10	10	7	10	4	-	0	
2	87	78	69	75	71	68	96	88	61	29.93	29.85	29.78	10	10	4	14	9	20	0.03	Rain , Thunderstorm
3	80	73	67	72	64	60	94	74	53	30.03	29.95	29.87	10	10	10	13	5	-	0	
4	82	72	64	71	66	62	97	87	65	30.07	29.97	29.91	10	9	2	15	5	18	0.71	Rain , Thunderstorm
5	80	74	67	70	68	66	97	87	65	30.01	29.98	29.94	10	8	2	7	4	-	0	
6	74	70	65	70	67	65	97	92	83	30.01	29.91	29.81	10	8	0	21	5	28	0	Fog , Rain
7	88	78	68	72	69	63	97	76	43	29.91	29.88	29.85	10	8	2	10	5	-	0	
8	83	75	67	75	68	62	92	77	57	29.98	29.88	29.81	10	10	10	14	7	21	0.15	Rain , Thunderstorm
9	74	73	71	72	71	70	95	93	91	29.94	29.89	29.81	10	9	1	17	4	24	2.72	Rain , Thunderstorm
10	81	74	65	67	64	59	96	77	54	30.13	30.03	29.93	10	8	0	13	3	20	0.47	Fog , Rain , Thunderstorm
11	82	71	60	64	61	57	94	70	42	30.25	30.19	30.13	10	10	10	6	2	-	0	
12	83	73	63	65	63	60	92	70	47	30.25	30.19	30.12	10	10	10	8	4	-	0	
13	89	76	64	69	63	60	88	69	45	30.13	30.1	30.05	10	10	10	12	7	16	0.03	
14	84	76	67	68	65	63	88	71	49	30.17	30.13	30.09	10	10	10	9	6	-	0	
15	84	74	64	68	65	62	92	73	52	30.17	30.1	30.02	10	10	10	13	8	21	0	
16	85	75	66	71	66	62	87	71	54	30.06	30.01	29.96	10	10	10	15	9	21	0	
17	75	72	68	70	68	65	95	89	76	30.03	29.97	29.89	10	8	1	15	3	21	0.47	Rain , Thunderstorm
18	71	63	55	68	61	50	95	87	61	29.9	29.77	29.69	10	8	2	21	6	26	0.86	Rain , Thunderstorm
19	72	61	51	54	50	46	86	68	40	29.92	29.85	29.78	10	10	10	22	12	29	0	
20	80	66	53	60	55	50	92	67	37	29.97	29.93	29.89	10	10	10	10	5	-	0	
21	81	70	59	65	58	53	83	67	49	29.96	29.92	29.86	10	10	10	20	11	25	0	
22	85	74	65	69	66	58	93	78	55	29.98	29.85	29.76	10	9	2	20	12	38	0.49	Rain , Thunderstorm
23	70	62	53	56	46	43	75	58	38	30.16	30.1	29.99	10	10	10	16	11	22	0	
24	76	62	48	56	48	44	90	59	34	30.19	30.15	30.11	10	10	10	9	5	-	0	
25	75	64	53	59	54	50	92	68	46	30.22	30.17	30.12	10	10	10	5	1	-	0	
26	76	66	57	63	57	52	89	73	58	30.22	30.15	30.08	10	10	10	15	6	20	0	
27	79	71	63	66	62	58	90	75	57	30.09	30	29.9	10	10	7	21	11	31	0.1	Rain , Thunderstorm
28	78	70	62	69	65	61	95	85	70	29.98	29.88	29.82	10	9	3	20	9	24	0.42	Rain , Thunderstorm
29	69	64	60	62	60	58	96	88	72	30.09	30.04	29.97	10	8	2	8	4	-	0	
30	75	66	58	68	63	57	97	89	70	30.09	30.03	29.96	10	6	0	12	4	-	0	Fog
31	84	74	65	71	67	64	96	79	53	29.99	29.95	29.9	10	7	0	12	6	16	0	Fog

Data Obtained from :

http://www.wunderground.com/history/airport/KPMV/2015/8/9/MonthlyHistory.html

WEATHER HISTORY for NEAREST AIRPORT NEAR PLATTSMOUTH, NEBRASKA for AUGUST 2015

2015	Temp. (°F)			Dew Point (°F)			Humidity (%)			Sea Level Press. (in)			Visibility (mi)			Wind (mph)			Precip. (in)	Events
Aug	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
1	83	74	65	72	68	64	96	83	62	30.1	30.01	29.91	10	10	7	10	4	-	0	
2	87	78	69	75	71	68	96	88	61	29.93	29.85	29.78	10	10	4	14	9	20	0.03	Rain , Thunderstorm
3	80	73	67	72	64	60	94	74	53	30.03	29.95	29.87	10	10	10	13	5	-	0	
4	82	72	64	71	66	62	97	87	65	30.07	29.97	29.91	10	9	2	15	5	18	0.71	Rain , Thunderstorm
5	80	74	67	70	68	66	97	87	65	30.01	29.98	29.94	10	8	2	7	4	-	0	
6	74	70	65	70	67	65	97	92	83	30.01	29.91	29.81	10	8	0	21	5	28	0	Fog , Rain
7	88	78	68	72	69	63	97	76	43	29.91	29.88	29.85	10	8	2	10	5	-	0	
8	83	75	67	75	68	62	92	77	57	29.98	29.88	29.81	10	10	10	14	7	21	0.15	Rain , Thunderstorm
9	74	73	71	72	71	70	95	93	91	29.94	29.89	29.81	10	9	1	17	4	24	2.72	Rain , Thunderstorm
10	81	74	65	67	64	59	96	77	54	30.13	30.03	29.93	10	8	0	13	3	20	0.47	Fog , Rain , Thunderstorm
11	82	71	60	64	61	57	94	70	42	30.25	30.19	30.13	10	10	10	6	2	-	0	
12	83	73	63	65	63	60	92	70	47	30.25	30.19	30.12	10	10	10	8	4	-	0	
13	89	76	64	69	63	60	88	69	45	30.13	30.1	30.05	10	10	10	12	7	16	0.03	
14	84	76	67	68	65	63	88	71	49	30.17	30.13	30.09	10	10	10	9	6	-	0	
15	84	74	64	68	65	62	92	73	52	30.17	30.1	30.02	10	10	10	13	8	21	0	
16	85	75	66	71	66	62	87	71	54	30.06	30.01	29.96	10	10	10	15	9	21	0	
17	75	72	68	70	68	65	95	89	76	30.03	29.97	29.89	10	8	1	15	3	21	0.47	Rain , Thunderstorm
18	71	63	55	68	61	50	95	87	61	29.9	29.77	29.69	10	8	2	21	6	26	0.86	Rain , Thunderstorm
19	72	61	51	54	50	46	86	68	40	29.92	29.85	29.78	10	10	10	22	12	29	0	
20	80	66	53	60	55	50	92	67	37	29.97	29.93	29.89	10	10	10	10	5	-	0	
21	81	70	59	65	58	53	83	67	49	29.96	29.92	29.86	10	10	10	20	11	25	0	
22	85	74	65	69	66	58	93	78	55	29.98	29.85	29.76	10	9	2	20	12	38	0.49	Rain , Thunderstorm
23	70	62	53	56	46	43	75	58	38	30.16	30.1	29.99	10	10	10	16	11	22	0	
24	76	62	48	56	48	44	90	59	34	30.19	30.15	30.11	10	10	10	9	5	-	0	
25	75	64	53	59	54	50	92	68	46	30.22	30.17	30.12	10	10	10	5	1	-	0	
26	76	66	57	63	57	52	89	73	58	30.22	30.15	30.08	10	10	10	15	6	20	0	
27	79	71	63	66	62	58	90	75	57	30.09	30	29.9	10	10	7	21	11	31	0.1	Rain , Thunderstorm
28	78	70	62	69	65	61	95	85	70	29.98	29.88	29.82	10	9	3	20	9	24	0.42	Rain , Thunderstorm
29	69	64	60	62	60	58	96	88	72	30.09	30.04	29.97	10	8	2	8	4	-	0	
30	75	66	58	68	63	57	97	89	70	30.09	30.03	29.96	10	6	0	12	4	-	0	Fog
31	84	74	65	71	67	64	96	79	53	29.99	29.95	29.9	10	7	0	12	6	16	0	Fog

Data Obtained from :

http://www.wunderground.com/history/airport/KPMV/2015/8/9/MonthlyHistory.html

APPENDIX D
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 5, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-1

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Base of Hillslope | Local relief (concave, convex, none): None

Slope (%): 0-1 | Lat: 40.98064 | Long: -95.918989 | Datum: WGS 1984

Soil Map Unit Name: Colo silty clay loam, occasionally flooded (7770) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 1

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-1 was collected along the north boundary of a Wetland Area 1 near the based of a farmed hillslope. The area received approximately 0.7 inches of rainfall the day prior to the delineation.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Equisetum arvense*	60	Y	FAC
2 *Ambrosia trifida*	25	Y	FAC
3 *Solidago canadensis*	10	N	FACU
4			
5			
6			
7			
8			
9			
10			
	95	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	85	x 3 =	255
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column totals	95 (A)		295 (B)

Prevalence Index = B/A = 3.11

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-4	10YR 3/2	100					Silty Clay	Profile Wet to 4 Inches
4-14	10YR 3/2	95	7.5YR 4/6	5	C	PL/M	Clay	Profile Wet to 18 Inches
14-18	10YR 4/1	85	7.5YR 4/6	15	C	M	Silty Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicator F6 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Two primary indicators of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 5, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-2

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 0-1 | Lat: 40.981017 | Long: -95.919691 | Datum: WGS 1984

Soil Map Unit Name: Marshall silty clay loam, 6 to 11 percent slopes, eroded (8025) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation X, soil X, or hydrology ___ significantly disturbed? Are "normal circumstances" present? No

Are vegetation ___, soil ___, or hydrology ___ naturally problematic?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes	**Is the sampled area within a wetland?**	Yes
Hydric soil present?	Yes	If yes, optional wetland site ID:	Wetland Area 3
Indicators of wetland hydrology present?	Yes		

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-2 was collected within a previously farmed depression near the base of a farmed hillslope. Residual cornstalks were observed within the sample area. The area received approximately 0.7 inches of rainfall the day prior to the delineation.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Cyperus esculentus*	50	Y	FACW
2 *Ammannia coccinea*	30	Y	OBL
3 *Amaranthus retroflexus*	10	N	FACU
4			
5			
6			
7			
8			
9			
10			
	90	=Total Cover	
Woody vine stratum (Plot size: ___)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	30	x 1 =	30
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column totals	90 (A)		170 (B)

Prevalence Index = B/A = 1.89

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-4	10YR 3/1	100					Silty Clay	Saturated 0 to 1 Inches
4-10	10YR 3/1	95	7.5YR 4/6	5	C	M	Silty Clay	Profile Wet to 10 Inches
10-20	10YR 2/1	85	7.5YR 4/6	15	C	M	Clay	Profile Moist to 20 Inches
20-24	10YR 3/1	90	7.5YR 4/6	10	C	M	Silty Clay	Profile Saturated at 20 Inches

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicator F6 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No		Depth (inches):	10
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Three primary and two secondary indicators of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 5, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-3

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): None

Slope (%): 1-3 | Lat: 40.980736 | Long: -95.91968 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation X, soil X, or hydrology ___ significantly disturbed? Are "normal circumstances" present? No

Are vegetation ___, soil ___, or hydrology ___ naturally problematic?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	No		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-3 was collected outside of Wetland Area 2 in a currently farmed area. The area received approximately 0.7 inches of rainfall the day prior to the delineation.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Glycine max*	75	Y	NI
2			
3			
4			
5			
6			
7			
8			
9			
10			
	75	=Total Cover	
Woody vine stratum (Plot size: ___)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	0	x 5 =	0	
Column totals	0	(A)	0	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ___ Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Hydrophytic vegetation was not observed at the data point location. Soybeans in the data point location appeared to be in good condition and exhibiting normal growth. Water stress was not apparent.

SOIL

Sampling Point: W-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-2	10YR 3/2	100					Silt	Somewhat Moist to 19 inches
2-8	10YR 3/2	98	10YR 5/6	2	C	M	Silt	
8-12	10YR 3/2	90	7.5YR 4/6	10	C	M	Silty Clay	
12-19	10YR 3/2	90	7.5YR 4/6	10	C	M	Silty Clay	
19-24	10YR 3/1	80	7.5YR 4/6	20	C	M	Silty Clay	Wet/Saturated

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicator F6 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No		Depth (inches):	20
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	19

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and/or two secondary indicators of wetland hydrology were not observed within the data point location. Depth requirements were not met for the A2 and A3 indicators.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 5, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-4

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): None

Slope (%): 0-1 | Lat: 40.980527 | Long: -95.919514 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	No		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-4 was collected outside of the west end of the forested portion of Wetland Area 1. The area received approximately 0.7 inches of rainfall the day prior to the delineation.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Fraxinus pennsylvanica*	5	Y	FACW
2			
3			
4			
5			
	5	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Symphyotrichum lanceolatum*	40	Y	FAC
2 *Solidago canadensis*	30	Y	FACU
3 *Verbena hastata*	10	N	FACW
4 *Vitis riparia*	5	N	FACW
5 *Helianthus annuus*	5	N	FACU
6 *Erigeron annuus*	5	N	FACU
7 *Sanicula canadensis*	2	N	FACU
8 *Leersia oryzoides*	1	N	OBL
9 *Asclepias incarnata*	1	N	OBL
10 *Typha latifolia*	1	N	OBL
	100	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	3	x 1 =	3
FACW species	20	x 2 =	40
FAC species	40	x 3 =	120
FACU species	42	x 4 =	168
UPL species	0	x 5 =	0
Column totals	105 (A)		331 (B)

Prevalence Index = B/A = 3.15

Hydrophytic Vegetation Indicators:

- [ ] Rapid test for hydrophytic vegetation
- [X] Dominance test is >50%
- [ ] Prevalence index is ≤3.0*
- [ ] Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was not observed at the data point location.

SOIL

Sampling Point: W-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-1	10YR 3/2	100					Silt	Soils Moist to 18 Inches
1-10	10YR 3/2	90	7.5YR 4/6	10	C	M	Silty Clay	
10-18	10YR 3/1	90	7.5YR 4/6	10	C	M	Silty Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicator F6 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and/or two secondary indicators of wetland hydrology were not observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 5, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-5

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): None

Slope (%): 0-1 | Lat: 40.980437 | Long: -95.919215 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 1

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-5 was collected within the west end of the forested portion of Wetland Area 1. The area received approximately 0.7 inches of rainfall the day prior to the delineation.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Salix amygdaloides*	60	Y	FACW
2 *Populus deltoides*	30	Y	FAC
3			
4			
5			
	90	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Salix amygdaloides*	30	Y	FACW
2 *Populus deltoides*	15	Y	FAC
3			
4			
5			
	45	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Phragmites australis*	30	Y	FACW
2 *Solidago gigantea*	20	Y	FACW
3 *Symphyotrichum lanceolatum*	20	Y	FAC
4 *Apocynum cannabinum*	5	N	FAC
5 *Toxicodendron radicans*	5	N	FAC
6			
7			
8			
9			
10			
	80	=Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	140	x 2 =	280
FAC species	75	x 3 =	225
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	215 (A)		505 (B)

Prevalence Index = B/A = 2.35

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-14	10YR 3/1	90	7.5YR 4/6	10	C	M	Silty Clay	Soils Moist/Wet to 14 Inches
14-18	10YR 3/1	85	7.5YR 4/6	15	C	M	Silty Clay	Soils Wet to 18 Inches

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:
Hydric soil indicator F6 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	X	No	___	Depth (inches):	11
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
One primary and one secondary indicator of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 5, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-6

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): None

Slope (%): 0-1 | Lat: 40.980437 | Long: -95.919215 | Datum: WGS 1984

Soil Map Unit Name: Colo silty clay loam, occasionally flooded (7770) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 1

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-6 was collected along the southern end of Wetland Area 1 outside of the forested portion of Wetland Area 1. The area received approximately 0.7 inches of rainfall the day prior to the delineation.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Symphyotrichum lanceolatum*	60	Y	FAC
2 *Phragmites australis*	40	Y	FACW
3			
4			
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	60	x 3 =	180
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		260 (B)

Prevalence Index = B/A = 2.60

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-8	10YR 3/1	98	7.5YR 4/6	2	C	M	Silty Clay Loam	Soils Moist/Wet to 14 Inches
8-15	10YR 3/1	95	7.5YR 4/6	5	C	M	Silty Clay Loam	Soils Wet to Saturated
15-18	10YR 3/1	90	7.5YR 4/6	10	C	M	Silty Clay Loam	Soils Wet to Saturated

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicator F6 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	X	No	___	Depth (inches):	11
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Two primary and one secondary indicator of wetland hydrology was observed within the data point location. Inundation signatures were observed on several aerial photographs between 1993 and 2014.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 5, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-7

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): None

Slope (%): 0-1 | Lat: 40.979895 | Long: -95.918999 | Datum: WGS 1984

Soil Map Unit Name: Colo silty clay loam, occasionally flooded (7770) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed?

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-7 was collected outside of Wetland Area 1. The area received approximately 0.7 inches of rainfall the day prior to the delineation.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Populus deltoides*	5	Y	FAC
2			
3			
4			
5			
	5	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Populus deltoides*	10	Y	FAC
2			
3			
4			
5			
	10	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Apocynum cannabinum*	40	Y	FAC
2 *Solidago canadensis*	25	Y	FACU
3 *Symphyotrichum lanceolatum*	15	N	FAC
4 *Salsola tragus*	15	N	FACU
5 *Asclepias syriaca*	4	N	FACU
6 *Helianthus annuus*	1	N	FACU
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	45	x 4 =	180
UPL species	0	x 5 =	0
Column totals	115 (A)		390 (B)

Prevalence Index = B/A = 3.39

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-5	10YR 3/1	100					Silty Clay	Soils Moist to 18 Inches
5-11	10YR 3/1	85	7.5YR 4/6	15	C	M	Silty Clay	
11-18	10YR 3/1	98	7.5YR 4/6	5	C	M	Silty Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicator F6 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No		Depth (inches):	18
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):	

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and two secondary indicators of wetland hydrology were not observed within the data point location. Depth requirements were not met for indicator A2.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 5, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-8

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): None

Slope (%): 0-1 | Lat: 40.979686 | Long: -95.919106 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed?

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-8 was collected outside of Wetland Area 1. The area received approximately 0.7 inches of rainfall the day prior to the delineation.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Morus alba*	5	Y	FAC
2 *Fraxinus pennsylvanica*	1	N	FACW
3			
4			
5			
	6	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Ambrosia trifida*	25	Y	FAC
2 *Helianthus annuus*	20	Y	FACU
3 *Symphyotrichum lanceolatum*	15	Y	FAC
4 *Salsola tragus*	15	Y	FACU
5 *Vitis riparia*	15	Y	FACW
6 *Asclepias syriaca*	5	N	FACU
7 *Geum canadense*	5	N	FAC
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	16	x 2 =	32
FAC species	50	x 3 =	150
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column totals	106 (A)		342 (B)

Prevalence Index = B/A = 3.23

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-10	10YR 3/1	100					Silt Loam	Soils Moist to 18 Inches
10-15	10YR 3/1	98	7.5YR 4/6	2	C	M	Silt Loam	
15-18	10YR 3/1	95	7.5YR 4/6	5	C	M	Silt Loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

Hydric soil indicator F6 was observed in the soil profile. Indicator F6 did not meet depth requirements within the first 12 inches of the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and two secondary indicators of wetland hydrology were not observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 5, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-9

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave

Slope (%): 2-3 | Lat: 40.97902 | Long: -95.917165 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed?

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-9 was collected within a depression outside of Wetland Area 2. The area received approximately 0.7 inches of rainfall the day prior to the delineation.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Equisetum arvense*	100	Y	FAC
2			
3			
4			
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		300 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location. The data point was collected within the base of a thin, linear depression containing *Equisetum arvense.* This vegetation continued north up an embankment in an area of surface hydrology.

SOIL

Sampling Point: W-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-10	10YR 3/2	100					Silty Clay	Soils Moist to 10 Inches
10-18	10YR 3/2	98	7.5YR 4/6	2	C	M	Silty Clay	Somewhat Moist to 18 Inches

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:
Hydric soil indicators were not observed in the soil profile. Indicator F6 did not meet depth requirements within the first 12 inches of the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
One primary and two secondary indicators of wetland hydrology were not observed within the data point location. The data point was collected within the base of a thin, linear depression containing Equisetum arvense. This vegetation continued north up an embankment in an area of surface hydrology.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 7, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-10

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): None

Slope (%): 0-1 | Lat: 40.979686 | Long: -95.919106 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed?

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 2

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-10 was collected within a forested area of Wetland Area 2.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Populus deltoides*	65	Y	FAC
2 *Salix amygdaloides*	10	N	FACW
3			
4			
5			
	75	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Populus deltoides*	30	Y	FAC
2 *Salix amygdaloides*	5	N	FACW
3			
4			
5			
	35	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Solidago gigantea*	70	Y	FACW
2 *Salsola tragus*	10	N	FACU
3			
4			
5			
6			
7			
8			
9			
10			
	80	=Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	85	x 2 =	170
FAC species	95	x 3 =	285
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column totals	190 (A)		495 (B)

Prevalence Index = B/A = 2.61

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-4	10YR 3/1	100					Silty Clay	Soils Moist to 12 Inches
4-12	10YR 3/1	60	7.5YR 4/6	10	C	M	Silty Clay	
4-12	10YR 4/1	30	7.5YR 4/6		C	M	Silty Clay	
12-18	10YR 4/1	60	7.5YR 4/6	10	C	M	Silty Clay	Wet/Saturated at 12 Inches
12-18	10YR 3/1	20	7.5YR 4/6	10	C	M	Silty Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicators F3 and F6 were observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	X	No	___	Depth (inches):	12
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and one secondary indicator of wetland hydrology was observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 7, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-11

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): concave

Slope (%): 0-1 | Lat: 40.978915 | Long: -95.91633 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 2

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-11 was collected within a forested area of Wetland Area 2.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Populus deltoides*	10	Y	FAC
2			
3			
4			
5			
	10	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Equisetum arvense*	45	Y	FAC
2 *Phragmites australis*	20	Y	FACW
3 *Ambrosia trifida*	20	Y	FAC
4 *Symphyotrichum lanceolatum*	10	N	FAC
5 *Asclepias syriaca*	5	N	FACU
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	85	x 3 =	255
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column totals	110 (A)		315 (B)

Prevalence Index = B/A = 2.86

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-5	10YR 3/1	100					Silty Clay	wet
5-10	10YR 3/1	95	5YR 3/4	5	C	M	Silty Clay	wet
10-20	10YR 3/1	90	5YR 3/4	10	C	M	Silty Clay	wet

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicators F6 were observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	X	No	___	Depth (inches):	12
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

two primary and one secondary indicator of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 7, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-12

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Slight Slope | Local relief (concave, convex, none): None

Slope (%): 1-3 | Lat: 40.97989 | Long: -95.916931 | Datum: WGS 1984

Soil Map Unit Name: Judson silt loam, 2 to 6 percent slopes (7231) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 1

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-12 was collected along the eastern boundary of Wetland Area 1.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Populus deltoides*	5	Y	FAC
2			
3			
4			
5			
	5	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Salsola tragus*	30	Y	FACU
2 *Verbena hastata*	20	Y	FACW
3 *Erigeron annuus*	15	N	FACU
4 *Apocynum cannabinum*	10	N	FAC
5 *Solidago canadensis*	10	N	FACU
6 *Taraxacum officinale*	5	N	FACU
7			
8			
9			
10			
	90	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 66.67% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	15	x 3 =	45
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column totals	95 (A)		325 (B)

Prevalence Index = B/A = 3.42

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-3	10YR 3/1	100					Silty Clay	Soils Wet to 3 Inches
3-18	10YR 3/1	95	7.5YR 5/8	5	C	M	Silty Clay	Profile Moist to 18 Inches

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:
Hydric soil indicator F6 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	X	No	___	Depth (inches):	12
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
One primary and one secondary indicator of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 7, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-13

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): None

Slope (%): 0-2 | Lat: 40.979726 | Long: -95.917906 | Datum: WGS 1984

Soil Map Unit Name: Colo silty clay loam, occasionally flooded (7770) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	No		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-13 was collected in an upland location to Wetland Area 1.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Cornus drummondii*	5	Y	NI
2			
3			
4			
5			
	5	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Solidago canadensis*	30	Y	FACU
2 *Ambrosia trifida*	15	Y	FAC
3 *Helianthus annuus*	15	Y	FACU
4 *Symphyotrichum lanceolatum*	10	N	FAC
5 *Verbena hastata*	10	N	FACW
6 *Vitis riparia*	10	N	FACW
7 *Convolvulus arvensis*	10	N	NI
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 25.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	25	x 3 =	75
FACU species	45	x 4 =	180
UPL species	0	x 5 =	0
Column totals	90 (A)		295 (B)

Prevalence Index = B/A = 3.28

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ___ Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was not observed at the data point location.

SOIL

Sampling Point: W-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-8	10YR 3/1	100					Silty Clay Loam	Profile Moist to 18 Inches
8-12	10YR 3/1	98	7.5YR 4/6	2	C	M	Silty Clay Loam	
12-18	10YR 2/1	98	7.5YR 4/6	2	C	M	Silty Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicator F6 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and/or two secondary indicators of wetland hydrology were not observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 7, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-14

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): None

Slope (%): 0-1 | Lat: 40.979611 | Long: -95.917309 | Datum: WGS 1984

Soil Map Unit Name: Colo silty clay loam, occasionally flooded (7770) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed?

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes	**Is the sampled area within a wetland?**	Yes
Hydric soil present?	Yes	If yes, optional wetland site ID:	Wetland Area 2
Indicators of wetland hydrology present?	Yes		

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-14 was collected in a forested component to Wetland Area 2.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Salix amygdaloides*	40	Y	FACW
2 *Populus deltoides*	40	Y	FAC
3			
4			
5			
	80	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Salix amygdaloides*	30	Y	FACW
2 *Populus deltoides*	30	Y	FAC
3			
4			
5			
	60	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Symphyotrichum lanceolatum*	30	Y	FAC
2 *Parthenocissus quinquefolia*	30	Y	FACU
3 *Ambrosia trifida*	10	N	FAC
4 *Verbena hastata*	10	N	FACW
5			
6			
7			
8			
9			
10			
	80	=Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 6 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 83.33% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	110	x 3 =	330
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column totals	220 (A)		610 (B)

Prevalence Index = B/A = 2.77

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-6	10YR 3/2	100					Silt	Profile Moist to 14 Inches
6-14	10YR 3/2	95	7.5YR 4/6	5	C	M	Silt	Profile Moist to 14 Inches
14-18	10YR 3/2	95	7.5YR 4/6	5	C	M	Silt	Profile Wet to 18 Inches

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicator F6 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and two secondary indicators of wetland hydrology were observed within the data point location. Signatures of ground saturation were observed on the 2011 aerial photograph.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 7, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-15

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): None

Slope (%): 0-1 | Lat: 40.979457 | Long: -95.917556 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	No		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-15 was collected upland to Wetland Area 2.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Cornus drummondii*	15	Y	NI
2 *Sambucus nigra*	10	Y	FACW
3			
4			
5			
	25	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Trifolium repens*	25	Y	FACU
2 *Helianthus annuus*	25	Y	FACU
3 *Ambrosia trifida*	20	Y	FAC
4 *Salsola tragus*	10	N	FACU
5 *Phalaris arundinacea*	5	N	FACW
6 *Asclepias syriaca*	5	N	FACU
7 *Taraxacum officinale*	2	N	FACU
8			
9			
10			
	92	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 40.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	20	x 3 =	60
FACU species	67	x 4 =	268
UPL species	0	x 5 =	0
Column totals	102 (A)		358 (B)

Prevalence Index = B/A = 3.51

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ___ Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was not observed at the data point location.

SOIL

Sampling Point: W-15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-14	10YR 3/1	100					Silt	Profile Moist to 18 Inches
14-18	10YR 3/1	100					Silty Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

Hydric soil indicators were not observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and two secondary indicators of wetland hydrology were not observed within the data point location. Signatures of ground saturation were observed on the 2011 aerial photograph.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 7, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-16

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): None

Slope (%): 0-1 | Lat: 40.979138 | Long: -95.916733 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 2

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-16 was collected in an emergent area outside of the forested component of Wetland Area 2.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Populus deltoides*	35	Y	FAC
2 *Salix amygdaloides*	25	Y	FACW
3			
4			
5			
	60	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Equisetum arvense*	50	Y	FAC
2 *Symphyotrichum lanceolatum*	25	Y	FAC
3 *Salsola tragus*	20	Y	FACU
4 *Phragmites australis*	5	N	FACW
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 80.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	30	x 2 =	60	
FAC species	110	x 3 =	330	
FACU species	20	x 4 =	80	
UPL species	0	x 5 =	0	
Column totals	160	(A)	470	(B)

Prevalence Index = B/A = 2.94

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-10	10YR 3/1	98	7.5YR 5/6	2	C	PL/M	Silty Clay	Profile Moist to 18 Inches
10-18	10YR 3/1	90	7.5YR 4/6	10	C	M	Silty Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:
Hydric soil indicator F6 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
One primary and one secondary indicator of wetland hydrology was observed within the data point location. The area to the south is bermed which is likely retaining sufficient hydrology for dominant hydrophytic vegetation.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 7, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-17

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Linear Depression | Local relief (concave, convex, none): Concave

Slope (%): 0-2 | Lat: 40.978801 | Long: -95.916012 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed?

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

Are "normal circumstances" present? Yes

(If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Yes	**Is the sampled area within a wetland?**	Yes
Hydric soil present?	Yes	If yes, optional wetland site ID:	Wetland Area 2
Indicators of wetland hydrology present?	Yes		

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-17 was along the eastern boundary of the site between a berm to the west and an embankment to an adjoining cornfield to the east.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Salix amygdaloides*	45	Y	FACW
2			
3			
4			
5			
	45	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Phalaris arundinacea*	60	Y	FACW
2 *Ambrosia trifida*	20	Y	FAC
3 *Urtica dioica*	19	N	FACW
4 *Asclepias incarnata*	1	N	OBL
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	1	x 1 =	1
FACW species	124	x 2 =	248
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	145 (A)		309 (B)

Prevalence Index = B/A = 2.13

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-2	10YR 4/1	100					Silt	Soil Saturated at Surface
2-18	10YR 4/1	80	7.5YR 4/6	20	C	PL/M	Silty Clay	Profile Wet to 18 Inches

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:
Hydric soil indicator F3 was observed in the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	1
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Four primary and two secondary indicators of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 7, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-18

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Ridge/Berm | Local relief (concave, convex, none): Convex

Slope (%): 1-2 | Lat: 40.979053 | Long: -95.916012 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	No		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-18 was collected upland to Wetland Area

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Bromus inermis*	75	Y	FACU
2 *Asclepias syriaca*	10	N	FACU
3 *Helianthus annuus*	5	N	FACU
4 *Phalaris arundinacea*	5	N	FACW
5 *Urtica dioica*	5	N	FACW
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column totals	100 (A)		380 (B)

Prevalence Index = B/A = 3.80

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ___ Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was not observed at the data point location.

SOIL

Sampling Point: W-18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-2	10YR 3/2	100					Silty Clay	Soil Moist to 18 Inches
2-18	10YR 3/2	98	7.5YR 4/6	2	C	M	Silty Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

Hydric soil indicators were not observed in the soil profile. Redox features did not meet 5 percent criteria for a soil chroma of 2.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and two secondary indicators of wetland hydrology were not observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 7, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-19

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Drainage | Local relief (concave, convex, none): Concave

Slope (%): 1-2 | Lat: 40.979249 | Long: -95.917721 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 4

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-19 was collected within an emergent area within a drainage. This data points represents several smaller emergent wetlands along the drainage.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Phalaris arundinacea*	70	Y	FACW
2 *Persicaria amphibia*	30	Y	OBL
3			
4			
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	30	x 1 =	30
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		170 (B)

Prevalence Index = B/A = 1.70

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- X Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:
A soil profile was not collected at the data point location due to the presence of dominant obligate vegetation and inundation. Hydric soils are assumed by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	4
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Three primary and three secondary indicators of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 13, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-20

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area Above Drainage | Local relief (concave, convex, none): None

Slope (%): 0-2 | Lat: 40.979575 | Long: -95.918899 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed? Are "normal circumstances" present? Yes

Are vegetation _____, soil _____, or hydrology _____ naturally problematic? (If needed, explain any answers in remarks.)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Yes	**Is the sampled area within a wetland?**	No
Hydric soil present?	Yes	If yes, optional wetland site ID:	
Indicators of wetland hydrology present?	No		

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-20 was collected in level area approximately 30 feet north a drainage.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Elymus virginicus*	50	Y	FACW
2 *Ipomoea hederacea*	20	Y	FAC
3 *Echinocystis lobata*	15	N	FACW
4 *Ambrosia trifida*	15	N	FAC
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	65	x 2 =	130
FAC species	35	x 3 =	105
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		235 (B)

Prevalence Index = B/A = 2.35

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-6	10YR 3/2	100					Silt	Somewhat Moist to 18 Inches
6-15	10YR 3/1	98	10YR 5/6	2	C	M	Silt	
15-18	10YR 3/2	98	10YR 5/6	2	C	M	Silty Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicator F6 was observed within the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and/or two secondary indicators of wetland hydrology were not observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 13, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-21

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Drainage | Local relief (concave, convex, none): Concave

Slope (%): 0-1 | Lat: 40.979539 | Long: -95.91933 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 4

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-21 was collected in within wetland emergent fringe along a drainage. This data point represents several small wetland areas along the edge of the drainage.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Phalaris arundinacea*	35	Y	FACW
2 *Persicaria amphibia*	35	Y	OBL
3 *Helianthus grosseserratus*	30	Y	FACW
4			
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	35	x 1 =	35
FACW species	65	x 2 =	130
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		165 (B)

Prevalence Index = B/A = 1.65

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-4	10YR 3/1	100					Silty Clay	Soil Saturated at Surface
4-14	10YR 3/1	95	7.5YR 5/8	5	C	M	Clay	Somewhat Moist to 18 Inches
14-18	10YR 3/2	70	10YR 5/8	30	C	M	Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:
Hydric soil indicator F6 was observed within the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface water present?	X		4
Water table present?		X	
Saturation present? (includes capillary fringe)	X		0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Three primary and three secondary indicators of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 13, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-22

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Flat Area | Local relief (concave, convex, none): None

Slope (%): 0-1 | Lat: 40.98035 | Long: -95.919738 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed?

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-22 was collected west of the forested component to Wetland Area 1.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1 *Salix amygdaloides*	5	Y	FACW
2			
3			
4			
5			
	5	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Morus alba*	10	Y	FAC
2			
3			
4			
5			
	10	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Solidago gigantea*	45	Y	FACW
2 *Ambrosia trifida*	35	Y	FAC
3 *Ipomoea hederacea*	20	Y	FAC
4			
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	65	x 3 =	195
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	115 (A)		295 (B)

Prevalence Index = B/A = 2.57

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-1	10YR 3/2	100					Silt	Moist from 0 to 1 Inches
1-16	10YR 3/2	98	7.5YR 5/8	2	C	M	Silty Clay	Somewhat Moist to 18 Inches
16-18	10YR 3/1	95	10YR 5/8	5	C	M	Silty Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

Hydric soil indicators were not observed within the soil profile. Redox percentage requirements were not met ofr a chroma of 2 from 1 to 16 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Three primary and three secondary indicators of wetland hydrology were observed within the data point location. The data point was collected approximately 15 feet east of the drainage.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 13, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-23

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Bank | Local relief (concave, convex, none): Cone

Slope (%): 0-1 | Lat: 40.977952 | Long: -95.919806 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	No		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-23 was collected on a bank of an unnamed intermittent stream approximately 5 feet above the water level.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Commelina communis*	50	Y	FACU
2 *Glycine max*	30	Y	NI
3 *Bromus inermis*	15	N	FACU
4 *Amaranthus retroflexus*	1	N	FACU
5			
6			
7			
8			
9			
10			
	96	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	66	x 4 =	264
UPL species	0	x 5 =	0
Column totals	66 (A)		264 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ___ Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was not observed at the data point location.

SOIL

Sampling Point: W-23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-18	10YR 3/2	100					Silt Loam	Somewhat Moist to 18 Inches

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

Hydric soil indicators were not observed within the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and/or two secondary indicators of wetland hydrology were not observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 13, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-24

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 1-3 | Lat: 40.97701 | Long: -95.919073 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation ____, soil ____, or hydrology ____ significantly disturbed?

Are vegetation ____, soil ____, or hydrology ____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 5

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-24 was collected near the southern boundary of the site approximately 35 feet east of an unnamed intermittent stream.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Phalaris arundinacea*	95	Y	FACW
2 *Ipomoea hederacea*	5	N	FAC
3			
4			
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: ____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		205 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-5	10YR 3/1	100					Silty Clay	Somewhat Moist to 18 Inches
5-18	10YR 3/1	98	10YR 5/8	2	C	M	Silty Clay	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicator F6 was observed within the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches): ___
Water table present?	Yes	___	No	X	Depth (inches): ___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches): ___

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and two secondary indicators of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 13, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-25

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Stream | Local relief (concave, convex, none): Concave

Slope (%): 1-2 | Lat: 40.978866 | Long: -95.92037 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 6

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-25 was collected on an emergent bech along an unnamed intermittent stream.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Phalaris arundinacea*	75	Y	FACW
2 *Abutilon theophrasti*	5	N	FACU
3			
4			
5			
6			
7			
8			
9			
10			
	80	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column totals	80 (A)		170 (B)

Prevalence Index = B/A = 2.13

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-6	10YR 3/1	100					Silty Clay	Saturated 0 to 6 Inches
0-6	10YR 3/2	100					Silty Clay	
6-8	10YR 3/1	100					Silty Clay	Wet to 8 Inches
8-18	10YR 3/1	98	7.5YR 5/8	2	C	M	Silty Clay	Moist to 18 Inches

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

Hydric soil indicator F6 was observed within the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface water present?	X		12
Water table present?		X	
Saturation present? (includes capillary fringe)	X		0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Three primary three secondary indicators of wetland hydrology were observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 13, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-26

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Bank | Local relief (concave, convex, none): None

Slope (%): 1-3 | Lat: 40.978812 | Long: -95.92037 | Datum: WGS 1984

Soil Map Unit Name: Colo-Nodaway complex, frequently flooded (7773) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-26 was collected in an upland location to Wetland Area 6 near an unnamed intermittent stream.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1 *Ulmus pumila*	5	Y	UPL
2			
3			
4			
5			
	5	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Phalaris arundinacea*	98	Y	FACW
2 *Acer saccharinum*	2	N	FACW
3			
4			
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0	
FACW species	100	x 2 =	200	
FAC species	0	x 3 =	0	
FACU species	0	x 4 =	0	
UPL species	5	x 5 =	25	
Column totals	105	(A)	225	(B)

Prevalence Index = B/A = 2.14

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ___ Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was not observed at the data point location. However, the prevalence index is less than 3.0 meeting hydrophytic vegetation criteria.

SOIL

Sampling Point: W-26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-4	10YR 3/2	100					Silty Clay	Soils Moist to 18 Inches
3-6	10YR 3/2	98	7.5YR 5/8	2	C	M	Silt Loam	
6-18	10YR 3/2	100					Silt Loam	

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

Hydric soil indicators were not observed within the soil profile. Thickness requirements were not met for indicator F6, and redox concentrations did not meet a 5 percent requirement for a soil chroma of 2.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	___	No	X	Depth (inches):	___
Water table present?	Yes	___	No	X	Depth (inches):	___
Saturation present? (includes capillary fringe)	Yes	___	No	X	Depth (inches):	___

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and/or two secondary indicators of wetland hydrology were not observed within the data point location.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 13, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-27

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Swale | Local relief (concave, convex, none): Concave

Slope (%): 1-2 | Lat: 40.97817 | Long: -95.92037 | Datum: WGS 1984

Soil Map Unit Name: Judson silt loam, 2 to 6 percent slopes (7231) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation X, soil X, or hydrology ___ significantly disturbed? Are "normal circumstances" present? No

Are vegetation ___, soil ___, or hydrology ___ naturally problematic?

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes	**Is the sampled area within a wetland?**	Yes
Hydric soil present?	Yes	If yes, optional wetland site ID:	Wetland Area 7
Indicators of wetland hydrology present?	Yes		

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-27 was collected in a swale in the western portion of the site. This area was previously farmed as residual corn stalks were observed.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Ammannia coccinea*	95	Y	OBL
2 *Cyperus esculentus*	5	N	FACW
3			
4			
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: ___)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	95	x 1 =	95
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		105 (B)

Prevalence Index = B/A = 1.05

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-16	10YR 3/1	85	7.5YR 4/6	15	C	M	Silty Clay	Saturated at Surface

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:
Hydric soil indicator F6 was observed within the soil profile. Soil depth was not attained to at least 24 inches for disturbed soils since hydric soil indicators were observed within the first 16 inches.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	2
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Four primary and three secondary indicators of wetland hydrology were observed within the data point location. The entire farmed wetland area was not inundated. However, the soil saturated was present throughout the farmed wetland area.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 13, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-28

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Cone

Slope (%): 2-3 | Lat: 40.978167 | Long: -95.921312 | Datum: WGS 1984

Soil Map Unit Name: Judson silt loam, 2 to 6 percent slopes (7231) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation X, soil X, or hydrology ___ significantly disturbed?

Are vegetation ___, soil ___, or hydrology ___ naturally problematic?

Are "normal circumstances" present? No

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	No		
Hydric soil present?	No	**Is the sampled area within a wetland?**	No
Indicators of wetland hydrology present?	No	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-28 was collected in an upland location between Wetland Area 7 and Wetland Area 8. This area is currently farmed.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Glycine max*	99	Y	NI
2 *Amaranthus retroflexus*	1	N	FACU
3			
4			
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: ___)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column totals	1 (A)		4 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- ___ Dominance test is >50%
- ___ Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? N

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was not observed at the data point location. The soybean (*Glycine max*) crop appeared to be in good condition and did not exhibit signs of water stress suggesting this area does not receive sufficient surface hydrology to promote dominant hydrophytic growth.

SOIL

Sampling Point: W-28

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks
0-4	10YR 3/1	100					Silty Clay	Somewhat Moist to 20 Inches
4-7	10YR 3/1	95	7.5YR 4/6	5	C	M	Silty Clay	
7-24	10YR 2/1	100					Clay	Saturated at 20 Inches

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? N

Remarks:

Hydric soil indicators were not observed within the soil profile. Depth requirements for indicator F6 were not met within the first 12 inches of the soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes		No	X	Depth (inches):	
Water table present?	Yes	X	No		Depth (inches):	20
Saturation present? (includes capillary fringe)	Yes		No	X	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

One primary and/or secondary indicators of wetland hydrology were not observed within the data point location. Indicator A2 did not meet depth requirements.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Fourmile Industrial Park | City/County: Council Bluffs / Pottaw. | Sampling Date: August 13, 2015

Applicant/Owner: City of Plattsmouth | State: Nebraska | Sampling Point: W-29

Investigator(s): Brandon Johnson | Section, Township, Range: Section 26, Township 12N, Range 13E

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave

Slope (%): 0-2 | Lat: 40.978199 | Long: -95.921516 | Datum: WGS 1984

Soil Map Unit Name: Judson silt loam, 2 to 6 percent slopes (7231) | NWI Classification: Not Indicated

Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)

Are vegetation _____, soil _____, or hydrology _____ significantly disturbed?

Are vegetation _____, soil _____, or hydrology _____ naturally problematic?

Are "normal circumstances" present? Yes

SUMMARY OF FINDINGS

(If needed, explain any answers in remarks.)

Hydrophytic vegetation present?	Yes		
Hydric soil present?	Yes	**Is the sampled area within a wetland?**	Yes
Indicators of wetland hydrology present?	Yes	If yes, optional wetland site ID:	Wetland Area 8

Remarks: (Explain alternative procedures here or in a separate report.)

Data point W-29 was collected along the west boundary of the site in a depression. The majority of this wetland area is located outside the site boundary.

Tree Stratum (Plot size: 2,827'2 - 30'R)	Absolute % Cover	Dominant Species	Indicator Staus
1			
2			
3			
4			
5			
	0	=Total Cover	
Sapling/Shrub stratum (Plot size: 707'2 - 15'R)			
1			
2			
3			
4			
5			
	0	=Total Cover	
Herb stratum (Plot size: 78.5'2 - 5'R)			
1 *Phalaris arundinacea*	65	Y	FACW
2 *Typha latifolia*	25	Y	OBL
3 *Sagittaria latifolia*	7	N	OBL
4 *Asclepias incarnata*	3	N	OBL
5			
6			
7			
8			
9			
10			
	100	=Total Cover	
Woody vine stratum (Plot size: _____)			
1			
2			
	0	=Total Cover	

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	35	x 1 =	35
FACW species	65	x 2 =	130
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	100 (A)		165 (B)

Prevalence Index = B/A = 1.65

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Dominant hydrophytic vegetation was observed at the data point location.

SOIL

Sampling Point: W-29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type*	Loc**	Texture	Remarks

*Type: C = Concentration, D = Depletion, RM = Reduced Matrix, MS = Masked Sand Grains. **Location: PL = Pore Lining, M = Matrix

Hydric Soil Indicators:

- ___ Histisol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils:

- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L)**
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Very Shallow Dark Surface (TF12)
- X Other (explain in remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric soil present? Y

Remarks:

A soil profile was not collected due to the presence of inundation and dominant obligate hydrophytic vegetation. Hydric soils are assumed by definition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface water present?	Yes	X	No		Depth (inches):	1
Water table present?	Yes		No	X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes	X	No		Depth (inches):	0

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Two primary and two secondary indicators of wetland hydrology were observed within the data point location.

APPENDIX E
Ground Photographs

Alternative 3,
Conveyance
system.

Aquatic Resource Report

Plattsmouth Wastewater Treatment Plant Relocation
Sewerage/Wastewater Conveyance System
Plattsmouth, Cass County, Nebraska

July 7, 2020
Terracon Project No. 05207234

Prepared for:
Olmsted & Perry Consulting Engineers Inc.
Omaha, Nebraska

Prepared by:
Terracon Consultants, Inc.
Omaha, Nebraska

terracon.com
Terracon
Environmental ■ Facilities ■ Geotechnical ■ Materials

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AQUATIC RESOURCE REPORT
PLATTSMOUTH WASTEWATER TREATMENT PLANT RELOCATION SEWERAGE/WASTEWATER CONVEYANCE SYSTEM PLATTSMOUTH, CASS COUNTY, NEBRASKA

Terracon Project No. 05207234
July 7, 2020

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) was retained by Mr. Steve Perry of Olmsted & Perry to conduct a wetland delineation on approximately four miles of proposed utility right -of way(ROW), including the two small lots, located within the City of Plattsmouth, hereafter referred to as the site. The delineation included approximately 50 feet on either side of the roadway or 100' wide area where no roadway is present. The site is proposed for the construction of the sewage/wastewater conveyance system (SWCS) for a new wastewater treatment plant for the City. The purpose of the delineation was to evaluate the presence and extent of wetlands and other waterways on the site that may be considered Waters of the United States (WOUS), regulated by Section 404 of the Clean Water Act (CWA).

The site is located throughout the City of Plattsmouth extending northeast from East Wiles Road toward the intersection of Main Street and River Road in the Plattsmouth, Cass County, Nebraska. The site is located at latitude-longitude coordinates of approximately 41.011235 and -95.876139, which are located in Environmental Protection Agency Ecoregion 47h (Western Corn Belt Plains, Nebraska/Kansas Loess Hills). The majority of the site is located in Hydrologic Unit Code (HUC) 10240001010, flowing towards the Missouri River with a small area of the site in the west located in HUC 1020020209 flowing towards the Platte River near its confluence with the Missouri River.

A site inspection was completed on May 29, 2020, by Mr. Philip Lind and Ms. Kim Copenhaver of Terracon to delineate potential wetlands and other Waters of the United States (WOUS) on the site. Prior to the site inspection, a review of the available natural resource maps, aerial photographs and other online resources was completed to assist with locating aquatic resource areas at the site. These maps and resources include the following :

- United States Geological Survey (USGS) Topographic Map
- Web Soil Survey Map
- Aerial Photographs
- United States Fish and Wildlife Service (USFWS) National Wetland inventory
- Google Earth and other available online resources
- Weather Underground
- Federal Emergency Management Agency Flood Hazard Maps

According to Weather Underground, the weather history data for the area of Plattsmouth,

Nebraska during the 14 days preceding the site visit (May 15, 2019 to May 28, 2019), the precipitation over this time period was 2.15 inches. A total of six rain events with measurable precipitation were recorded within seven days prior to the site visit, May 23, 2020 through May 28, 2020, receiving a total of 1.69 inches of rain in that period. The total rainfall for the region in the month of May is recorded as approximately 3.25 inches, which is a departure of 1.51 inches from the 30- year average of 4.76 inches (a typical year). The average temperature prior to the site visit was 69.7 degrees Fahrenheit (°F). The supporting weather data can be accessed at https://w2.weather.gov/climate/index.php?wfo=oax.

Delineation Techniques

The wetland delineation was conducted in general accordance with the 1987 United States Army Corps of Engineers (USACE) Wetlands Delineation Manual and the 2010 Regional Supplement to the USACE Wetland Delineation Manual: Midwest Region. These manuals describe the methods for delineating wetlands in natural conditions using three wetland characteristics: hydrophytic (wetland) vegetation, hydric soils, and wetland hydrology. Other delineation methods for disturbed sites and managed landscapes are also described in these manuals. Vegetation, soils, and hydrology were characterized within each suspect area to evaluate for the presence of wetland characteristics. Streams were evaluated on the site using standard guidance from the USACE using mapping references and observations of stream characteristics such as defined bed and banks, evidence of an ordinary high water mark and water sorted materials.

The following definitions are used when describing streams and drainages:

- Flow Characteristics:
  - Perennial: contains water at all times except during extreme drought.
  - Intermittent: carries water a considerable portion of the time; but ceases to flow occasionally or seasonally.
  - Ephemeral: carries water only during and immediately after periods of rainfall or snowmelt.

Other aquatic resources that may have the potential to be WOUS such as: ponds, basins, drainages, ditches, lakes, canals, and other waterways are reviewed and delineated, if they occur on the site.

Wetland data sheets, maps and a discussion of the aquatic resources delineated at the site are provided as appendices in this report. Photographs of the site are also provided in this report.

2.0 SITE DESCRIPTION

The project site primarily consists of road corridors with road shoulders and manicured landscaping within road Right-of-Ways. One area of the site (On the green Pump Station) along Bradford Drive includes vacant wooded lot. A second area of the site (Headworks Structure and

Pump Station) located at the SE corner of Main and 1st Streets, includes a vacant lot that is primarily unvegetated. Eight streams and two wetlands were identified on the site. These aquatic resources are described in detail below.

The site lies within close proximity to the Missouri River within a well-established mixed-use area of the City of Plattsmouth. The site is bordered by agricultural crop land, residential neighborhoods, commercial businesses, farmsteads, and park land. The Missouri River is located east of the site. Several man-made drainages and swales were found throughout the area, with culverts occasionally carrying flow under the roads. The flow direction was generally north-northeast towards the Missouri River and its tributaries.

A topographic map is included in Appendix A, Exhibits 1A-1C demonstrating the topography of the site. The National Wetland Inventory (NWI) map is shown as Exhibits 2A-2B of Appendix A.

Based on the Web Soil Survey results, the following soil types were mapped on the site:

Map Unit Symbol	Map Unit Name	National Hydric Soil
7231	Judson silt loam, 2-6 percent slopes	Yes
7710	Albaton silty clay, 0-2 percent slopes, occasionally flooded	Yes
7741	Haynie silt loam, 0-2 percent slopes, occasionally flooded	Yes
7750	Nodaway silt loam, occasionally flooded	Yes
7773	Colo-Nodaway complex, frequently flooded	Yes
7867	Nodaway silt loam, channeled, frequently flooded	Yes
7880	Onawa silty clay, occasionally flooded	Yes
8019	Marshall silty clay loam, 2-6 percent slopes	No
8025	Marshal silty clay loam, 6-11 percent slopes, eroded	No
8071	Monona silt loam, 11-17 percent slopes, eroded	No
8073	Monona silt loam, 17-30 percent slopes	No
8079	Monona silt loam, 6-11 percent slopes, eroded	No

A copy of the soil survey maps are provided on Exhibits 3A-3D in Appendix A.

3.0 WETLAND DELINEATION OBSERVATIONS

The findings of the field work are provided below and are shown on the Aquatic Resource Maps provided as Exhibits 4A-4G Appendix A. Aerial photographs of the site are provided in Appendix B, wetland data sheets are provided in Appendix C and ground photographs taken during the inspection, are provided in Appendix D.

3.1 Wetlands

Based on field observations, one Palustrine Emergent (PEMA) and one Palustrine Forested (PFO) wetland were identified and delineated on the site. The boundaries of these aquatic resources are shown on the Aquatic Resource maps provided in Appendix A. The wetlands would be characterized as emergent marsh or forested wetlands and are described below.

Wetland Description	
Wetland ID	Wetland Area A (PFO)
Size	0.0013 acres
Sampling Point(s)	Wet A
Photo ID	P-10
Association w/ other waters	Situated along the northern portion of Stream 6.
Jurisdictional Opinion	Likely jurisdictional. The site is within close proximity of the Missouri River.
Wetland Description	Wetland A is comprised of a PFO wetlands along the fringes and sand bars of a perennial stream . Hydrology of the wetland appears to be supplied by the runoff from adjacent lands and an outfall structure. Virginia Waterleaf were found along the fringes of this wetland, in addition to aquatic fauna.
Non-Wetland (Upland) Description	
Upland Data Point(s)	Up A
Was there a marked difference between the wetland and upland?	Vegetative cover was a markedly different between wetland to upland. Upland was approximately 6 to 10 inches higher than the wetland area. Upland vegetation consisted of Sticky Bedstraw (*Galium aparine)* and Dead Nettle Lamium amplexicaule (*Lamium amplexicaule).*

Wetland Description	
Wetland ID	Wetland B (PEMA) with some shrubs
Size	0.003 acres
Sampling Point(s)	Wet B
Photo ID	P-15
Association w/ other waters	Adjacent to Stream 8,
Jurisdictional Opinion	Possibly jurisdictional
Wetland Description	Wetland B (PEMA) is located approximately 450 feet west of the intersection of E. Wiles Road and South 15th Street in southern portion of the site. Dominant vegetation at this wetland is Reed Canary Grass (*Phalaris arundinacea*) and Peachleaf Willow (*Salix amygdlodees).* Hydrology of the wetland appears to be supplied by the overflow from field runoff. The wetland sits at the headwater of a field drainage as it develops into a more defined stream channel with intermittent flow

Non-Wetland (Upland) Description	
Data Point(s)	Up B
Was there a marked difference between the wetland and upland?	The data points were taken at higher elevation than Wetland B. Vegetative cover was markedly different between upland and wetland. Upland vegetation consisted of Sticky Bedstraw (*Galium aparine)* and Smooth brome (*Bromus inermis).*

3.2 Streams and other Waters of the United States (WOUS)

Based on field observations, eight streams were identified and delineated on the site. These streams appear to be primarily natural watercourses; however, some have been manipulated to manage flows and reduce erosion. Culverts were found in various locations of the review area, carrying stream flows under roadways. Within the developed urbanized lands, stream flows appear to be supplemented by stormwater infrastructure discharges, including combined storm-sewer overflow. In the rural areas of the review area streams were headwater streams which collect intermittent overland flow from fields into channelized drainages. Flows within the streams were typical for the season being classified primarily as intermittent, which is confirmed by the USGS Topographic survey. Ephemeral drainages were not mapped. Only one ephemeral drainage was observed near the western limit of the review area.

All of the streams identified are located within the Missouri River watershed

Drainage Description	
Waterway ID	Stream 1
Approximate Length Onsite	60 feet on Site
Name of Water Body	Unnamed tributary
Location	Northern portion of the On the Green, approximately 225 feet south of Happy Hollow Court and Queens Way
Waterway Type	Stream with well-defined bed and bank. Stream is culverted under the roadway for approximately 100 feet or more.
Flow Characteristics	Intermittent to Perennial
Ordinary High-Water Mark (OHWM)	Yes
Defined Bed & Bank	Yes
Channel Width Across OHWM	3 to 4 feet
Channel Width Across Bank Top	6 to 8 feet
Channel Width Across Water Surface or Dry Bottom	2 to 3 feet
Water Depth	3 to 6 inches
Water Clarity	Cloudy
Water Color	Light brown
Stream Flow	Slow
Stream Flow Direction	West

Drainage Description	
Waterway ID	Stream 1
Bank Height	Left Bank: 4 to 6 feet
	Right Bank: 3 to 5 feet
% Slope on Banks	Left Bank: 75% slope
	Right Bank: 75% slope
Bank Substrate	40% Vegetation; 60% Soil
Bed Substrate	Silty/Clay, some broken concrete
Riparian Vegetation Descr. & Width	Established wooded riparian area.
Wetland Fringe	No
Aquatic Organisms	Aquatic invertebrates
Aquatic Habitat Discussion	High quality habitat, established wooded area with a flowing stream

Drainage Description	
Waterway ID	Stream 2
Approximate Length Onsite	300 feet on Site
Name of Water Body	Unnamed Tributary
Location	Northern portion of the site, near South 1st Street and Main Street. Located within the flood plain of the Missouri River.
Waterway Type	Stream with defined bed and bank. Appears to be the remnant of a natural stream that has been piped through town. Stream receives combined sewage overflow and during storm events.
Flow Characteristics	Perennial
Ordinary High-Water Mark (OHWM)	Yes
Defined Bed & Bank	Yes
Channel Width Across OHWM	15 to 20 feet
Channel Width Across Bank Top	25 to 30 feet
Channel Width Across Water Surface or Dry Bottom	5 to15 feet
Water Depth	2 to 4 feet
Water Clarity	Cloudy
Water Color	Light brown
Stream Flow	Slow
Stream Flow Direction	Southeast
Bank Height	Left Bank: 10 to 15 feet
	Right Bank: 4 to 6 feet
% Slope on Banks	Left Bank: 70% slope
	Right Bank: 45% slope
Bank Substrate	90% Vegetation; 10% Soil
Bed Substrate	Silty/Clay and vegetated Polygonum in sections
Riparian Vegetation Descr. & Width	Weedy opportunistic species along unpaved parking area and eroding banks

Drainage Description (cont.)	
Wetland Fringe	Yes, downstream of project area on sand deposits and bank sluff to the southwest, Polygonum and Rumex
Aquatic Organisms	Aquatic invertebrates and frogs
Aquatic Habitat Discussion	Modest habitat, stormwater flows from the city and combined sewage water overflow discharges in this location at time. Several small industrial and mechanical shops are located on adjacent properties. Water quality is somewhat degraded.

Drainage Description (May not be on site)	
Waterway ID	Stream 3
Approximate Length Onsite	85 feet on Site
Name of Water Body	Unnamed Tributary
Location	Approximately 50 feet east from the intersection of Lincoln Avenue and 3rd Avenue.
Waterway Type	Stream within manmade channel
Flow Characteristics	Perennial
Ordinary High-Water Mark (OHWM)	Yes
Defined Bed & Bank	Yes
Channel Width Across OHWM	2 to 4 feet
Channel Width Across Bank Top	8 to 10 feet
Channel Width Across Water Surface or Dry Bottom	2 to 4 feet
Water Depth	3 to 4 inches
Water Clarity	Cloudy
Water Color	Light brown
Stream Flow	Moderate
Stream Flow Direction	North
Bank Height	Left Bank: 10-15 feet
	Right Bank: 10-15 feet
% Slope on Banks	Left Bank: 45% slope
	Right Bank: 60% slope
Bank Substrate	80% Vegetation; 20% Soil Rip rap
Bed Substrate	Silty/Clay and vegetated in sections
Riparian Vegetation Descr. & Width	weeds and few shrubs, within fenced in area
Wetland Fringe	No
Aquatic Organisms	None
Aquatic Habitat Discussion	Modest habitat, water is shallow, Stream is culverted at both ends and fenced in, stormwater detention

Drainage Description	
Waterway ID	Stream 4
Approximate Length Onsite	825 feet on Site
Name of Water Body	Unnamed Tributary
Location	West of Rylander park along Lincoln Avenue
Waterway Type	Unnamed Tributary manicured park/roadside setting
Flow Characteristics	Perennial
Ordinary High-Water Mark (OHWM)	Yes
Defined Bed & Bank	Yes
Channel Width Across OHWM	3 to 4 feet
Channel Width Across Bank Top	4 to 6 feet
Channel Width Across Water Surface or Dry Bottom	2 to 3 feet
Water Depth	10 to 12 inches
Water Clarity	Cloudy
Water Color	Light brown
Stream Flow	Slow
Stream Flow Direction	South
Bank Height	Left Bank: 2 to 4 feet
	Right Bank: 2 to 4 feet
% Slope on Banks	Left Bank: 80% slope
	Right Bank: 80% slope
Bank Substrate	10% Vegetation; 90% Soil
Bed Substrate	Silty/Clay and vegetated Polygonum in sections
Riparian Vegetation Descr. & Width	Mowed lawn, narrow strip of mature trees with some shrubs then mowed park setting.
Wetland Fringe	No
Aquatic Organisms	Aquatic invertebrates and frogs
Aquatic Habitat Discussion	Moderate habitat, grass is frequently mowed Evidence of regular maintenance and channel shaping.

Drainage Description	
Waterway ID	Stream 5
Approximate Length Onsite	60 feet on Site
Name of Water Body	Unnamed Drainage
Location	Approximately 100 feet southwest from the intersection of Lincoln Avenue and South 12th street
Waterway Type	Stream with defined bed and bank
Flow Characteristics	Intermittent
Ordinary High-Water Mark (OHWM)	Yes
Defined Bed & Bank	Yes
Channel Width Across OHWM	4 to 6 feet

Drainage Description	
Waterway ID	Stream 5
Channel Width Across Bank Top	10 to 12 feet
Channel Width Across Water Surface or Dry Bottom	3-4 feet
Water Depth	NA
Water Clarity	Cloudy
Water Color	Brown
Stream Flow	Intermittent
Stream Flow Direction	East
Bank Height	Left Bank: 10 to 12 feet
	Right Bank: 10 to 12 feet
% Slope on Banks	Left Bank: 75% slope
	Right Bank: 75% slope
Bank Substrate	75% Vegetation; 25% Soil
Bed Substrate	Silty/Clay and vegetated in small sandbar sections
Riparian Vegetation Descr. & Width	Mowed grass with some trees and shrubs.
Wetland Fringe	None
Aquatic Organisms	Aquatic invertebrates
Aquatic Habitat Discussion	Modest habitat, broken concrete buried in the stream bed and banks. Some evidence of regular maintenance and ditching.

Drainage Description	
Waterway ID	Stream 6
Approximate Length Onsite	1,425 feet on Site
Name of Water Body	Unnamed Tributary
Location	East side of Smith Avenue, starting at the intersection of Smith Avenue and 15th Avenue
Waterway Type	Manicured and shaped roadside channel stream channel with defined bed and bank.
Flow Characteristics	Intermittent to Perennial
Ordinary High-Water Mark (OHWM)	Yes
Defined Bed & Bank	Yes
Channel Width Across OHWM	4 to 6 feet
Channel Width Across Bank Top	6 to 8 feet
Channel Width Across Water Surface or Dry Bottom	2 to 3 feet
Water Depth	6 to 12 inches
Water Clarity	Cloudy
Water Color	Light brown
Stream Flow	Slow
Stream Flow Direction	North
Bank Height	Left Bank: 6 to 8 feet

Drainage Description	
Waterway ID	Stream 6
	Right Bank: 6 to 8 feet
% Slope on Banks	Left Bank: 70% slope
	Right Bank: 60% slope
Bank Substrate	90% Vegetation; 10% Soil
Bed Substrate	Silty/Clay and vegetated
Riparian Vegetation Descr. & Width	Mowed grasses, park and roadside maintenance. Evidence of regular ditching and shaping. Some trees
Wetland Fringe	No, except for small area of wetland A just outside of the project site.
Aquatic Organisms	Aquatic invertebrates and frogs
Aquatic Habitat Discussion	Good habitat with a wooded riparian corridor.

Drainage Description (maybe off site)	
Waterway ID	Stream 7
Approximate Length Onsite	60 feet on Site
Name of Water Body	Unnamed Tributary
Location	Approximately 25 feet south from the intersection of Smith Avenue and 16th Avenue
Waterway Type	Pond overflow drainage
Flow Characteristics	Intermittent
Ordinary High-Water Mark (OHWM)	No
Defined Bed & Bank	No
Channel Width Across OHWM	1 to 2 feet
Channel Width Across Bank Top	2 to 4 feet
Channel Width Across Water Surface or Dry Bottom	NA
Water Depth	None
Water Clarity	NA
Water Color	NA
Stream Flow	NA
Stream Flow Direction	Easterly
Bank Height	Left Bank: 1 to 2 feet
	Right Bank: 1 to 2 feet
% Slope on Banks	Left Bank: 85% slope
	Right Bank: 85% slope
Bank Substrate	90% Vegetation; 10% Soil
Bed Substrate	Silty/Clay and vegetated
Riparian Vegetation Descr. & Width	Field area, herbaceous vegetation only.
Wetland Fringe	No
Aquatic Organisms	Aquatic invertebrates and frogs
Aquatic Habitat Discussion	Modest habitat for intermittent drainageway

Drainage Description	
Waterway ID	Stream 8
Approximate Length Onsite	35 feet on Site
Name of Water Body	Unnamed Tributary
Location	Southern portion of the site, approximately 475 feet west from East Wiles Road and Chicago Avenue.
Waterway Type	Headwater Stream with defined bed and bank from cropland overflow
Flow Characteristics	Intermittent
Ordinary High-Water Mark (OHWM)	Yes
Defined Bed & Bank	Yes
Channel Width Across OHWM	4 to 6 feet
Channel Width Across Bank Top	4 to 6 feet
Channel Width Across Water Surface or Dry Bottom	3 to 4 feet
Water Depth	3 to 6 inches
Water Clarity	Cloudy
Water Color	Light brown
Stream Flow	Slow
Stream Flow Direction	South
Bank Height	Left Bank: 10 to 12 inches
	Right Bank: 4 to 6 inches
% Slope on Banks	Left Bank: 90% slope
	Right Bank: 90% slope
Bank Substrate	90% Vegetation; 10% Soil
Bed Substrate	Silty/Clay and vegetated Polygonum in a few sections
Riparian Vegetation Descr. & Width	
Wetland Fringe	PEMA and PSS Phalaris and willow
Aquatic Organisms	Aquatic invertebrates and frogs
Aquatic Habitat Discussion	Moderate habitat, receives farm field runoff

4.0 AQUATIC RESOURCE SUMMARY

This report describes the methods and procedures used to delineate the aquatic resources on the subject site that could be considered wetlands and other WOUS in accordance with the field procedures and methods accepted by the USACE for the Midwest Region. Two wetland areas and eight streams were identified on the site. The wetlands total approximately 0.004 acres on the site and would be generally classified as a freshwater emergent marsh wetland (PEMA) with pockets of forested (PFO) within Wetland A. The PFO Wetland consisted of Green Ash (Fraxinus pennsylvanica) and Box Elder (Acer negundo) trees. The wetlands are dominated by wetland plants typically found within drainages or stream cooridors throughout the region. These wetlands would not be considered unique or pristine due to the ongoing mowing, the vegetative make up, and their position in the land scape.

The eight streams were identified on the site, many of which appear to be manipulated to accommodate roadways. Some of the streams formed a small pocket with wetland vegetation where the stream flows slowed or where in places where a small gravel bar had formed. A direction of flow varied depending on the topography. Our review of the topographic maps indicate that these streams primarily flow to the Missouri River which is generally within a mile of the project site. The streams are primarily located within an urban setting and receive stormwater runoff from manicured lawns and roads. Many of the streams are culverted beneath roads and have some sort of maintenance work, including channel shaping, or rock placed for stabilization. The streams have somewhat fair water quality and habitat value given the conditions of the landscapes that drain to them and moderate wildlife use.

The following tables summarize the aquatic resources delineated on the site and our opinion regarding potential justification under the Clean Water Act (CWA). Please note that wetland boundaries and stream locations were surveyed in the field using a Trimble GPS Unit (submeter accuracy). The stream measurements were estimated using aerial photographs and the field survey points, with onsite confirmation of their approximate location, width and characteristics.

WETLAND TABLE

Wetland ID	Wetland Area (acres)	Wetland Classification	Wetland Subclass	Potentially Jurisdiction
Wetland A	0.001	PFO	Floodplain Depression	Yes
Wetland B	0.003	PEMA	Floodplain Depression	Yes
Total	**0.004 acres**			

[1]PEMA – Palustrine Emergent Temporarily flooded
[2]PFO – Palustrine Forested

DRAINAGE TABLE

Stream ID	Length on Site (feet)	Flow Class	Width avg (feet)	Potentially Jurisdictional	State Water Quality Classification
Stream 1	**60**	Perennial	5	Likely Jurisdictional	Not Listed
Stream 2	**300**	Perennial	4	Likely Jurisdictional	Not Listed
Stream 3	**85**	Perennial	3	Likely Jurisdictional	Not Listed
Stream 4	**825**	Perennial	4	Likely Jurisdictional	Not Listed
Stream 5	**60**	Perennial	4	Likely Jurisdictional	Not Listed
Stream 6	**1425**	Perennial	4	Likely Jurisdictional	Not Listed
Stream 7	**60**	Intermittent	3	Likely Jurisdictional	Not Listed
Stream 8	**35**	Perennial	5	Likely Jurisdictional	Not Listed

The approximate wetland boundaries and the location of potential WOUS are depicted on the Wetland Delineation Maps (Exhibits 4A-4G, Appendix A). Please note that *only* the USACE can

make the final determination on the jurisdictional status of wetlands and WOUS, and on the need for permit processing and compensatory mitigation.

5.0 CONCLUSIONS

According to our field observations and survey results, approximately 0.004 acres of wetlands and approximately 2,790 feet of perennial and intermittent streams were identified on the site. These aquatic resources may be regulated by the USACE under Section 404 of the CWA. However, only the USACE can make the final determination on the limits of and the jurisdictional status of wetlands, streams or other waterbodies, and on the need for permit processing and compensatory mitigation if impacts to the jurisdictional areas are proposed.

If you require documentation that a USACE permit may or may not be required for your project, you should submit a copy of this report to the USACE at the following address, with a request to perform an approved jurisdictional determination, a copy of the site plans for development, and a permit application form to:

United States Army Corps of Engineers
Omaha Regulatory Office - Wehrspann
8901 South 154th Street
Omaha NE 68138

Additional information about the USACE and their regulations can be found at USACE Regulatory Branch Website - www.usace.army.mil/missions/civil-works/regulatory-program-and-permits/.
A link to regionally specific information can be found by following the district links provided at this website.

If requested, Terracon can submit this report along with the above listed information to the USACE on behalf of the client.

6.0 GENERAL COMMENTS

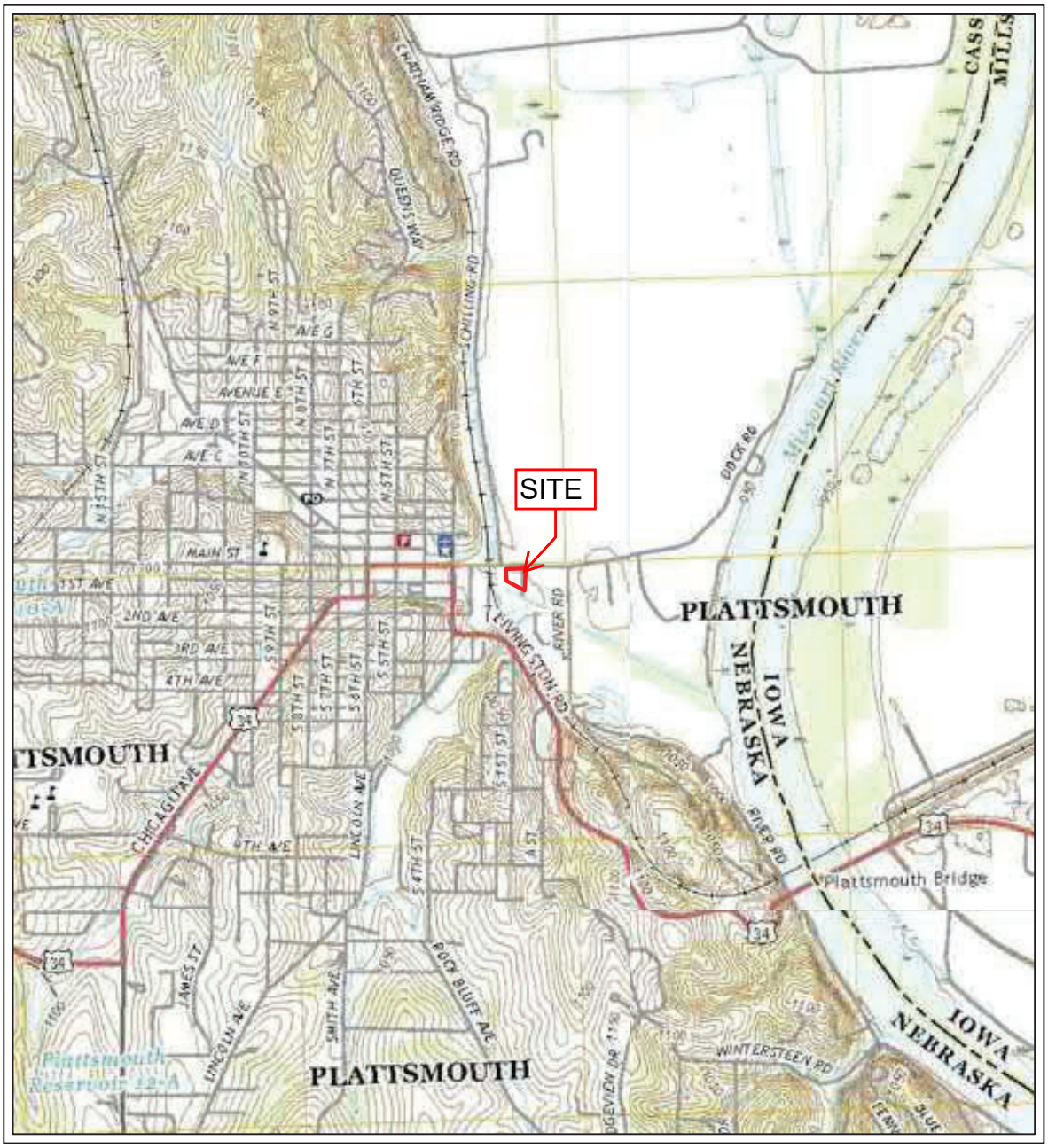
The wetland delineation was conducted using the 1987 USACE Manual and the 2010 Midwest Supplement. The manuals provide assistance for delineating wetlands based on the three criteria discussed for sites that have natural conditions and other methods for sites where the landscape is disturbed. However, the manual alone may not have provided enough information to document whether or not the three criteria were met. Various physical properties or other visual signs used to evaluate whether the three wetland criteria areas were satisfied may not be straightforward, especially in disturbed or problem areas. The manual also allows the user to visually estimate certain indicators such as the percentage of area covered by dominant species for the entire community. Terracon did not attempt to identify every possible plant species and did not classify soil type by laboratory methods. Due to seasonal changes and or site disturbances, Terracon

cannot guarantee the area to exhibit or not to exhibit wetland characteristics at all times of the year. The limitations of this wetland delineation should be recognized.

This report has been prepared in accordance with generally accepted scientific and engineering evaluation practices. This report is for the exclusive use of the client for the project being discussed. No warranties, either express or implied, are intended or made.

APPENDIX A
Exhibits

UNITED STATES - DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY



SCALE 1:24 000

KILOMETERS 1 .5 0 1 2

1000 0 1000 2000

METERS 1 .5 0 1

FEET 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

CONTOUR INTERVAL 10 FEET

NORTH AMERICAN VERTICAL DATUM OF 1988

PLATTSMOUTH, NEBRASKA
QUADRANGLE
2017
7.5 MINUTE SERIES (TOPOGRAPHIC)

N

Project Mngr: KAC	Project No. 05207234	Terracon Consulting Engineers and Scientists	TOPOGRAPHIC / LOCATION MAP
Drawn By: PAI	Scale:	15080 A CIRCLE OMAHA, NE 68144	**Headworks Structure and Pump Station**
Checked By: KAM	File No. 05207234C01	PH. (402) 330-2202 FAX. (402) 330-7606	Plattsmouth WWTP Relocation
Approved By: MRH	Date: 5/11/20		Sewage/Wastewater Conveyance System
			Plattsmouth, NE

Exhibit 1A

UNITED STATES - DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY

SCALE 1:24 000

KILOMETERS 1 .5 0 1 2

1000 0 1000 2000

METERS 1 .5 0 1

FEET 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

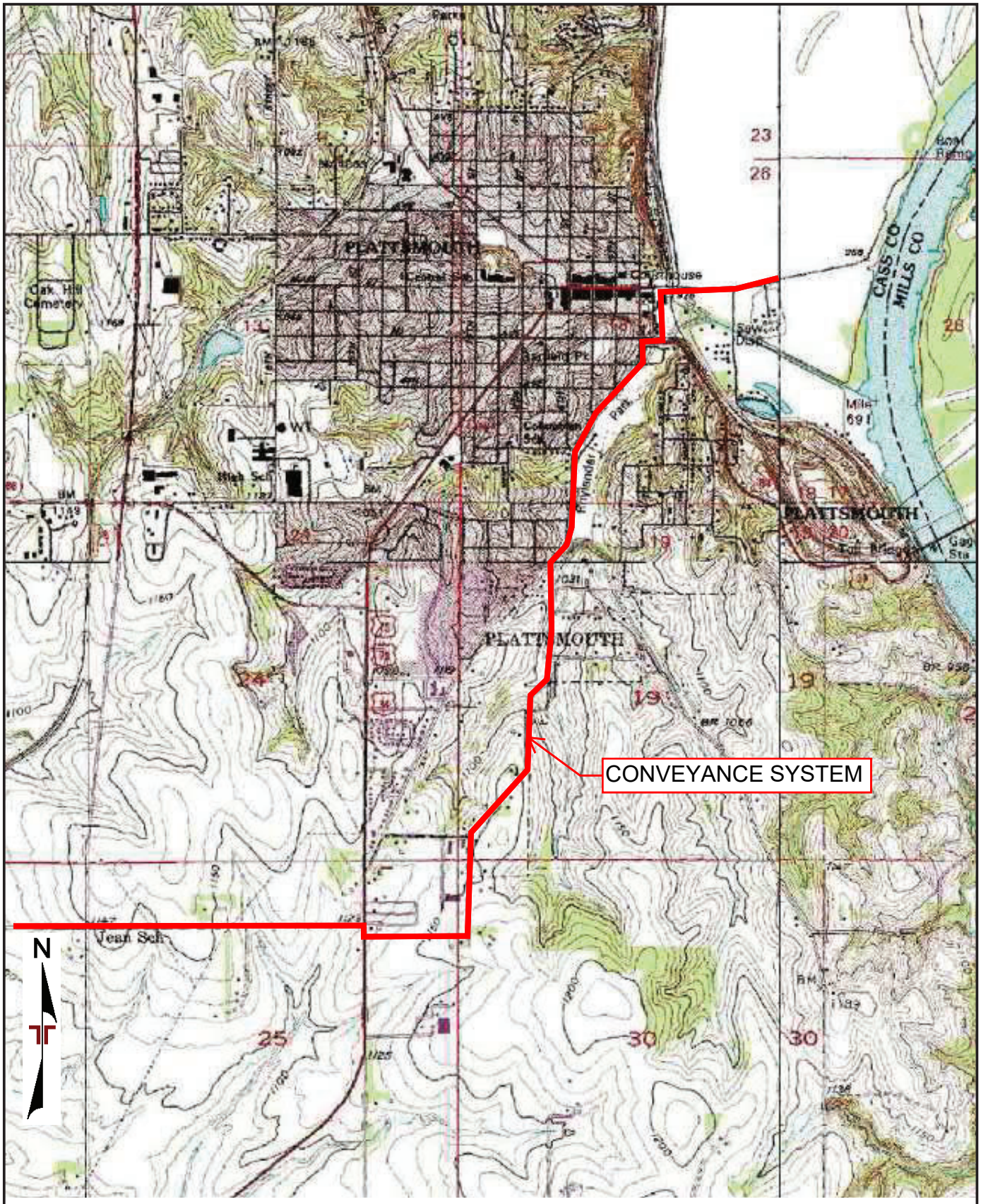
CONTOUR INTERVAL 10 FEET

NORTH AMERICAN VERTICAL DATUM OF 1988

N

PLATTSMOUTH, NEBRASKA
QUADRANGLE
2017
7.5 MINUTE SERIES (TOPOGRAPHIC)

Project Mngr: KAC	Project No. 05207234	Terracon Consulting Engineers and Scientists	TOPOGRAPHIC / LOCATION MAP
Drawn By: PAI	Scale:	15080 A CIRCLE OMAHA, NE 68144	**On the Green Pump Station** Plattsmouth WWTP Relocation Sewage/Wastewater Conveyance System Plattsmouth, NE
Checked By: KAM	File No. 05207234C01	PH. (402) 330-2202 FAX. (402) 330-7606	Exhibit 1B
Approved By: MRH	Date: 5/11/20		



AERIAL PHOTOGRAPHY PRO DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

Project Manager: KAC	Project No. 05207234	Terracon 15080 A Cir Omaha, NE 68144-5558	TOPOGRAPHIC MAP **Conveyance Route** Plattsmouth WWTP Relocation Sewage/Wastewater Conveyance System Plattsmouth, NE	Exhibit 1C
Drawn by: PEL	Scale: 1"=2,000'			
Checked by: KAC	File Name: 05207234			
Approved by: JH	Date: 6/15/2020			

June 30, 2020

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.

IMAGE COURTESY OF NWI MAPPER

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: KAC	Project No. 05207234
Drawn by: PEL	Scale:
Checked by: KAC	File Name: NWI
Approved by: JH	Date: 6/30/20

Terracon
15080 A Cir
Omaha, NE 68144-5558

NWI MAP

On the Green Pump Station
Plattsmouth WWTP Relocation
Sewage/Wastewater Conveyance System
Plattsmouth, NE

Exhibit
2A

June 30, 2020

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.

IMAGE COURTESY OF NWI MAPPER

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: KAC	Project No. 05207234
Drawn by: PEL	Scale:
Checked by: KAC	File Name: NWI
Approved by: JH	Date: 6/30/20

Terracon
15080 A Cir
Omaha, NE 68144-5558

NWI MAP

Headworks and Conveyance System
Plattsmouth WWTP Relocation
Sewage/Wastewater Conveyance System
Plattsmouth, NE

Exhibit
2B

Project Manager: KAC	Project No. 05207234	Terracon 15080 A Cir Omaha, NE 68144-5558	SOIL MAP	Exhibit
Drawn by: PEL	Scale:		**On the Green Pump Station** Plattsmouth WWTP Relocation Sewage/Wastewater Conveyance System Plattsmouth, NE	3A
Checked by: KAC	File Name: SOILS A			
Approved by: JH	Date: 6/30/20			

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cass County, Nebraska
Survey Area Data: Version 19, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

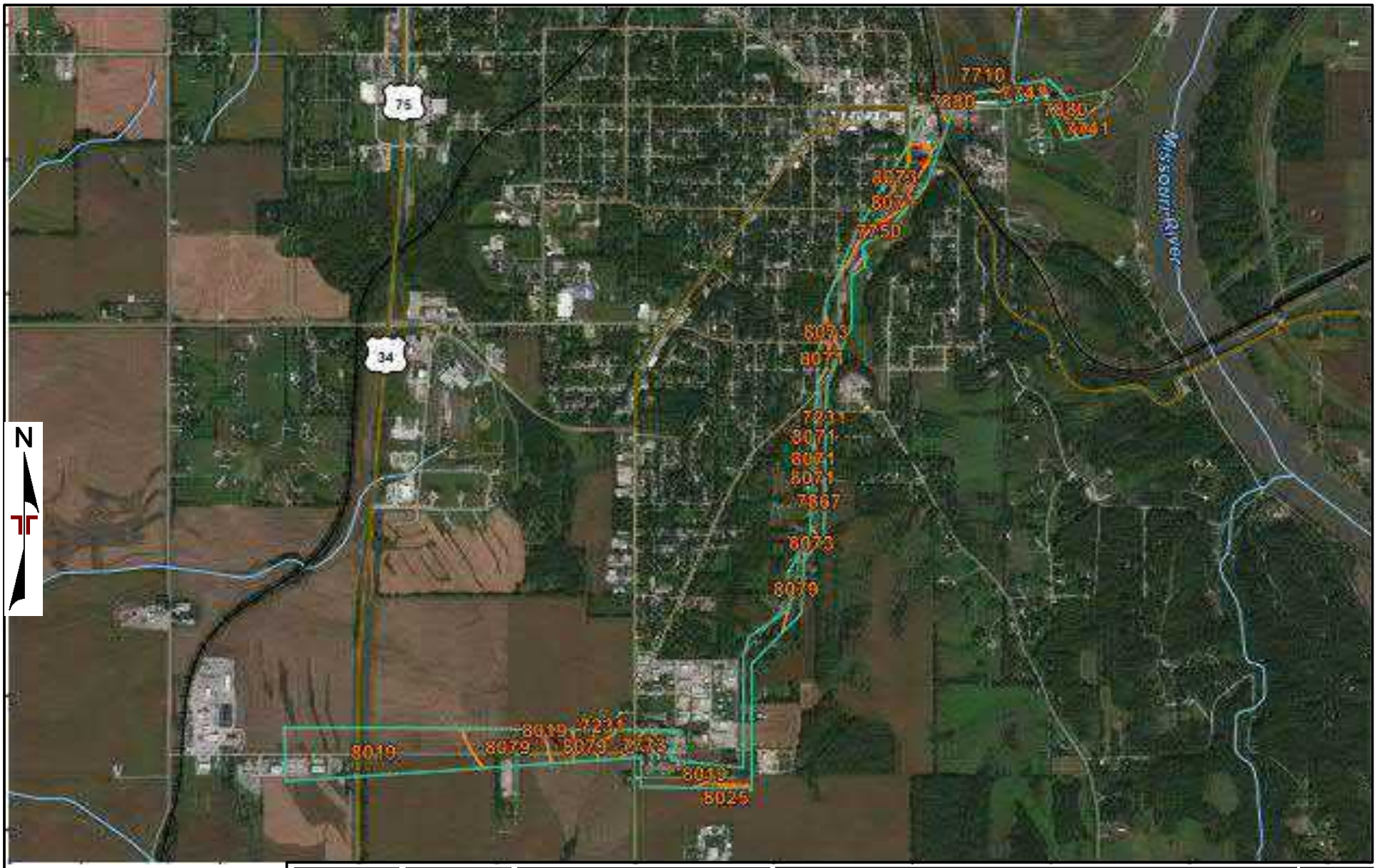
Date(s) aerial images were photographed: Feb 1, 2014—Dec 1, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
7231	Judson silt loam, 2 to 6 percent slopes	0.1	1.8%
8071	Monona silt loam, 11 to 17 percent slopes, eroded	0.9	18.1%
8073	Monona silt loam, 17 to 30 percent slopes	2.9	59.9%
8094	Monona-Ida silt loams, 30 to 60 percent slopes	1.0	20.2%
Totals for Area of Interest		**4.8**	**100.0%**

Project Manager: KAC	Project No. 05207234	Terracon 15080 A Cir Omaha, NE 68144-5558	SOIL MAP	Exhibit
Drawn by: PEL	Scale:		**On the Green Pump Station** Plattsmouth WWTP Relocation Sewage/Wastewater Conveyance System Plattsmouth, NE	3B
Checked by: KAC	File Name: SOILS A			
Approved by: JH	Date: 6/30/20			



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY WEB SOIL SURVEY

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	KACKAC
Drawn by:	PELPEL
Checked by:	KAC
Approved by:	JH

Project No.	05207234
Scale:	
File Name:	soil b
Date:	6/30/20

Terracon

15080 A Cir

Omaha, NE 68144-5558

SOIL MAP

Headworks and Conveyance System
Plattsmouth WWTP Relocation
Sewage/Wastewater Conveyance System
Plattsmouth, NE

Exhibit

3C

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cass County, Nebraska
Survey Area Data: Version 19, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 1, 2014—Dec 1, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
7231	Judson silt loam, 2 to 6 percent slopes	7.1	4.4%
7710	Albaton silty clay, 0 to 2 percent slopes, occasionally flooded	0.2	0.1%
7741	Haynie silt loam, 0 to 2 percent slopes, occasionally flooded	8.6	5.4%
7750	Nodaway silt loam, occasionally flooded	18.6	11.6%
7773	Colo-Nodaway complex, frequently flooded	4.0	2.5%
7867	Nodaway silt loam, channeled, frequently flooded	4.7	2.9%
7880	Onawa silty clay, occasionally flooded	5.3	3.3%
8019	Marshall silty clay loam, 2 to 6 percent slopes	73.4	45.9%
8025	Marshall silty clay loam, 6 to 11 percent slopes, eroded	1.1	0.7%
8071	Monona silt loam, 11 to 17 percent slopes, eroded	11.7	7.3%
8073	Monona silt loam, 17 to 30 percent slopes	4.1	2.6%
8079	Monona silt loam, 6 to 11 percent slopes, eroded	21.4	13.3%
Totals for Area of Interest		**160.1**	**100.0%**

Project Manager: KAC	Project No. 05207234	Terracon 15080 A Cir Omaha, NE 68144-5558	SOIL MAP	Exhibit
Drawn by: PEL	Scale:		**Headworks and Conveyance System** Plattsmouth WWTP Relocation Sewage/Wastewater Conveyance System Plattsmouth, NE	3D
Checked by: KAC	File Name: SOILS B			
Approved by: JH	Date: 6/30/20			

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

Project Manager: KAC	Project No. 05207234	Terracon	Aquatic Resource Map – On The Green	Exhibit
Drawn by: PEL	Scale:	15080 A Cir	**On the Green Pump Station**	4A
Checked by: KAC	File Name: 05207234 OTG	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation	
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System	
			Plattsmouth, NE	

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

Project Manager: KAC	Project No. 05207234	Terracon	Aquatic Resource Map
Drawn by: PEL	Scale:	15080 A Cir	**Headworks Structure and Pump Station**
Checked by: KAC	File Name: 05207234 PSN	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System
			Plattsmouth, NE

Exhibit

4B

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

Project Manager: KAC	Project No. 05207234	Terracon	Aquatic Resource Map	Exhibit
Drawn by: PEL	Scale:	15080 A Cir	**Conveyance System**	4C
Checked by: KAC	File Name: 05207234 SAN	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation	
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System	
			Plattsmouth, NE	

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

Project Manager: KAC	Project No. 05207234	Terracon	Aquatic Resource Map
Drawn by: PEL	Scale:	15080 A Cir	**Conveyance System**
Checked by: KAC	File Name: 05207234 SAC	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System
			Plattsmouth. NE

Exhibit

4D

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

Project Manager: KAC	Project No. 05207234	Terracon	Aquatic Resource Map
Drawn by: PEL	Scale:	15080 A Cir	**Conveyance System**
Checked by: KAC	File Name: 05207234	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System
			Plattsmouth, NE

Exhibit

4E

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: KAC	Project No. 05207234
Drawn by: PEL	Scale:
Checked by: KAC	File Name: E Wiles 4F
Approved by: JH	Date: 6/16/20

Terracon
15080 A Cir
Omaha, NE 68144-5558

Aquatic Resource Map

Conveyance System
Plattsmouth WWTP Relocation
Sewage/Wastewater Conveyance System
Plattsmouth, NE

Exhibit
4F

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: KAC	Project No. 05207234
Drawn by: PEL	Scale:
Checked by: KAC	File Name: 4F
Approved by: JH	Date: 6/16/20

Terracon

Omaha, NE 68144-5558

Aquatic Resource Map

Conveyance System
Plattsmouth WWTP Relocation
Sewage/Wastewater Conveyance System
Plattsmouth, NE

Exhibit

4G

APPENDIX B
Aerial Photographs

AERIAL PHOTOGRAPHY PRO DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

Project Manager: KAC	Project No: 05207234	Terracon	AERIAL PHOTOGRAPH 2012	Exhibit
Drawn by: PEL	Scale:	15080 A Cir Omaha, NE 68144-5558	**On the Green Pump Station** Plattsmouth WWTP Relocation Sewage/Wastewater Conveyance System Plattsmouth, NE	B1A
Checked by: KAC	File Name: 05207234			
Approved by: JH	Date: 6/15/2020			

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2018

Project Manager: KAC	Project No. 05207234	Terracon	AERIAL PHOTOGRAPH 2018
Drawn by: PEL	Scale:	15080 A Cir	**On the Green Pump Station**
Checked by: KAC	File Name: 05207234 OTG	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System
			Plattsmouth, NE

Exhibit

B1B

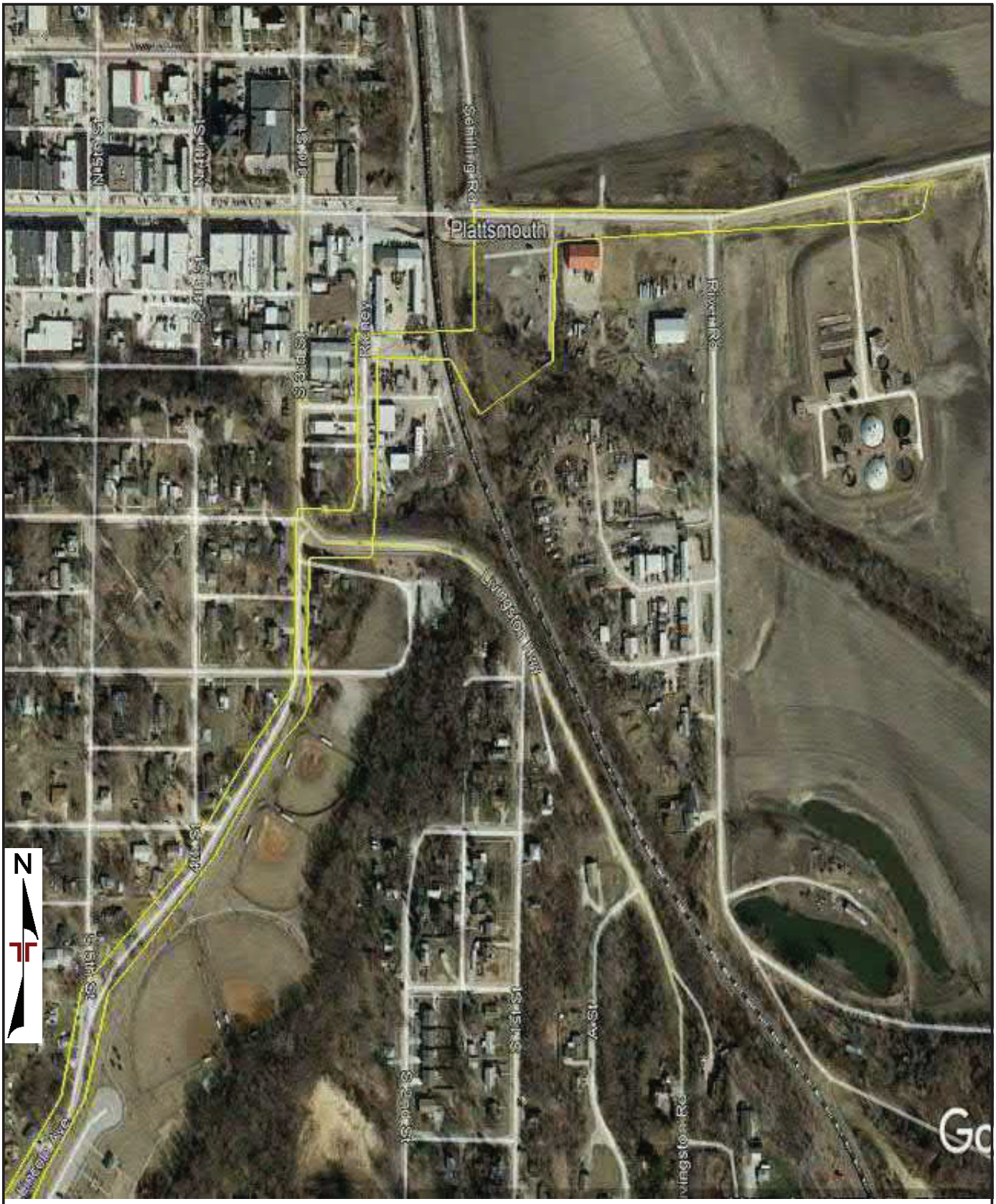


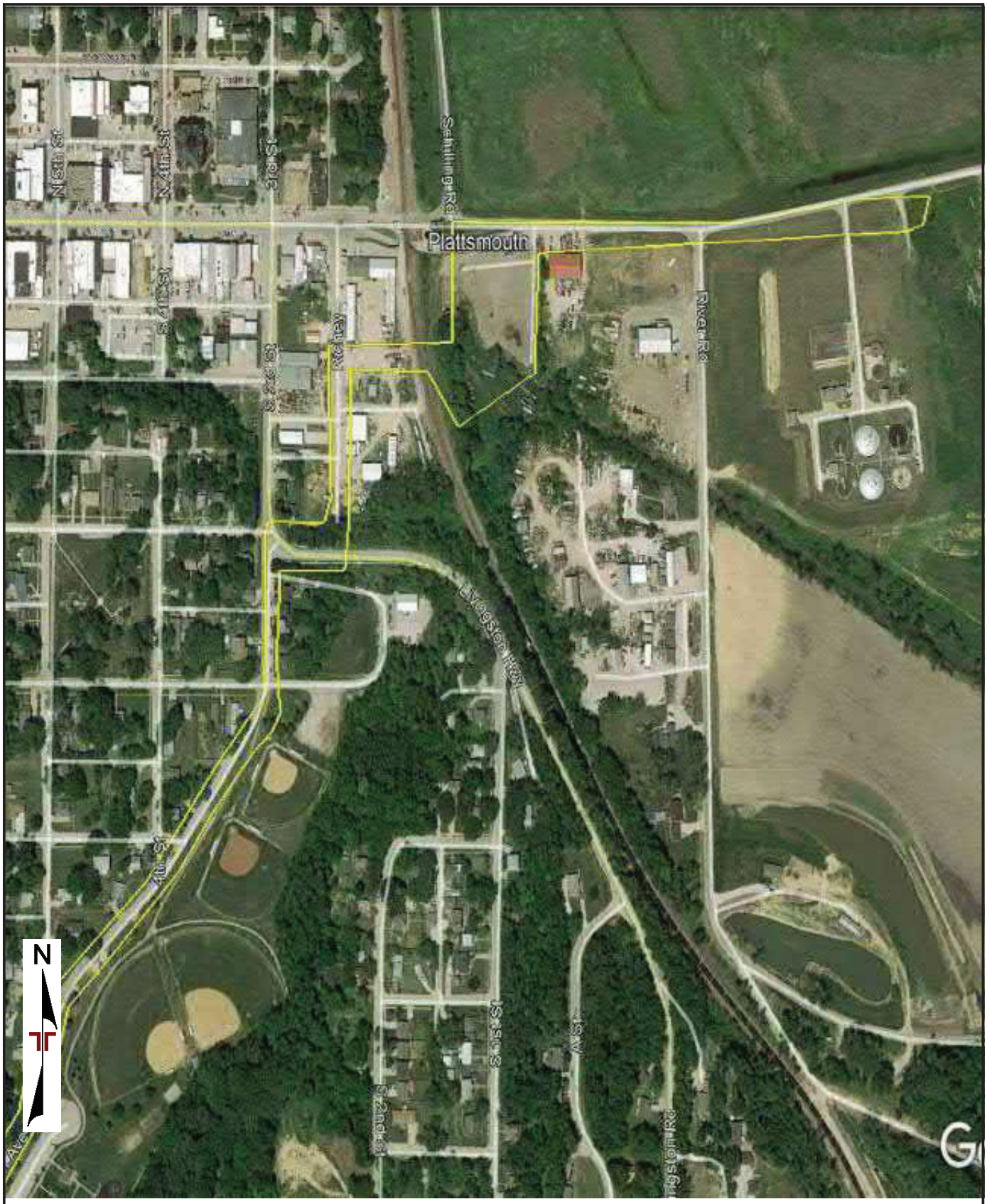
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

Project Manager: KAC	Project No. 05207234	Terracon	AERIAL PHOTOGRAPH 2012
Drawn by: PEL	Scale:	15080 A Cir	**Headworks and Conveyance System**
Checked by: KAC	File Name: 05207234 OTG	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System
			Plattsmouth, NE

Exhibit

B2A



AERIAL PHOTOGRAPHY PRO DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2018

Project Manager: KAC	Project No. 05207234	Terracon	AERIAL PHOTOGRAPH 2018	Exhibit
Drawn by: PEL	Scale:	15080 A Cir	**Headworks and Conveyance System**	B2B
Checked by: KAC	File Name: 05207234	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation	
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System	
			Plattsmouth, NE	

AERIAL PHOTOGRAPHY PRO DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

Project Manager: KAC	Project No. 05207234	Terracon	AERIAL PHOTOGRAPH 2012	Exhibit
Drawn by: PEL	Scale:	15080 A Cir	**Conveyance System**	B3A
Checked by: KAC	File Name: 05207234	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation	
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System	
			Plattsmouth, NE	

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2018

Project Manager: KAC	Project No. 05207234	Terracon	AERIAL PHOTOGRAPH 2018
Drawn by: PEL	Scale:	15080 A Cir	Conveyance System
Checked by: KAC	File Name: 05207234 OTG	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System
			Plattsmouth, NE

Exhibit

B3B

AERIAL PHOTOGRAPHY PRO DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

Project Manager: KAC	Project No. 05207234	Terracon	AERIAL PHOTOGRAPH 2012	Exhibit
Drawn by: PEL	Scale:	15080 A Cir	Plattsmouth WWTP Relocation	B4A
Checked by: KAC	File Name: 05207234	Omaha, NE 68144-5558	Sewage/Wastewater Conveyance System	
Approved by: JH	Date: 7/7/2020		Plattsmouth, NE	

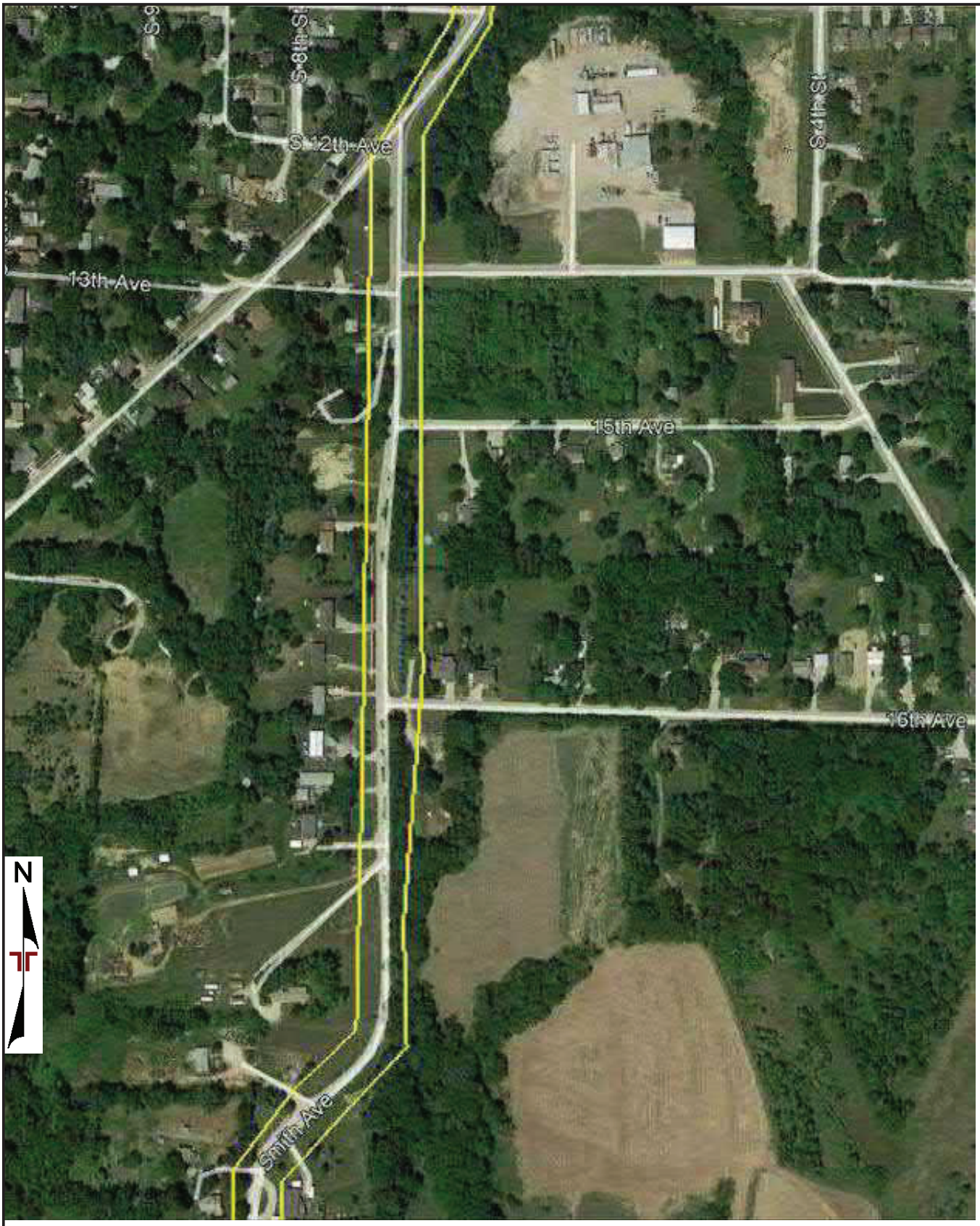


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2018

Project Manager: KAC	Project No. 05207234	Terracon	AERIAL PHOTOGRAPH 2018
Drawn by: PEL	Scale:	15080 A Cir	**Conveyance System**
Checked by: KAC	File Name: 05207234 OTG	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System
			Plattsmouth, NE

Exhibit

B4B

AERIAL PHOTOGRAPHY PRO DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

Project Manager: KAC	Project No. 05207234	Terracon	AERIAL PHOTOGRAPH 2012
Drawn by: PEL	Scale:	15080 A Cir	**Conveyance System**
Checked by: KAC	File Name: 05207234	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System
			Plattsmouth, NE

Exhibit

B5A

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2018

Project Manager: KAC	Project No. 05207234	Terracon	AERIAL PHOTOGRAPH 2018
Drawn by: PEL	Scale:	15080 A Cir	Conveyance System
Checked by: KAC	File Name: 05207234 OTG	Omaha, NE 68144-5558	Plattsmouth WWTP Relocation
Approved by: JH	Date: 6/15/2020		Sewage/Wastewater Conveyance System
			Plattsmouth, NE

Exhibit

B5B

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2012

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: KAC	Project No. 05207234
Drawn by: PEL	Scale:
Checked by: KAC	File Name: 4F
Approved by: JH	Date: 6/16/20

Terracon

15080 A Cir

Omaha, NE 68144-5558

AERIAL PHOTOGRAPH 2012

Conveyance System
Plattsmouth WWTP Relocation
Sewage/Wastewater Conveyance System
Plattsmouth, NE

Exhibit

B6A

AERIAL PHOTOGRAPHY PROVIDED BY GOOGLE EARTH 2018

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: KAC	Project No. 05207234
Drawn by: PEL	Scale:
Checked by: KAC	File Name: 4F
Approved by: JH	Date: 6/16/20

Terracon

15080 A Cir

Omaha, NE 68144-5558

AERIAL PHOTOGRAPH 2018

Conveyance System
Plattsmouth WWTP Relocation
Sewage/Wastewater Conveyance System
Plattsmouth, NE

Exhibit

B6B

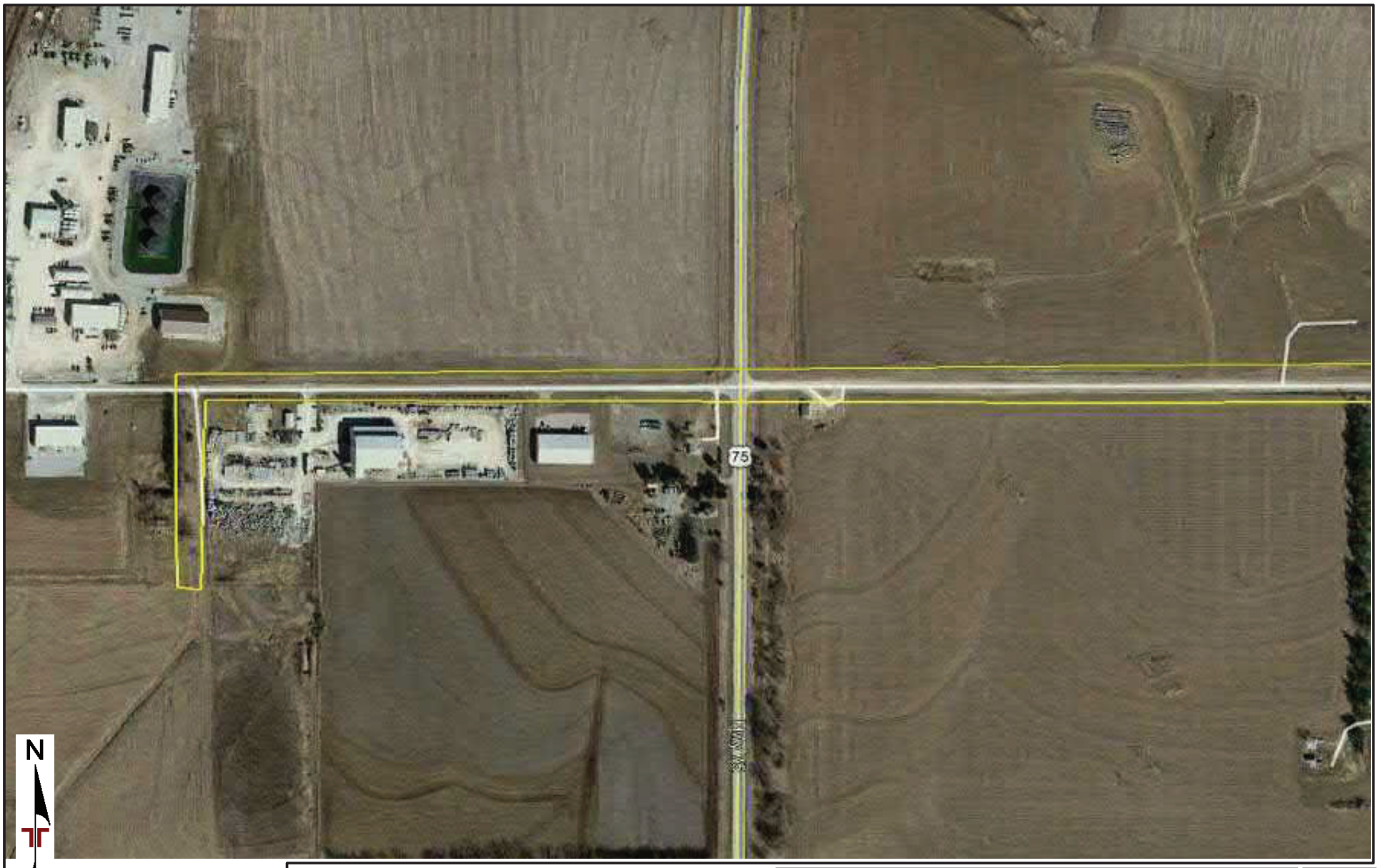


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: KAC	Project No. 05207234
Drawn by: PEL	Scale:
Checked by: KAC	File Name: 4G
Approved by: JH	Date: 6/16/20

Terracon

AERIAL PHOTOGRAPH 2012

Conveyance System
Plattsmouth WWTP Relocation
Sewage/Wastewater Conveyance System
Plattsmouth, NE

Exhibit

B7A

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: KAC	Project No. 05207234
Drawn by: PEL	Scale:
Checked by: KAC	File Name: 4G
Approved by: JH	Date: 6/16/20

Terracon
15080 A Cir
Omaha, NE 68144-5558

AERIAL PHOTOGRAPH 2018

Plattsmouth WWTP Relocation/SWCS
SE of 6th St and Wiles Rd
Plattsmouth, NE

Exhibit
B7B

APPENDIX C
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth WWTP Relocation SWCS City/County: Plattsmouth / Cass Sampling Date: 5/29/20

Applicant/Owner: Olsted & Perry State: NE Sampling Point: Up A

Investigator(s): P. Lind & K. Copenhaver Section, Township, Range: S19 T12N R14E

Landform (hillside, terrace, etc.): roadside drainage Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 40.9980 Long: -95.886909 Datum: 1984

Soil Map Unit Name: Urban land- Kennebec 0-2 percent slopes (9709) NWI classification: ____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Point taken in an area with mixed vegetation near Stream 6.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	20	Yes	FAC
2. *Juglans nigra*	20	Yes	FACU
3.			
4.			
5.			
	40	=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Galium aparine*	45	Yes	FACU
2. *Lamium amplexicaule*	15	No	UPL
3. *Angelica atropurpurea*	10	No	OBL
4. *Urtica dioica*	10	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	80	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	10	x 2 =	20
FAC species	20	x 3 =	60
FACU species	65	x 4 =	260
UPL species	15	x 5 =	75
Column Totals:	120 (A)		425 (B)

Prevalence Index = B/A = 3.54

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
____ 2 - Dominance Test is >50%
____ 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Wetland plants observed at sample location, but were not dominant. Approximatly 20% bareground.

SOIL

Sampling Point: Up A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10yr 3/3	100					Loamy/Clayey	
4-8	10yr 3/3	100					Loamy/Clayey	Saturated
8-12	10yr 3/2	90					Loamy/Clayey	
	10yr 2/1	10						
12-20	10yr 3/2	75					Loamy/Clayey	
	10yr 2/1	25						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NA

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
Hydric soil not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Hydrology not observed at this location.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth WWTP Relocation SWCS City/County: Plattsmouth / Cass Sampling Date: 5/29/20

Applicant/Owner: Olsted & Perry State: NE Sampling Point: Wet A

Investigator(s): P. Lind & K. Copenhaver Section, Township, Range: S19 T12N R14E

Landform (hillside, terrace, etc.): roadside drainage Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 40.998028 Long: -95.886942 Datum: 1984

Soil Map Unit Name: Urban land- Kennebec 0-2 percent slopes (9709) NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes X	No ___	

Remarks:
Point taken on a small wetland bench within the Stream 6.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	20	Yes	FACW
2. *Juglans nigra*	20	Yes	FACU
3. *Acer negundo*	20	Yes	FAC
4.			
5.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1.	25	Yes	
2.			
3.			
4.			
5.			
	25	=Total Cover	
Herb Stratum (Plot size: ___)			
1. *Hydrophyllum virginianum*	75	Yes	FAC
2. *Galium aparine*	15	No	FACU
3. *Lamium amplexicaule*	10	No	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1. *Vitis riparia*	5	Yes	FACW
2.			
	5	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	95	x 3 =	285
FACU species	35	x 4 =	140
UPL species	10	x 5 =	50
Column Totals:	165 (A)		525 (B)

Prevalence Index = B/A = 3.18

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Upland plants observed at sample location, but were not dominant.

SOIL

Sampling Point: Wet A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10yr 3/2	100					Loamy/Clayey	
4-8	10yr 3/2	90					Loamy/Clayey	Saturated
	10yr 2/1	10						
8-12	10yr 2/1	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NA

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:
Fluvial soils, redox features not substantial.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	___	X	___
Water Table Present?	X	___	10
Saturation Present? (includes capillary fringe)	X	___	6

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Surface water was within close proximity of the sample point. Multiple hydrology indicators were observed.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth WWTP Relocation SWCS City/County: Plattsmouth / Cass Sampling Date: 5/29/20

Applicant/Owner: Olsted & Perry State: NE Sampling Point: Up B

Investigator(s): P. Lind & K. Copenhaver Section, Township, Range: S25 T12 R13E

Landform (hillside, terrace, etc.): Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 40.985056 Long: -95.898426 Datum: 1984

Soil Map Unit Name: Monona silt loam, 6-11% slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N, Soil N, or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** **Yes** ___ **No** X
Hydric Soil Present?	Yes ___	No X	
Wetland Hydrology Present?	Yes ___	No X	

Remarks:
Point taken in an area with mixed vegetation approximately one foot higher in elevation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1. *Salix amygdaloides*	20	Yes	FACW
2.			
3.			
4.			
5.			
	20	=Total Cover	
Herb Stratum (Plot size: ___)			
1. *Bromus inermis*	50	Yes	FACU
2. *Galium aparine*	50	Yes	FACU
3. *Asclepias syriaca*	10	No	FACU
4. *Phalaris arundinacea*	2	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	112	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	22	x 2 =	44
FAC species	0	x 3 =	0
FACU species	110	x 4 =	440
UPL species	0	x 5 =	0
Column Totals:	132 (A)		484 (B)

Prevalence Index = B/A = 3.67

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Upland plants dominant wetland plants present by scarse

SOIL

Sampling Point: Up B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	10yr 3/2	100					Loamy/Clayey	
10-15	10yr 3/2	90	5yr 4/6	2	C	PL	Loamy/Clayey	
	10yr 4/2	8						
15-20	10yr 3/2	95	5yr 4/6	5	C	PL	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NA

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
No hydric soils within the root zone.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 18

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Soil became moist at 15 inches, saturated at 18 inches. Hydrology indicators were not observed.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth WWTP Relocation SWCS City/County: Plattsmouth / Cass Sampling Date: 5/29/20

Applicant/Owner: Olsted & Perry State: NE Sampling Point: Wet B

Investigator(s): P. Lind & K. Copenhaver Section, Township, Range: S25 T12 R13E

Landform (hillside, terrace, etc.): Bottom of slope Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 40.985050 Long: -96.898457 Datum: 1984

Soil Map Unit Name: Urban land- Kennebec 0-2 percent slopes (9709) NWI classification: PEMA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** **Yes** X **No** ___
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes X	No ___	

Remarks:
Point taken near intermittent stream adjacent to stream

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix amygdaloides*	10	Yes	FACW
2.			
3.			
4.			
5.			
	10	=Total Cover	
Sapling/Shrub Stratum (Plot size: ___)			
1. *Salix amygdaloides*	25	Yes	FACW
2.			
3.			
4.			
5.			
	25	=Total Cover	
Herb Stratum (Plot size: ___)			
1. *Phalaris arundinacea*	80	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80	=Total Cover	
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	115	x 2 =	230
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	115 (A)		230 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Upland plants not observed at sample location.

SOIL

Sampling Point: Wet B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10yr 4/1	100					Loamy/Clayey	Saturated
4-8	10yr 4/1	90					Loamy/Clayey	Saturated
	10yr 2/1	10						
8-15	10yr 4/2	90	5yr 4/6	5	C	PL	Loamy/Clayey	Prominent redox concentrations
	10yr 2/1	5						
15-20	10yr 2/1	95	5yr 4/6	5	C	PL	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NA

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

The lighter soils in the upper layer is likely due to field runoff soils covering the wetland soil beneath

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?	___	X	___
Water Table Present?	X	___	4
Saturation Present? (includes capillary fringe)	X	___	0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface water was within close proximity of the sample point. Multiple hydrology indicators were observed.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Plattsmouth WWTP Relocation SWCS City/County: Plattsmouth / Cass Sampling Date: 5/29/20

Applicant/Owner: Olsted & Perry State: NE Sampling Point: Up C

Investigator(s): P. Lind & K. Copenhaver Section, Township, Range: S25 T12 R13E

Landform (hillside, terrace, etc.): Field runoff Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 40.985326 Long: -95.9022476 Datum: 1984

Soil Map Unit Name: Monona silt loam, 6-11% slopes NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation N , Soil N , or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation N , Soil N , or Hydrology No naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Point taken in an area with mixed vegetation near culvert. Area supplied from field runoff.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: ____)			
1. *Phalaris arundinacea*	90	Yes	FACW
2. *Bromus inermis*	10	No	FACU
3. *Rumex altissimus*	5	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	105	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	105 (A)		230 (B)

Prevalence Index = B/A = 2.19

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks: (Include photo numbers here or on a separate sheet.)
Wetland plants doninant, upland plants present but scarse.

SOIL

Sampling Point: Up C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10yr 3/3	100					Loamy/Clayey	
4-8	10yr 3/3	90					Loamy/Clayey	
	10yr 2/2	10						
8-12	10yr 3/3	50					Loamy/Clayey	
	10yr 3/2	50						
12-20	10yr 3/3	60					Loamy/Clayey	
	10yr 4/3	40						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: NA

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Hydric soil was not observed in upper 20 inches. Hydric soils were expected beneath upper layers but not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Secondary Hydrology indicators were observed. Point taken in a low area near a culvert.

APPENDIX D
Ground Photographs

Ground Photos – Taken May 29, 2020
Plattsmouth WWTP Relocation Sewage/Wastewater Conveyance System
Plattsmouth, Nebraska
Terracon Project No. 05207234

Photo 1 (S1): View of Stream 1 located south of On the Green site.

P-2: View of Culvert and Stream 1 located on the west side of Queens Way, approximately 190 feet north of the intersection of Queens Way and Avenue I.

P-3: View of Culvert and Stream 1 located on the east side of Queens Way, approximately 60 feet northwest of the intersection of Queens Way and Avenue I.

P-4: View of Stream 2 and stormwater outfall facing northwest.

P-5: View of Stream 2 facing southeast.

P-6: View of Stream 2 facing northwest.

P-7: View of culverts on the south side of Stream 3.

P-8: View of culverts on the north side of Stream 3.

P-9: View of culverts on the south side of Stream 4.

P-10: View of Sample point WET A within Wetland A, near stream 6.

P-11: View of Stream 6 facing south.

P-12: View of Stream 7 facing west.

P-13: View of Stream 7 facing east.

P-14: View of culvert facing south towards Stream 8.

P-15: View of point Wet B within Wetland B near Stream 8.

P-16: View of point Up C, on the North side or E. Wiles road, West of Stream 8

P-17: View of Stream 8 facing south.

P-18: View of culvert draining into Stream 8.

APPENDIX C
Wildlife and Threatened and Endangered Species

August 26, 2020

Nebraska Game and Parks Commission
2200 North 33rd Street
Lincoln, Nebraska 68503

Re: City of Plattsmouth Water Supply System Relocation Project
Applicant Name: City of Plattsmouth

Start Point: South 36th Street and LaPlatte Road, Sarpy County, Nebraska
Section 29, Township 13N, Range 13E (41.071339N, -95.972795W)

End: Avenue B & 16th Street, Plattsmouth, Cass County, Nebraska
Section 13, Township 12N, Range 13E (41.013498N, -95.897873W)
Terracon Project Number: 05207584

To Whom It May Concern:

On behalf the City of Plattsmouth and Floodplain Emergency Management Agency (FEMA), an agency of the Department of Homeland Security, Terracon is submitting the above project for review by the Nebraska Game and Parks Commission (NE GPC) for review of potential impacts to listed and proposed threatened and endangered (T&E) species and critical habitats resulting from construction approximately 7.5 miles of 20-inch diameter water main at the above referenced location. The proposed project involves the transmission of a new water supply source from the Metropolitan Utilities District (MUD) Platte South Water Treatment Plant to the existing city of Plattsmouth water supply distribution system. The City's water treatment plant and wells were significantly damaged in the flood of 2019 and have a history of flooding. Exhibits describing the project are attached to for your review.

The City has applied for grant assistance from FEMA's Public Assistance Program and Nebraska Department of Environment and Energy (NDEE) State Revolving Fund to relocate the water supply system (WSS) out of the floodplain of the Missouri River during flood events. An Environmental Assessment (EA) document is being prepared as part of the National Environmental Policy Act (NEPA) documentation for funding the project. Three alternatives are being considered in this EA: a "no action" alternative, the proposed action discussed below, and a third alternative to construct a new water treatment plant at the Fourmile Industrial Park site and install the water main along a route through the City of Plattsmouth. Both the water treatment plant site and the watermain right of way for this alternative were recently reviewed by your office for the Plattsmouth Wastewater Treatment Plant relocation project. See attached correspondence and exhibits.

The proposed action / preferred alternative involves the construction of approximately 40,650 feet of a new 20-inch diameter water transmission main from the City's distribution system located in Webster Avenue to the existing MUD Platte South Water Treatment Plant located along the north side of the Platte River near South 36th Street and LaPlatte Road. Water use by the City is expected to be approximately 3 Million Gallons Per day (MGD) at peak use. The MUD has stated that they have adequate capacity within their current approvals. Therefore, no impact to the flows of the Platte River are expected to occur from this project.

The proposed watermain alignment will primarily be installed along existing road and utility right of ways (ROWs). The new transmission water main would also involve a crossing of the Platte River by means of directional bore. This methodology will be used where ever feasible to avoid impacts to aquatic resources. A wetland delineation and general wildlife habitat assessment is being completed for the project.

Terracon conducted a preliminary review using USFWS Division of Endangered Species website and the NGPC website to identify listed and proposed T&E species, as well as critical habitats that may be located on or near the proposed tower site. Based on a review of the websites the Pallid Sturgeon (*Scaphirhynchus albus*) and the Least Tern (*Sterna antillarum*) are listed as state and/or federally endangered species potentially occurring in Cass and Sarpy Counties. The American Ginseng (*Panax quinquefolium*); the Lake Sturgeon (*Acipenser fulvescens);* the Piping Plover (*Charadrius melodus*); the River Otter (*Lontra canadensis*), Western Prairie Fringed Orchid (*Platanthera praeclara*), Northern Long Eared Bat (M*yotis septenrionalis*), and the Southern Flying Squirrel (*Glaucomys volans*) are listed as threatened species or species of concern potentially occurring in Cass and Sarpy Counties.

Based on our desktop review of the project site, it is unlikely that these species and/or their suitable habitat in any measurable amount would be located at the site. The majority of the site consists of previously disturbed conditions due to a combination of mowing, agriculture, and roadside maintenance. Existing utility lines including an overhead power line were also noted within a portion of the proposed watermain ROW. The Platte River and its riparian area is in a relatively natural state within the proposed ROW crossing. However, impacts to the Platte River and its riparian areas will be avoided due to directional boring.

The project will avoid tree removal from April 1st through July 15th to avoid impacts to nesting migratory birds and to the Northern Long-Eared Bat. It is not expected that protected plant species will be impacted by the project due to disturbed conditions of the ROW and directional bore techniques near the Platte River corridor. However, a general assessment of natural vegetative conditions and other wildlife habitat will be conducted during the wetland delineation to assess the potential for the other species to be present during at the site.

Conditions expressed in the attached CERT letter relating to the Platte River crossing will be implemented as necessary. However, the directional bore under the river and its riparian area will likely avoid any impacts to protected species and their habitats. Your confirmation of all of the above, however, would be greatly appreciated.

Thank you for your response on this matter. If you have any questions concerning this letter, please do not hesitate to call me at (402) 384-7087. If you wish to respond by email, I may be reached at matthew.harbeck@terracon.com.

Sincerely,

Terracon Consultants, Inc.

Matthew Harbeck
Staff Scientist

For Kim Copenhaver
Senior Scientist

Distribution: Addressee (1)

Attachments: CERT Report
USFWS Species List
Previous Corresponded for Alternative 3 site
Vicinity Map
Project Maps
Alternate 3 Plant Site Concept Plan

Environmental Review Report

Project Information

Report Generation Date:	8/19/2020 08:47:00 AM
Project Title:	Plattsmouth Public Water Supply Relocation
User Project Number(s):	05207584
System Project ID:	NE-CERT-003002
Project Type:	Waste Water Treatment/Disposal, Sanitary Sewer Lines
Project Activities:	New construction outside muncipality - previously disturbed habitat New construction outside muncipality - previously undisturbed habitat New construction within existing municipality - previously undisturbed habitat
Project Size:	61.87 acres
County(s):	Cass; Sarpy
Watershed(s):	Lower Platte; Nemaha
Watershed(s) HUC 8:	Keg-Weeping Water; Lower Platte
Watershed(s) HUC 12:	Eaton Ditch-Keg Creek-Missouri River; Eightmile Creek; Turkey Creek-Platte River; Zwiebel Creek-Platte River
Biologically Unique Landscape(s):	Lower Platte River; Missouri River
Township/Range and/or Section(s):	T12R13ES02; T12R13ES11; T12R13ES13; T12R13ES14; T13R13ES29; T13R13ES32; T13R13ES33; T13R13ES34; T13R13ES35
Latitude/Longitude:	41.045784 / -95.936023

Contact Information

Organization:	Terracon Consultants, Inc.
Contact Name:	Matthew Harbeck
Contact Phone:	402-384-7087
Contact Email:	matthew.harbeck@terracon.com
Contact Address:	15080 A Circle Omaha NE 68144
Prepared By:	
Submitted On Behalf Of:	

Project Description

Proposed Regional Water Supply Source from MUD Water System. New 20-inch diameter water transmission main and water booster pumping station from MUD plant to connection point in Plattsmouth, NE located in Webster Avenue.

Introduction

The Nebraska Game and Parks Commission (Commission) and the U.S. Fish and Wildlife Service (Service) have special concerns for endangered and threatened species, migratory birds, and other fish and wildlife and their habitats. Habitats frequently used by fish and wildlife species are wetlands, streams, riparian areas, woodlands, and grasslands. Special attention is given to proposed projects which modify wetlands, alter streams, result in loss of riparian habitat, convert/remove grasslands, or contaminate habitats. When this occurs, the Commission and Service recommend ways to avoid, minimize, or compensate for adverse effects to fish and wildlife and their habitats.

CONSULTATION PURSUANT TO THE NEBRASKA NONGAME AND ENDANGERED SPECIES CONSERVATION ACT (NESCA)

The Commission has responsibility for protecting state-listed endangered and threatened species under authority of the Nongame and Endangered Species Conservation Act (NESCA) (Neb. Rev. Stat. § 37-801 to 37-811). Pursuant to § 37-807 (3) of NESCA, all state agencies shall, in consultation with the Commission, ensure projects they authorize (i.e., issue a permit for), fund or carry out do not jeopardize the continued existence of state-listed endangered or threatened species or result in the destruction or modification of habitat of such species which is determined by the Commission to be critical. If a proposed project may affect state-listed species or designated critical habitat, further consultation with the Commission is required.

Informal consultation pursuant to NESCA can be completed by using the Conservation and Environmental Review Tool (CERT). The CERT analyzes the project type and location, and based on the analysis, provides information about potential impacts to listed species, habitat questions and/or conservation conditions. Project proponents can agree to implement conservation conditions as outlined in the report and applicable to the project type by signing in the designated areas and uploading the signed PDF as part of their "final" project submittal. By agreeing to and implementing the conservation conditions as outlined (if applicable), then further consultation with the Commission is not required. If the report indicates the project may have impacts on listed species, then further consultation with the Commission is required.

TECHNICAL ASSISTANCE AND CONSULTATION PURSUANT TO THE ENDANGERED SPECIES ACT (ESA)

The Service has responsibility for conservation and management of fish and wildlife resources for the benefit of the American public under the following authorities: 1) Endangered Species Act of 1973 (ESA); 2) Fish and Wildlife Coordination Act; 3) Bald and Golden Eagle Protection Act; and 4) Migratory Bird Treaty Act. The National Environmental Policy Act (NEPA) requires compliance with all of these statutes and regulations.

Pursuant to section 7(a)(2) of ESA, every federal agency, shall in consultation with the Service, ensure that an action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. If a proposed project may affect federally listed species or designated critical habitat, section 7 consultation is required with the Service. It is the responsibility of the lead federal action agency to fully evaluate all potential effects (direct and indirect) that may occur to listed species and critical habitat in the action area. The lead federal agency provides their effect determination to the Service for concurrence. If federally listed species and/or designated/proposed critical habitat would be adversely affected by implementation of the project, the lead federal agency will need to formally request further section 7 consultation with the Service prior to making any irretrievable or irreversible commitment of federal funds (section 7(d) of ESA), or issuing any federal permits or licenses.

At this time, **the information generated in this report DOES NOT satisfy consultation obligations between the lead federal agency and the Service pursuant to ESA**. For the purposes of ESA, the information in this report should be considered as TECHNICAL ASSISTANCE, and does not serve as the Service's concurrence letter, even if the user signs and agrees to implement conservation conditions in order to satisfy the consultation requirements of NESCA.

Overall Results

The following result is based on a detailed analysis of your project.

- More information needed - refer to the following sections. Answer the habitat question(s) in the section below. Additional consultation with the Nebraska Game and Parks Commission and/or the U.S. Fish and Wildlife Service may or may not be required. Refer to the "Conservation Conditions Agreement" section for additional information.

Questions and Conservation Conditions

American Ginseng

This project is within or near the modeled distribution of the state-listed threatened American ginseng (*Panax quinquefolius*).
Habitat Question for American Ginseng:

Will the project or activity occur directly in a mature woodland along a river bluff or otherwise affect or alter vegetation in a mature woodland along a river bluff (floodplain forests are not suitable habitat)?

____ Unknown
_X_ No. Conservation measures are not needed for this species unless otherwise indicated.
____ Yes. The following conservation measures must be implemented in order to avoid adverse impacts on American Ginseng:

AG CM-1: A qualified biologist will survey according to protocol during the growing season (May 15 - August 31) immediately prior to construction/ground disturbance activities, tree planting, or herbicide application. Note: The species is easier to identify during the fruiting period (July - August) than during the blooming period (May - July). If the species is found, then further consultation with the Nebraska Game and Parks Commission is required prior to commencing the project or activity. If the species is not found during the survey, then work may proceed.

Interior Least Tern and Piping Plover

This project is within or near the modeled distribution of the state and federally listed endangered interior least tern (*Sternula antillarum athalassos*) and/or the state and federally listed threatened piping plover (*Charadrius melodus*).
Habitat Questions for Interior Least Tern and Piping Plover:

Do the Project Limits include un-vegetated or sparsely vegetated sand, shale, or gravel such as a beach, peninsula, or bar?
OR
Are the Project Limits (noise and sight) within 1/4 mile of suitable habitat to include but not limited to a beach area, sand pits, peninsula, sand, shale, or gravel bar AND is the habitat visible from the Project Limits?

____ Unknown for EITHER question.
____ No for BOTH questions. Conservation measures are not needed for these species unless otherwise indicated.
_X_ Yes for EITHER question. The following conservation measures must be implemented in order to avoid adverse impacts on interior least tern and piping plover:

ILT & PP CM-1: Project would be implemented from August 16 to April 14 OR conduct a survey according to protocol. If the species is found, then further consultation with the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service is required prior to commencing the project or activity. If the species is not found during the survey, then work may proceed.

Lake Sturgeon, Pallid Sturgeon, Sturgeon Chub

This project is within or near the modeled distribution of the state-listed threatened lake sturgeon (*Acipenser fulvescens*), the state and federally listed endangered pallid sturgeon (*Scaphirhynchus albus*) and the state-listed endangered sturgeon chub (*Macrhybopsis gelida*).

The following conservation measures must be implemented in order to avoid adverse impacts on lake sturgeon, pallid sturgeon and/or sturgeon chub:

LS, PS, & SC CM-80.2:

a) Work will not occur in the river, stream or connected backwater areas. (Boat docks and ramps can be installed from August 1 to January 31.)

b) The project or activity will not impact water quality or flows, including out-of-channel high bank flows.

c) Avoid and minimize sedimentation from upland soil disturbances.

d) Bridge deck debris will be captured and/or contained to prevent material from entering the wet or dry channel, streambed or riverbed. (Only applies to bridge work.)

e) Water and spoil will not be discharged directly into the channel from February 1 - July 31.

Northern Long-eared Bat

This project is within the range of the state and federally listed threatened northern long-eared bat (*Myotis septentrionalis*).

Habitat Questions for Northern Long-eared Bat:

Are the Project Limits within or adjacent to deciduous and/or pine woodlands with live or dead trees or snags that exhibit peeling bark or have crevices or hollows?

OR

Do the Project Limits include buildings, bridges over drainages (wet or dry), and/or box culverts over 5-feet in height?

____ Unknown for EITHER question

____ No for BOTH questions. Conservation measures are not needed for this species unless otherwise indicated.

__X__ Yes for EITHER question. The following conservation measures must be implemented in order to avoid adverse impacts on northern long-eared bat.

NLEB CM-2: No removal of trees or removal of roosting structures between June 1 and July 31.

River Otter

This project is within or near the modeled distribution of the state-listed threatened river otter (*Lontra canadensis*).

Habitat Questions for River Otter:

Do the Project Limits include or occur in a river, stream, pond, canal, sandpit with water or backwater area?

OR

Are the Project Limits within 1/2 mile of a lake, pond, or an adjacent upland bank within the topographic floodplain AND is the lake, pond, or adjacent upland bank associated with a river, stream, or backwater area?

____ Unknown for EITHER question.

____ No for BOTH questions. Conservation measures are not needed for this species unless otherwise indicated.

__X__ Yes for EITHER question. The following conservation measures must be implemented in order to avoid adverse impacts on river otter:

RO CM-1: Survey for dens according to protocol no more than 10 days prior to ground disturbing activities. If active river otter dens are found during the survey, further consultation with the Nebraska Game and Parks Commission is required prior to commencement of project activities. If the species is not found during the survey, work may proceed.

Western Prairie Fringed Orchid

This project is within the range of the state and federally listed threatened western prairie fringed orchid (*Platanthera praeclara*).

Habitat Questions for Western Prairie Fringed Orchid:

Are the Project Limits within or adjacent to a wet meadow or natively vegetated grassland that is on a lower stream terrace or topographic floodplain?
Are the Project Limits within 100 feet of a natively vegetated sidehill seep that has no history of tillage?
Do the Project Limits occur in a drainage (ditch, waterway, or other moist soil sites) that contains suitable vegetation for the species AND is associated with a wet meadow or natively vegetated grassland that is on a lower stream terrace or topographic floodplain?

____ Unknown for one or more questions
____ No for ALL three questions. Conservation measures are not needed for this species unless otherwise indicated.
__X__ Yes for ANY of the questions. The following conservation measures must be implemented in order to avoid adverse impacts on western prairie fringed orchid:

WPFO CM-1: Survey according to protocol required during flowering period (June 15 - July 15) prior to ground disturbing activities, herbicide application, and/or conversion from haying to grazing with management for shorter duration or timing. If the species is found during the survey, further consultation with the Nebraska Game and Parks Commission is required prior to commencement of project activities. If the species is not found during the survey, work may proceed.

Conservation Measures Agreement

Based on the information contained in the report, follow the instructions for A, B or C below.

A) IF one or more of the habitat questions were answered with "Yes", insert an "X" for one of the two options below:

__X__ Option 1. For all species for which there is habitat present (as indicated by checking "yes" to a habitat question) I understand and agree to implement and/or incorporate the conservation measures for those species as indicated. By agreeing to implement and/or incorporate the conservation measures for those species as indicated, no further consultation with the Nebraska Game and Parks Commission is required. However, further consultation between the lead federal agency and the U.S. Fish and Wildlife Service (Service) may be required. Contact the Service for additional information. Sign and date on the line below, and also sign and date the "Certification" section. Submit a copy of the signed report with any type of permit/application required for the project.

_____ _____
Applicant/project proponent signature Date

_____ Option 2. I have concerns regarding one or more of the conservation measures. Sign the "Certification" section below. When submitting the project as "Final" in CERT, please attach a separate document explaining your concerns with the conservation measures and why they cannot be implemented. Then, contact the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service for further information.

B) IF one or more habitat questions were answered with "Unknown," then sign the "Certification" section below, submit the project as "Final" in CERT, and contact the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service for further information.

C) IF ALL the habitat questions were answered "No" or if the "Overall Results" section indicated the project was unlikely to impact listed species, then sign the "Certification" section below and submit the project as "Final" in CERT. No further consultation with the Nebraska Game and Parks Commission is required. Additional coordination with the U.S. Fish and Wildlife Service may be necessary depending on the determination made by the lead federal agency pursuant to their obligations under ESA. Submit a copy of the signed report with any type of permit/application needed for the project.

Certification

I certify that ALL of the project information in this report (including project location, project size/configuration, project type, project activities, answers to questions) is true, accurate, and complete. If the project type, activities, location, size, or configuration of the project change, or if any of the answers to any questions asked in this report change, then this information is no longer valid and we recommend running the revised project through CERT to get an updated report.

Applicant/project proponent signature Date

Additional Considerations

Bald and Golden Eagle Protection Act

The federal Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668c) provides for the protection of the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*). Under the Eagle Act, "take" of eagles, their parts, nests or eggs is prohibited. Disturbance resulting in injury to an eagle or a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior is a form of "take."

Bald eagles use mature, forested riparian areas near rivers, streams, lakes, and wetlands and occur along all the major river systems in Nebraska. The bald eagle southward migration begins as early as October and the wintering period extends from December-March. The golden eagle is found in arid open country with grassland for foraging in western Nebraska and usually near buttes or canyons which serve as nesting sites. Golden eagles are often a permanent resident in the Pine Ridge area of Nebraska. Additionally, many bald and golden eagles nest in Nebraska from mid-February through mid-July. Disturbances within 0.5-miles of an active nest or within line-of-sight of the nest could cause adult eagles to discontinue nest building or to abandon eggs. Both bald and golden eagles frequent river systems in Nebraska during the winter where open water and forested corridors provide feeding, perching, and roosting habitats, respectively. The frequency and duration of eagle use of these habitats in the winter depends upon ice and weather conditions. Human disturbances and loss of wintering habitat can cause undue stress leading to cessation of feeding and failure to meet winter thermoregulatory requirements. These affects can reduce the carrying capacity of preferred wintering habitat and reproductive success for the species.

To comply with the Eagle Act, it is recommended that the project proponent determine if the proposed project would impact bald or golden eagles or their habitats. This can be done by conducting a habitat assessment, surveying nesting habitat for active and inactive nests, and surveying potential winter roosting habitat to determine if it is being used by eagles. The area to be surveyed is dependent on the type of project; however for most projects we recommend surveying the project area and a ½ mile buffer around the project area. If it is determined that either species could be affected by the proposed project, the Commission recommends that the project proponent notify the Nebraska Game and Parks Commission as well as the Nebraska Field Office, U.S. Fish and Wildlife Service for recommendations to avoid "take" of bald and golden eagles.

Migratory Bird Treaty Act and Nebraska Revised Statute §37-540

We recommend the project proponent compliy with the Migratory Bird Treaty Act (16 U.S.C. 703-712: Ch. 128 *as amended*) (MBTA). The project proponent should also comply with Nebraska Revised Statute §37-540, which prohibits take and destruction of nests or eggs of protected birds (as defined in Nebraska Revised Statute §37-237.01). Construction activities in grassland, wetland, stream, woodland, and river bank habitats that would result in impacts on birds, their nests or eggs protected under these laws should be avoided. Although the provisions of these laws are applicable year-round, most migratory bird nesting activity in Nebraska occurs during the period of April 1 to July 15. However, some migratory birds are known to nest outside of the aforementioned primary nesting season period. For example, raptors can be expected to nest in woodland habitats during February 1 through July 15, whereas sedge wrens, which occur in some wetland habitats, normally nest from July 15 to September 10. If development in this area is planned to occur during the primary nesting season or at any other time which may result in impacts to birds, their nests or eggs protected under these laws, we request that the project proponent arrange to have a qualified biologist conduct a field survey of the affected habitats to determine the absence or presence of nesting migratory birds. If a field survey identifies the existence of one or more active bird nests that cannot be avoided by the planned construction

activities, the Nebraska Game and Parks Commission and the Nebraska Field Office, U.S. Fish and Wildlife Service should be contacted immediately. For more information on avoiding impacts to migratory birds, their nests and eggs, or to report active bird nests that cannot be avoided by planned construction activities, please contact the U.S. Fish and Wildlife Service and/or the Nebraska Game and Parks Commission (contact information within report). Adherence to these guidelines will help avoid unnecessary impacts on migratory birds.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) requires consultation with the U.S. Fish and Wildlife Service (Service) and the State fish and wildlife agency (i.e., Nebraska Game and Parks Commission) for the purpose of preventing loss of and damage to fish and wildlife resources in the planning, implementation, and operation of federal and federaly funded, permitted, or licensed water resource development projects. This statute requires that federal agencies take into consideration the effect that the water related project would have on fish and wildlife resources, to take action to prevent loss or damage to these resources, and to provide for the development and improvement of these resources. The comments in this letter are provided as technical assistance only and are not the document required of the Secretary of the Interior pursuant to Section 2(b) of FWCA on any required federal environmental review or permit. This technical assistance is valid only for the described conditions and will have to be revised if significant environmental changes or changes in the proposed project take place. In order to determine whether the effects to fish and wildlife resources from the proposed project are being considered under FWCA, the lead federal agency must notify the Service in writing of how the comments and recommendations in this technical assistance letter are being considered into the proposed project.

Section 404 of the Clean Water Act

In general, the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service have concerns for impacts to wetlands, streams and riparian habitats. We recommend that impacts to wetlands, streams, and associated riparian corridors be avoided and minimized, and that any unavoidable impacts to these habitats be mitigated. If any fill materials will be placed into waterways or wetlands, the U.S. Army Corps of Engineers Regulatory Office in Omaha should be contacted to determine if a 404 permit is needed.

Agency Contact Information

Nebraska Game and Parks Commission

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U.S. Fish and Wildlife Service

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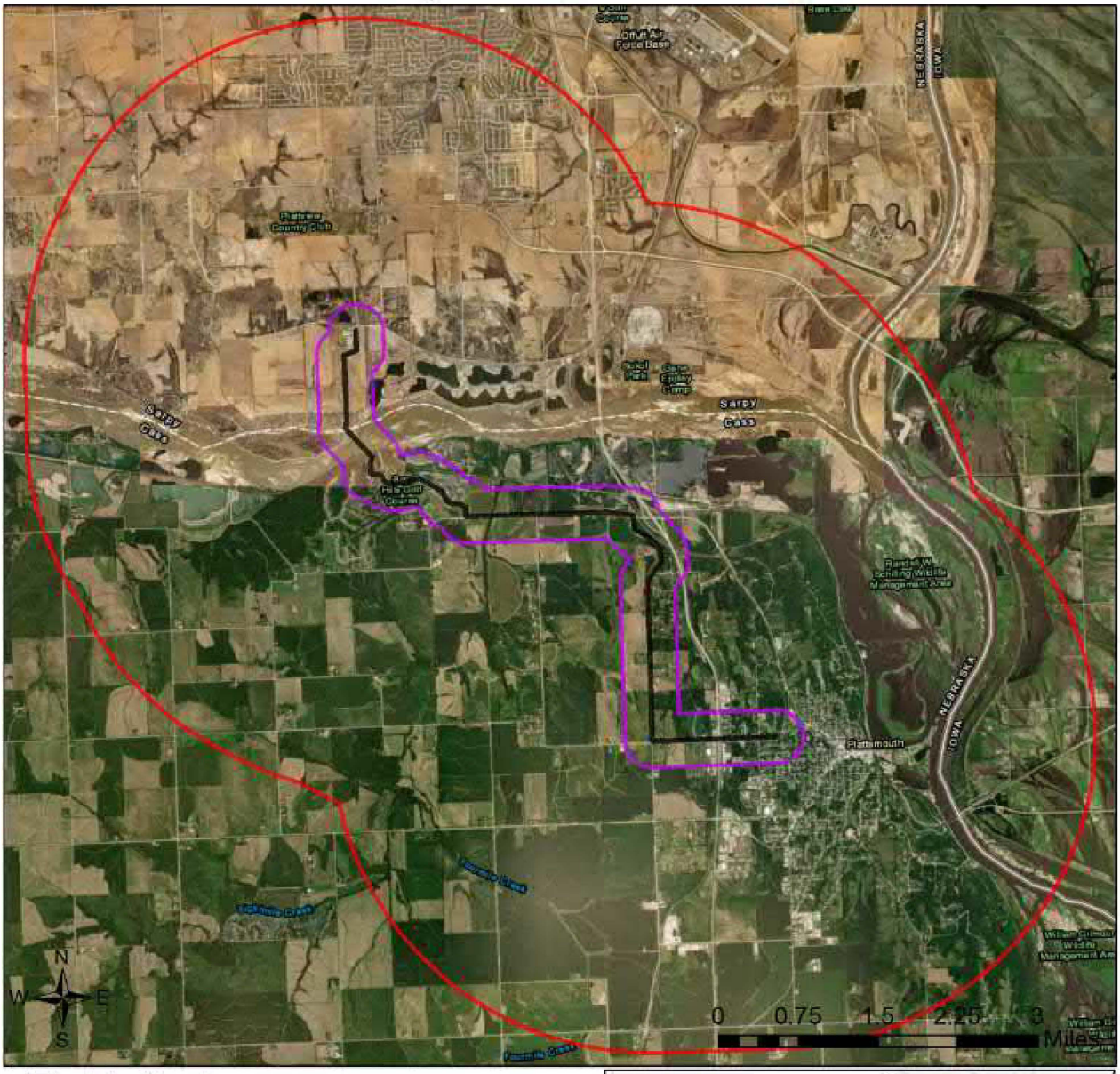
Wood River, NE 68883
phone: (308) 382-6468 ext. 204
email: eliza_hines@fws.gov

Plattsmouth Public Water Supply Relocation

Aerial Image Basemap With Locator Map



Project Boundary

Project Review Boundary

3-mile Information Buffer Boundary

Project Size (acres): 61.87

Lat/Long (DD): 41.0458 / -95.9360

County(s): Cass; Sarpy

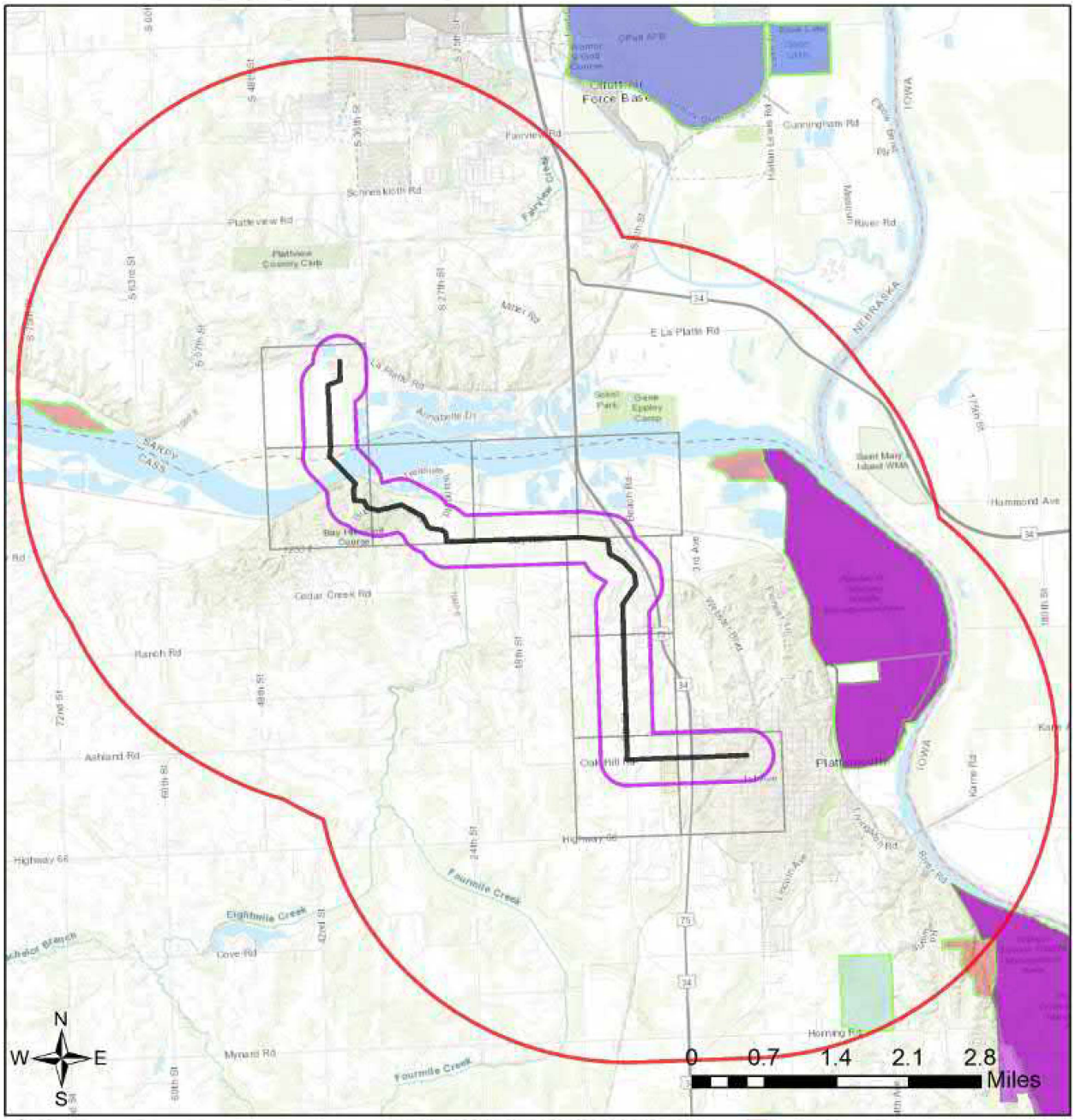
BUL(s): Lower Platte River; Missouri River

Township/Range/Section(s): T12R13ES02; T12R13ES11; T12R13ES13; T12R13ES14; T13R13ES29 +

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Plattsmouth Public Water Supply Relocation

Topographic Basemap With Sections and Protected Areas



- Project Boundary
- Project Review Boundary
- 3-mile Information Buffer Boundaryi
- Sections
- NGPC Properties
- PAD (USGS) - boundaries

Protected Areas Database (USGS)

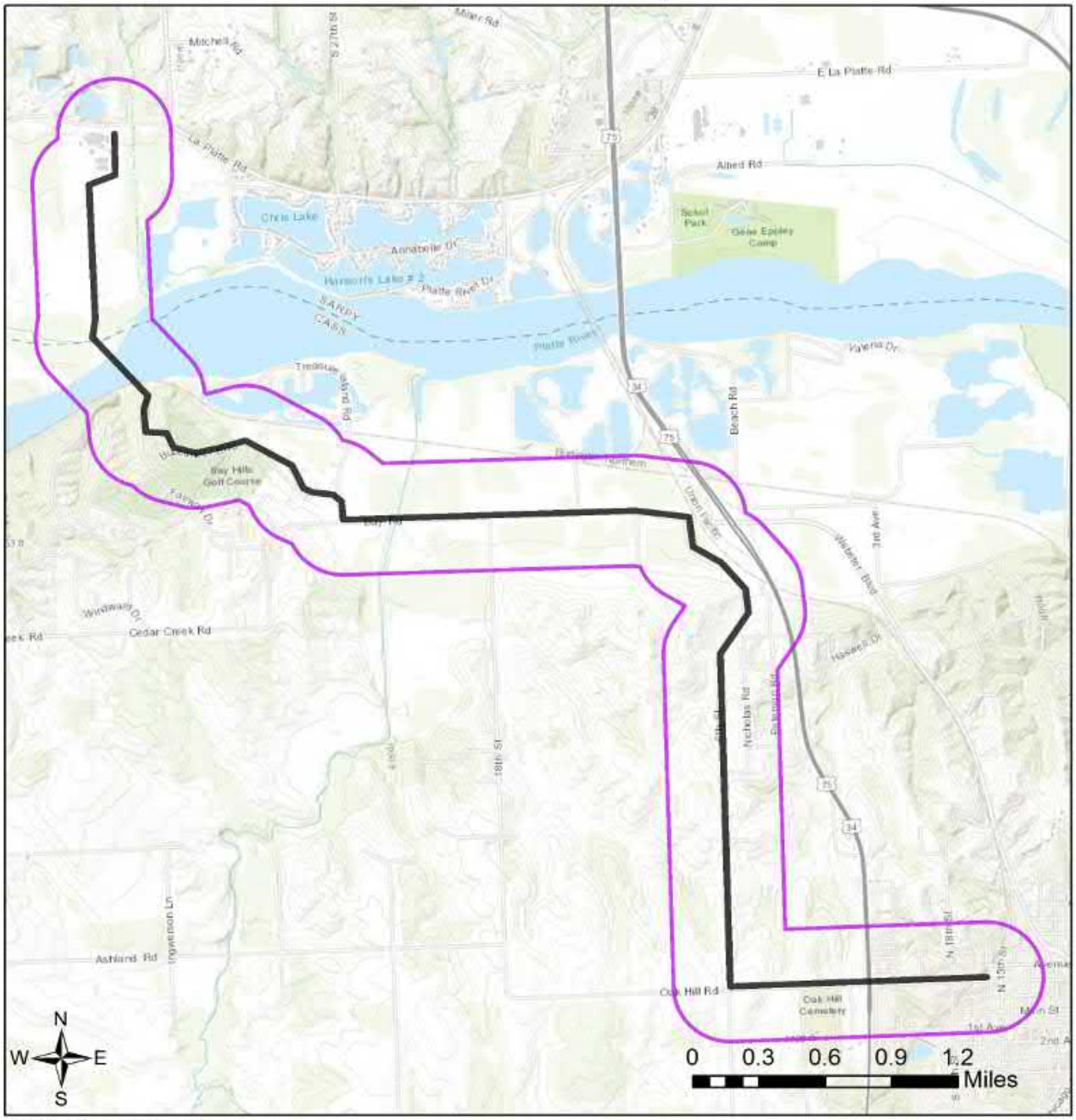
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
- Bureau of Reclamation
- Designation

- Regional Agency
- State (NGPC)
- Other State
- NGO or Private
- Other (City, Unknown)i

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Plattsmouth Public Water Supply Relocation

Web Map As Submitted By User



Project Boundary

Project Review Boundary

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Table 1
Protected Areas in Immediate Vicinity of Project (project review area)

This table has no results.

Table 2
Documented Occurrences in Immediate Vicinity of Project (project review area):
Natural communities and special areas

Name	Other Information	SRank	GRank
Lower Platte River Biologically Unique Landscape	Link to BUL document		
Missouri River Biologically Unique Landscape	Link to BUL document		

Table 3
Township-level Documented Occurrences of Species within 1 Mile of Project Review Area

Scientific Name	Common Name	USFWS	State	SGCN	USFS	SRank	GRank
Acipenser fulvescens	Lake Sturgeon		T	Tier 1		S1	G3G4
Anguilla rostrata	American Eel			Tier 2		SNR	G4
Anodonta suborbiculata	Flat Floater			Tier 1		S1	G5
Arnoglossum atriplicifolium	Pale Indian-plantain			Tier 2		S2	G4G5
Asclepias amplexicaulis	Clasping-leaf Milkweed			Tier 2		S1	G5
Baeolophus bicolor	Tufted Titmouse			Tier 2		S3	G5
Charadrius melodus	Piping Plover	T	T	Tier 1		S2	G3
Cycleptus elongatus	Blue Sucker			Tier 1		S1	G3G4
Cygnus buccinator	Trumpeter Swan			Tier 2	S	S2	G4
Haliaeetus leucocephalus	Bald Eagle			Tier 2	S	S3	G5
Hybognathus argyritis	Western Silvery Minnow			Tier 1		S2	G4
Hybognathus placitus	Plains Minnow			Tier 1	S	S2	G4
Lasiurus borealis	Eastern Red Bat			Tier 1		S3	G3G4
Lasiurus cinereus	Hoary Bat			Tier 1	S	S3	G3G4
Lilium michiganense	Turk's Cap Lily					S2S4	G5
Macrhybopsis gelida	Sturgeon Chub		E	Tier 1	S	S1	G3
Macrhybopsis hyostoma	Shoal Chub			Tier 2		S3	G5
Macrhybopsis meeki	Sicklefin Chub			Tier 1		S1	G3
Macrhybopsis storeriana	Silver Chub			Tier 2		S2	G5

Table 3
Township-level Documented Occurrences of Species within 1 Mile of Project Review Area

Scientific Name	Common Name	USFWS	State	SGCN	USFS	SRank	GRank
Noturus gyrinus	Tadpole Madtom			Tier 2		S3	G5
Pimephales notatus	Bluntnose Minnow			Tier 2		S3	G5
Platygobio gracilis	Flathead Chub			Tier 1	S	S2	G5
Polyodon spathula	Paddlefish			Tier 2		S2	G4
Scaphirhynchus albus	Pallid Sturgeon	E	E	Tier 1		S1	G2
Sternula antillarum athalassos	Interior Least Tern	E	E	Tier 1		S2	G4T3Q
Sturnella magna	Eastern Meadowlark			Tier 2		S3	G5
Thamnophis proximus	Western Ribbon Snake		NC	Tier 2		S2	G5

Table 4
Potential Occurrences in Immediate Vicinity of Project (project review area):
Special status species (Tier 1 at-risk species and Bald and Golden Eagle), based on models or range maps

Scientific Name	Common Name	Data Type	USFWS	State	SGCN	USFS	SRank	GRank
Acipenser fulvescens	Lake Sturgeon	Model		T	Tier 1		S1	G3G4
Ammodramus henslowii	Henslow's Sparrow	Range			Tier 1		S1	G4
Apobaetis lakota	Lakota Mayfly	Range			Tier 1		SNR	G2G3
Asio flammeus	Short-eared Owl	Range			Tier 1	S	S2	G5
Atrytone arogos iowa	Iowa Skipper	Range			Tier 1		S1	G3T3
Boloria selene nebraskensis	Nebraska Fritillary	Range			Tier 1		SNR	G5T3T4
Calidris subruficollis	Buff-breasted Sandpiper	Range			Tier 1		S2N	G4
Catocala nuptialis	Married Underwing	Range			Tier 1		SNR	G3G4
Catocala whitneyi	Whitney Underwing	Range			Tier 1		S1	G3G4
Charadrius melodus	Piping Plover	Model	T	T	Tier 1		S2	G3
Cicindela lepida	Ghost Tiger Beetle	Range			Tier 1		S2	G3G4
Coccyzus erythropthalmus	Black-billed Cuckoo	Range			Tier 1		S3	G5
Cycleptus elongatus	Blue Sucker	Range			Tier 1		S1	G3G4
Danaus plexippus	Monarch	Range			Tier 1	S	S2	G4
Emydoidea blandingii	Blanding's Turtle	Range		NC	Tier 1		S4	G4
Erynnis martialis	Mottled Duskywing	Range			Tier 1		S2	G3

Table 4
Potential Occurrences in Immediate Vicinity of Project (project review area):
Special status species (Tier 1 at-risk species and Bald and Golden Eagle), based on models or range maps

Scientific Name	Common Name	Data Type	USFWS	State	SGCN	USFS	SRank	GRank
Euphyes bimacula illinois	Two-spotted Skipper	Range			Tier 1		S3	G4T1T2
Fundulus sciadicus	Plains Topminnow	Range			Tier 1	S	S3	G4
Haliaeetus leucocephalus	Bald Eagle	Range			Tier 2	S	S3	G5
Hesperia ottoe	Ottoe Skipper	Range			Tier 1	S	S2	G3G4
Hybognathus argyritis	Western Silvery Minnow	Range			Tier 1		S2	G4
Hybognathus placitus	Plains Minnow	Range			Tier 1	S	S2	G4
Hylocichla mustelina	Wood Thrush	Range			Tier 1		S3	G4
Lanius ludovicianus	Loggerhead Shrike	Range			Tier 1	S	S3	G4
Lasionycteris noctivagans	Silver-haired Bat	Range			Tier 1		S3	G3G4
Lasiurus borealis	Eastern Red Bat	Range			Tier 1		S3	G3G4
Lasiurus cinereus	Hoary Bat	Range			Tier 1	S	S3	G3G4
Lethe eurydice fumosus	Smoky-eyed Brown	Range			Tier 1		S3	G5T3T4
Lontra canadensis	River Otter	Model		T		S	S4	G5
Macrhybopsis gelida	Sturgeon Chub	Model		E	Tier 1	S	S1	G3
Macrhybopsis meeki	Sicklefin Chub	Range			Tier 1		S1	G3
Myotis lucifugus	Little Brown Myotis	Range			Tier 1		SNR	G3
Myotis septentrionalis	Northern Long-eared Myotis	Range	T	T	Tier 1		S1S2	G1G2
Panax quinquefolius	American Ginseng	Model		T	Tier 1		S1	G3G4
Perimyotis subflavus	Tricolored Bat	Range			Tier 1		S3	G2G3
Platanthera praeclara	Western Prairie Fringed Orchid	Range	T	T	Tier 1		S2	G3
Platygobio gracilis	Flathead Chub	Range			Tier 1	S	S2	G5
Problema byssus kumskaka	Byssus Skipper	Range			Tier 1		S1	G4TNR
Scaphirhynchus albus	Pallid Sturgeon	Model	E	E	Tier 1		S1	G2
Speyeria idalia	Regal Fritillary	Range			Tier 1	S	S3	G3?
Sternula antillarum athalassos	Interior Least Tern	Model	E	E	Tier 1		S2	G4T3Q
Triphora trianthophoros var. trianthophoros	Nodding-pogonia	Range			Tier 1		S1	G4?T4?

Nebraska NRCS Species By County

Use to answer Step 1. of the NE-CPA-52 Endangered and Threatened Species Guide Sheet.

This table of species by county is based on the "Range maps for listed species in Nebraska, compiled and edited by the Nebraska Natural Heritage Program, November 2011." The map product was based on documented occurrences of listed species and expert knowledge about the distribution of species and suitable habitat. For a given county-by-species combination, the range of the given species covers some portion (from all to very little) of the county. The individual species range map needs to be reviewed to determine if a particular area of potential effect for the action is within the species's range.

For species information see links given below:

Species List by County. May use maps to further define (eFOTG Section II): http://efotg.nrcs.usda.gov
Species specific information (eFOTG Section II): http://efotg.nrcs.usda.gov
General species information can be found at the following links: Nebraska's Natural Legacy Project
Nature Serve

Any of the state species of concern that are also listed federally as endangered, threatened, or proposed are addressed in the Federal species section.

Federally Listed Species

E = Endangered
T = Threatened
P = Proposed for listing
C= Candidate
XN = Experimental Population

Animals
Beetle, American burying (E)
Beetle, salt creek tiger (E)
Crane, whooping (E)
Curlew, Eskimo (E)
Ferret, black-footed (E)
Mussel, scaleshell (E)
Plover, piping (T)
Shiner, Topeka (E)
Sturgeon, shovelnose (P)
Sturgeon, pallid (E)
Tern, interior least (E)
Wolf, gray (E)

Plants
Butterfly plant, Colorado (T)
Penstemon, blowout (T)
Orchid, western prairie fringed (T)
Ladies'-tresses, Ute (T)

Federally Designated Critical Habitat: Crane, whooping and Shiner, Topeka
Federally Proposed Critical Habitat: None

State Species of Concern

Animals
Chub, Sturgeon
Dace, Finescale
Dace, Northern Redbelly
Fox, Swift
Massasauga
Otter, River
Plover, Mountain
Shiner, Blacknose
Squirrel, Southern Flying
Sturgeon, Lake

Plants
Ginseng, American
Lady's Slipper, Small White
Saltwort

Four federally listed species that could potentially be found in Nebraska do not appear on any of the County lists: Eskimo curlew, black-footed ferret, scaleshell mussel, and gray wolf. Review the Evaluation Parameters. If they are observed or believed to be present in the area then contact the State Office Wildlife Biologist.

County	Status	Common Name	Scientific Name
Adams	**Federally:** endangered or threatened	Whooping Crane	Grus americana
		Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
	State: species of concern	River Otter	Lutra canadensis

County	Status	Common Name	Scientific Name
Antelope	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Small White Lady's Slipper	Cypripedium candidum
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
Arthur	**Federally:** endangered or threatened	Whooping Crane	Grus americana
Banner	**State:** species of concern	Mountain Plover	Charadrius montanus
		Swift Fox	Vulpes velox
Blaine	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Blowout Penstemon	Penstemon haydenii
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
Boone	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	
	State: species of concern	River Otter	Lutra canadensis
Box Butte	**Federally:** endangered or threatened	Blowout Penstemon	Penstemon haydenii
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
		Swift Fox	Vulpes velox
Boyd	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Lake Sturgeon	Acipenser fulvescens
		River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
		Sturgeon Chub	Macrhybopsis gelida
Brown	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Blowout Penstemon	Penstemon haydenii
		Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
		River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum

County	Status	Common Name	Scientific Name
Buffalo	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
		Whooping Crane: Designated Critical Habitat	
	State: species of concern	River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
Burt	**Federally:** endangered or threatened	Pallid Sturgeon	Scaphirhyncus albus
	State: species of concern	American Ginseng	Panax quinquefolium
		Lake Sturgeon	Acipenser fulvescens
		Sturgeon Chub	Macrhybopsis gelida
Butler	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Lake Sturgeon	Acipenser fulvescens
		River Otter	Lutra canadensis
		Sturgeon Chub	Macrhybopsis gelida
Cass	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
		Western Prairie Fringed Orchid	Platanthera praeclara
	State: species of concern	American Ginseng	Panax quinquefolium
		Lake Sturgeon	Acipenser fulvescens
		River Otter	Lutra canadensis
		Southern Flying Squirrel	Glaucomys volans
		Sturgeon Chub	Macrhybopsis gelida
Cedar	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
		Scaleshell Mussel	Leptodea leptodon
	State: species of concern	Lake Sturgeon	Acipenser fulvescens
		Sturgeon Chub	Macrhybopsis gelida
Chase	**Federally:** endangered or threatened	Whooping Crane	Grus americana
	State: species of concern	Swift Fox	Vulpes velox
Cherry	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Blowout Penstemon	Penstemon haydenii
		Topeka Shiner	Notropis topeka
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	Blacknose Shiner	Notropis heterolepis
		Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
		River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
		Swift Fox	Vulpes velox

County	Status	Common Name	Scientific Name
Cheyenne	**Federally:** endangered or threatened	Whooping Crane	Grus americana
	State: species of concern	Mountain Plover	Charadrius montanus
		Swift Fox	Vulpes velox
Clay	**Federally:** endangered or threatened	Whooping Crane	Grus americana
Colfax	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Lake Sturgeon	Acipenser fulvescens
		Massasauga	Sistrurus catenatus
		River Otter	Lutra canadensis
		Sturgeon Chub	Macrhybopsis gelida
Cuming	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
Custer	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Northern Redbelly Dace	Phoxinus eos
		River Otter	Lutra canadensis
Dakota	**Federally:** endangered or threatened	Pallid Sturgeon	Scaphirhyncus albus
	State: species of concern	American Ginseng	Panax quinquefolium
		Lake Sturgeon	Acipenser fulvescens
		Sturgeon Chub	Macrhybopsis gelida
Dawes	**Federally:** endangered or threatened	Whooping Crane	Grus americana
	State: species of concern	Blacknose Shiner	Notropis heterolepis
		Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
		Swift Fox	Vulpes velox
Dawson	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
		Whooping Crane: Designated Critical Habitat	
	State: species of concern	River Otter	Lutra canadensis
Deuel	**State:** species of concern	Swift Fox	Vulpes velox

County	Status	Common Name	Scientific Name
Dixon	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
		Scaleshell Mussel	Leptodea leptodon
	State: species of concern	American Ginseng	Panax quinquefolium
		Lake Sturgeon	Acipenser fulvescens
		Sturgeon Chub	Macrhybopsis gelida
Dodge	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
	State: species of concern	Lake Sturgeon	Acipenser fulvescens
		Massasauga	Sistrurus catenatus
		River Otter	Lutra canadensis
		Sturgeon Chub	Macrhybopsis gelida
Douglas	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
	State: species of concern	American Ginseng	Panax quinquefolium
		Lake Sturgeon	Acipenser fulvescens
		River Otter	Lutra canadensis
		Sturgeon Chub	Macrhybopsis gelida
Dundy	**State:** species of concern	Swift Fox	Vulpes velox
Fillmore	**Federally:** endangered or threatened	Whooping Crane	Grus americana
Franklin	**Federally:** endangered or threatened	River Otter	Lutra canadensis
		Whooping Crane	Grus americana
Frontier	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Whooping Crane	Grus americana
	State: species of concern	Swift Fox	Vulpes velox
Furnas	**Federally:** endangered or threatened	Whooping Crane	Grus americana
	State: species of concern	Swift Fox	Vulpes velox
Gage	**Federally:** endangered or threatened	Western Prairie Fringed Orchid	Platanthera praeclara
	State: species of concern	Massasauga	Sistrurus catenatus
Garden	**Federally:** endangered or threatened	Blowout Penstemon	Penstemon haydenii
		Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
		Swift Fox	Vulpes velox

County	Status	Common Name	Scientific Name
Garfield	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
Gosper	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
		Whooping Crane: Designated Critical Habitat	
	State: species of concern	River Otter	Lutra canadensis
		Swift Fox	Vulpes velox
Grant	**Federally:** endangered or threatened	Blowout Penstemon	Penstemon haydenii
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
Greeley	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
Hall	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
Hamilton	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
Harlan	**Federally:** endangered or threatened	River Otter	Lutra canadensis
		Whooping Crane	Grus americana
Hayes	**Federally:** endangered or threatened	Whooping Crane	Grus americana
	State: species of concern	Swift Fox	Vulpes velox
Hitchcock	**Federally:** endangered or threatened	Whooping Crane	Grus americana
	State: species of concern	Swift Fox	Vulpes velox

County	Status	Common Name	Scientific Name
Holt	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of	River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
Hooker	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Blowout Penstemon	Penstemon haydenii
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
Howard	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
Jefferson	**Federally:** endangered or threatened	Whooping Crane	Grus americana
	State: species of concern	Massasauga	Sistrurus catenatus
Johnson	**Federally:** endangered or threatened	Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	Massasauga	Sistrurus catenatus
		River Otter	Lutra canadensis
Kearney	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
		Whooping Crane: Designated Critical Habitat	
	State: species of concern	River Otter	Lutra canadensis
Keith	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
		River Otter	Lutra canadensis
		Swift Fox	Vulpes velox

County	Status	Common Name	Scientific Name
Keya Paha	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Blacknose Shiner	Notropis heterolepis
		Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
		River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
Kimball	**Federally:** endangered or threatened	Colorado Butterfly Plant	Gaura neomexicana ssp. coloradensis
	State: species of concern	Mountain Plover	Charadrius montanus
		Swift Fox	Vulpes velox
Knox	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Lake Sturgeon	Acipenser fulvescens
		River Otter	Lutra canadensis
		Sturgeon Chub	Macrhybopsis gelida
Lancaster	**Federally:** endangered or threatened	Salt Creek Tiger Beetle	Cicindela nevadica lincolniana
		Salt Creek Tiger Beetle - Proposed	Critical Habitat
		Western Prairie Fringed Orchid	Platanthera praeclara
	State: species of concern	Saltwort	Salicornia rubra
Lincoln	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
		River Otter	Lutra canadensis
		Swift Fox	Vulpes velox
Logan	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Whooping Crane	Grus americana
	State: species of concern	Northern Redbelly Dace	Phoxinus eos
Loup	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Blowout Penstemon	Penstemon haydenii
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis

County	Status	Common Name	Scientific Name
Madison	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Topeka Shiner	Notropis topeka
		Topeka Shiner - Designated Critical Habitat	
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
McPherson	**Federally:** endangered or threatened	Whooping Crane	Grus americana
	State: species of concern	Northern Redbelly Dace	Phoxinus eos
Merrick	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
Morrill	**Federally:** endangered or threatened	Blowout Penstemon	Penstemon haydenii
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
		Swift Fox	Vulpes velox
Nance	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
Nemaha	**Federally:** endangered or threatened	Pallid Sturgeon	Scaphirhyncus albus
		Western Prairie Fringed Orchid	Platanthera praeclara
	State: species of concern	American Ginseng	Panax quinquefolium
		Lake Sturgeon	Acipenser fulvescens
		River Otter	Lutra canadensis
		Southern Flying Squirrel	Glaucomys volans
		Sturgeon Chub	Macrhybopsis gelida
Nuckolls	**Federally:** endangered or threatened	Whooping Crane	Grus americana
Otoe	**Federally:** endangered or threatened	Pallid Sturgeon	Scaphirhyncus albus
		Western Prairie Fringed Orchid	Platanthera praeclara
	State: species of concern	American Ginseng	Panax quinquefolium
		Lake Sturgeon	Acipenser fulvescens
		River Otter	Lutra canadensis
		Southern Flying Squirrel	Glaucomys volans
		Sturgeon Chub	Macrhybopsis gelida

County	Status	Common Name	Scientific Name
Pawnee	**State:** species of concern	Massasauga	Sistrurus catenatus
Perkins	**Federally:** endangered or threatened	Whooping Crane	Grus americana
	State: species of concern	Swift Fox	Vulpes velox
Phelps	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
		Whooping Crane: Designated Critical Habitat	
	State: species of concern	River Otter	Lutra canadensis
Pierce	**Federally:** endangered or threatened	Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	Small White Lady's Slipper	Cypripedium candidum
Platte	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	Lake Sturgeon	Acipenser fulvescens
		River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
		Sturgeon Chub	Macrhybopsis gelida
Polk	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
			Cypripedium candidum
Red Willow	**Federally:** endangered or threatened	Whooping Crane	Grus americana
	State: species of concern	Swift Fox	Vulpes velox
Richardson	**Federally:** endangered or threatened	Pallid Sturgeon	Scaphirhyncus albus
	State: species of concern	American Ginseng	Panax quinquefolium
		Lake Sturgeon	Acipenser fulvescens
		Massasauga	Sistrurus catenatus
		River Otter	Lutra canadensis
		Southern Flying Squirrel	Glaucomys volans
		Sturgeon Chub	Macrhybopsis gelida

County	Status	Common Name	Scientific Name
Rock	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Blowout Penstemon	Penstemon haydenii
		Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
		River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
Saline	**Federally:** endangered or threatened	Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
Sarpy	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
		Western Prairie Fringed Orchid	Platanthera praeclara
	State: species of concern	American Ginseng	Panax quinquefolium
		Lake Sturgeon	Acipenser fulvescens
		River Otter	Lutra canadensis
		Sturgeon Chub	Macrhybopsis gelida
Saunders	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
		Salt Creek Tiger Beetle	Cicindela nevadica lincolniana
		Salt Creek Tiger Beetle - Proposed Critical Habitat	
		Western Prairie Fringed Orchid	Platanthera praeclara
	State: species of concern	Lake Sturgeon	Acipenser fulvescens
		River Otter	Lutra canadensis
		Saltwort	Salicornia rubra
		Sturgeon Chub	Macrhybopsis gelida
Scotts Bluff	**Federally:** endangered or threatened	Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
		Swift Fox	Vulpes velox
Seward	**Federally:** endangered or threatened	Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
Sheridan	**Federally:** endangered or threatened	Blowout Penstemon	Penstemon haydenii
		Western Prairie Fringed Orchid	Platanthera praeclara
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
		River Otter	Lutra canadensis
		Swift Fox	Vulpes velox
Sherman	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum

County	Status	Common Name	Scientific Name
Sioux	**Federally:** endangered or threatened	Ute Lady's Tresses	Spiranthes diluvialis
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
		River Otter	Lutra canadensis
		Swift Fox	Vulpes velox
Stanton	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Topeka Shiner	Notropis topeka
		Western Prairie Fringed Orchid	Platanthera praeclara
	State: species of concern	River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
Thayer	**Federally:** endangered or threatened	Whooping Crane	Grus americana
Thomas	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Blowout Penstemon	Penstemon haydenii
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	Finescale Dace	Phoxinus neogaeus
		Northern Redbelly Dace	Phoxinus eos
Thurston	**Federally:** endangered or threatened	Pallid Sturgeon	Scaphirhyncus albus
	State: species of concern	American Ginseng	Panax quinquefolium
		Lake Sturgeon	Acipenser fulvescens
		Sturgeon Chub	Macrhybopsis gelida
Valley	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Interior Least Tern	Sternula antillarum athalassos
		Piping Plover	Charadrius melodus
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
		Small White Lady's Slipper	Cypripedium candidum
Washington	**Federally:** endangered or threatened	Interior Least Tern	Sternula antillarum athalassos
		Pallid Sturgeon	Scaphirhyncus albus
		Piping Plover	Charadrius melodus
	State: species of concern	American Ginseng	Panax quinquefolium
		Lake Sturgeon	Acipenser fulvescens
		Sturgeon Chub	Macrhybopsis gelida
Wayne	**State:** species of concern	Small White Lady's Slipper	Cypripedium candidum
Webster	**Federally:** endangered or threatened	Whooping Crane	Grus americana
Wheeler	**Federally:** endangered or threatened	American Burying Beetle	Nicrophorus americanus
		Western Prairie Fringed Orchid	Platanthera praeclara
		Whooping Crane	Grus americana
	State: species of concern	River Otter	Lutra canadensis
York	**Federally:** endangered or threatened	Whooping Crane	Grus americana

United States Department of the Interior

FISH AND WILDLIFE SERVICE
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In Reply Refer To: August 19, 2020
Consultation Code: 06E22000-2020-SLI-0388
Event Code: 06E22000-2020-E-00795
Project Name: Plattsmouth Water Supply Line- Alternative 2

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Nebraska Ecological Services Field Office
9325 B South Alda Rd., Ste B
Wood River, NE 68883-9565
(308) 382-6468

Project Summary

Consultation Code: 06E22000-2020-SLI-0388

Event Code: 06E22000-2020-E-00795

Project Name: Plattsmouth Water Supply Line- Alternative 2

Project Type: WATER SUPPLY / DELIVERY

Project Description: Proposed water supply source from the Metropolitan Utilities District (MUD) system. 20-inch diameter water transmission main and water boosting pumping station from MUD's plant to a connection point to the City's distribution system located in Webster Avenue.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.04213071932665N95.92009164277403W

Counties: Cass, NE | Sarpy, NE

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Least Tern *Sterna antillarum* Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505	Endangered
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened

Fishes

NAME	STATUS
Pallid Sturgeon *Scaphirhynchus albus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162	Endangered

Flowering Plants

NAME	STATUS
Western Prairie Fringed Orchid *Platanthera praeclara* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1669	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover *Pluvialis dominica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31

NAME	BREEDING SEASON
Buff-breasted Sandpiper *Calidris subruficollis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9488	Breeds elsewhere
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere
Hudsonian Godwit *Limosa haemastica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Least Bittern *Ixobrychus exilis* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6175	Breeds Aug 16 to Oct 31
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Semipalmated Sandpiper *Calidris pusilla* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the

FAQ “Proper Interpretation and Use of Your Migratory Bird Report” before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your

project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that

overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1C
- PEM1Cx

FRESHWATER POND

- PUBFx

RIVERINE

- R2UBGx
- R2USC
- R4SBC
- R4SBCx
- R2UBH

Terracon

June 18, 2020

Previous correspondence to NGPC for Alternative 3 Site

Nebraska Game and Parks Commission
2200 North 33rd Street
Lincoln, Nebraska 68503

Re: Property Evaluation
Applicant Name: City of Plattsmouth
Site Name: Plattsmouth WWTP Relocation
Section 26, Township 12N, Range 13E
Southeast of 6th Street and East Wiles Road
Plattsmouth, Cass County, Nebraska
40.918832N, -95.91890W
Terracon Project Number: 05207234

To Whom It May Concern:

On behalf the City of Plattsmouth and Floodplain Emergency Management Agency (FEMA), an agency of the Department of Homeland Security, Terracon is submitting the above project for review by the Nebraska Game and Parks (NGPC) for review of potential impacts to listed and proposed threatened and endangered (T&E) species and critical habitats resulting from future construction at the above referenced location. The proposed project involves the relocation of an existing waste water treatment plant (WWTP), the sewerage and wastewater conveyance systems and an alternative outfall location. The city has applied for grant assistance from FEMA's Public Assistance Program and Nebraska Department of Environment and Energy (NDEE) State Revolving Fund to relocate the plant out of the floodplain to prevent pollutants, primarily raw sewage, from entering the Missouri River during flood events. An Environmental Assessment is being prepared as part of the National Environmental Policy Act (NEPA) documentation for funding the project.

The proposed project consists of approximately 26-acres for the relocation of the existing WWTP to a property owned by the City of Plattsmouth and proposed for industrial development, along E. Wiles Road in Plattsmouth, NE (40.918832, -95.91890). The WWTP is being relocated due to reoccurring flooding of the Missouri River at its current location within the floodplain just east of downtown Plattsmouth. Approximately 4.2 miles of sewer transmission line, which is part of the sewage/wastewater conveyance system (SWCS), would be constructed within the existing road Right-of-Way (ROW) with a few areas located outside of the road corridor. The SWCS would collect wastewater from the low points of the existing citywide collection systems near East Main Street and Schilling Road and convey it to the proposed WWTP. Effluent from the new WWTP is proposed to be conveyed along the same route, ending at the existing WWTP wastewater discharge pipe along the Missouri River (see attached map). An alternative wastewater discharge point is being considered in Four-Mile Creek, just west of the proposed WWTP site. The sewage collection and wastewater conveyance (SWCS) system will also involve the construction of two

additional pump stations, one at the coordinates 41.01816, -95.880122 and a smaller pump station at the coordinates 41.021694, -95.882398. It should be noted that only a minor amount of expanded capacity will occur due to modernized wastewater processing technology.

The influent collection and effluent conveyance lines will be placed in the same trench within SWCS ROW. The SWCS begins at the existing WWTP located at the southeast corner of E. Main Street and River Road. The SWCS then follows E. Main Street to a vacant city-owned lot located at the southwest corner of Main Street and South 1st Street, where a sewage pump station will be constructed. The SWCS will cross the City-owned lot and the rail road tracks to the south; then cross Livingston Street to the north end of Rylander Park. The SWCS will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue. The SWCS will be constructed along Smith Avenue for a distance of approximately 1.4 miles to its intersection with S. Chicago Avenue where the line will follow S. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance approximately 1.1 miles to the entrance of Four Mile Industrial Park, where the new WWTP is proposed to be constructed. In addition to the above, a sewage forced main sewage conveyance line will be constructed along North 16th Street/Queens Way, northerly from its intersection with Avenue G to a point just north of Sandy Lane where it will turn east to meet a proposed pump station that would be located on vacant land, south of Bradford Drive.

The relocated WWTP would require new primary treatment equipment consisting of influent screening, grit removal and raw wastewater pumping. The new WWTP would utilized sequencing batch reactor for secondary treatment and ultra violet disinfection to meet effluent disinfection requirements. Aerobic digesters would be constructed for treating and stabilizing solids generated as part of the treatment process. Onsite sludge storage tanks with sludge loading facilities would also be constructed to store treated solids for disposal by land applications. The proposed facility would also include a flow equalization basin which would be utilized to capture and storm peak flows that would later be returned to the WWTP for treatment, an administration building consisting of office spaces, laboratory, garage, control room for the plant control system and associated access roads, parking areas, and stormwater management infrastructure.

An alternative is being considered for the WWTP effluent discharge point . This alternative would involve the construction of approximately one mile of wastewater conveyance pipe to a location west of the new WWTP site at the coordinates 40.984086, -95.933889. The wastewater would discharge effluent to Four-Mile Creek which is a perennial tributary that flows to Eight-Mile Creek, in the Lower Platte River watershed. This alternative discharge point is under review by the Nebraska Department of Environmental (NDEE) and would require a permit from the NDEE to ensure that water quality standards are met. This alternative would eliminate a portion of SWCS that would carry treated wastewater effluent to the existing discharge outfall pipe which is currently permitted by the NDEE.

Terracon conducted a preliminary review using USFWS Division of Endangered Species website and the NGPC website to identify listed and proposed T&E species, as well as critical habitats

that may be located on or near the proposed tower site. Based on a review of the websites the Pallid sturgeon (*Scaphirhynchus albus*), the Least tern (*Sterna antillarum*), and Sturgeon Chub *(Marhybopsis gelida)* are listed as state and/or federally endangered species potentially occurring in Cass County. The Western prairie fringed Orchid (*Platanthera praeclara*); the Lake Sturgeon (*Acipenser fulvescens);* the Piping Plover, (*Charadrius melodus*); the River Otter (*Lontra canadensis*), Northern Long Eared Bat (M*yotis septenrionalis*), and the Southern Flying Squirrel (*Glaucomys Volans*) are listed as threatened species potentially occurring in Cass County.

Based on our desktop review of the project site, it is unlikely that these species and/or their suitable habitat in any measurable amount would be located at the site. The site is primarily agricultural cropland, landscaped grass within the ROW, and trees located along the riparian corridors. The amount of discharge from the WWTP would remain the same and the quality of the discharge would be similar. Overall the relocation of the WWTP would have a positive impact on water quality of the Missouri River.

A wetland delineation was completed on the site in August 2015 and May 2020. It is estimated that the project would result in approximately 0.06 acres of impacts to farmed wetlands and approximately 75 feet of stream to construct an access road to the proposed WWTP site. Temporary impacts to streams and a minor amounts of wetlands for the construction of SWCS lines may also occur. All aquatic resources that may be temporarily disturbed by the SWCs would be restored to pre-construction conditions.

The project will avoid tree removal from April 1st through July 15th to avoid impacts to nesting migratory birds and to the Northern Long-Eared Bat. The critical habitat for the other T&E species as well as the species themselves are not likely to occur at the proposed WWTP and the influent conveyance lines. The alternative location being considered for the effluent discharge may likely, but will not adversely effect T&E species in the Platte and Missouri River. Your confirmation of this, however, would be greatly appreciated. Photographs, a topographic site location map and other maps showing the project and have been included with this letter for your use.

Thank you for your response on this matter. If you have any questions concerning this letter, please do not hesitate to call me at (402) 617-8245. If you wish to respond by email, I may be reached at Jessica.Engelbart@terracon.com.

Sincerely,

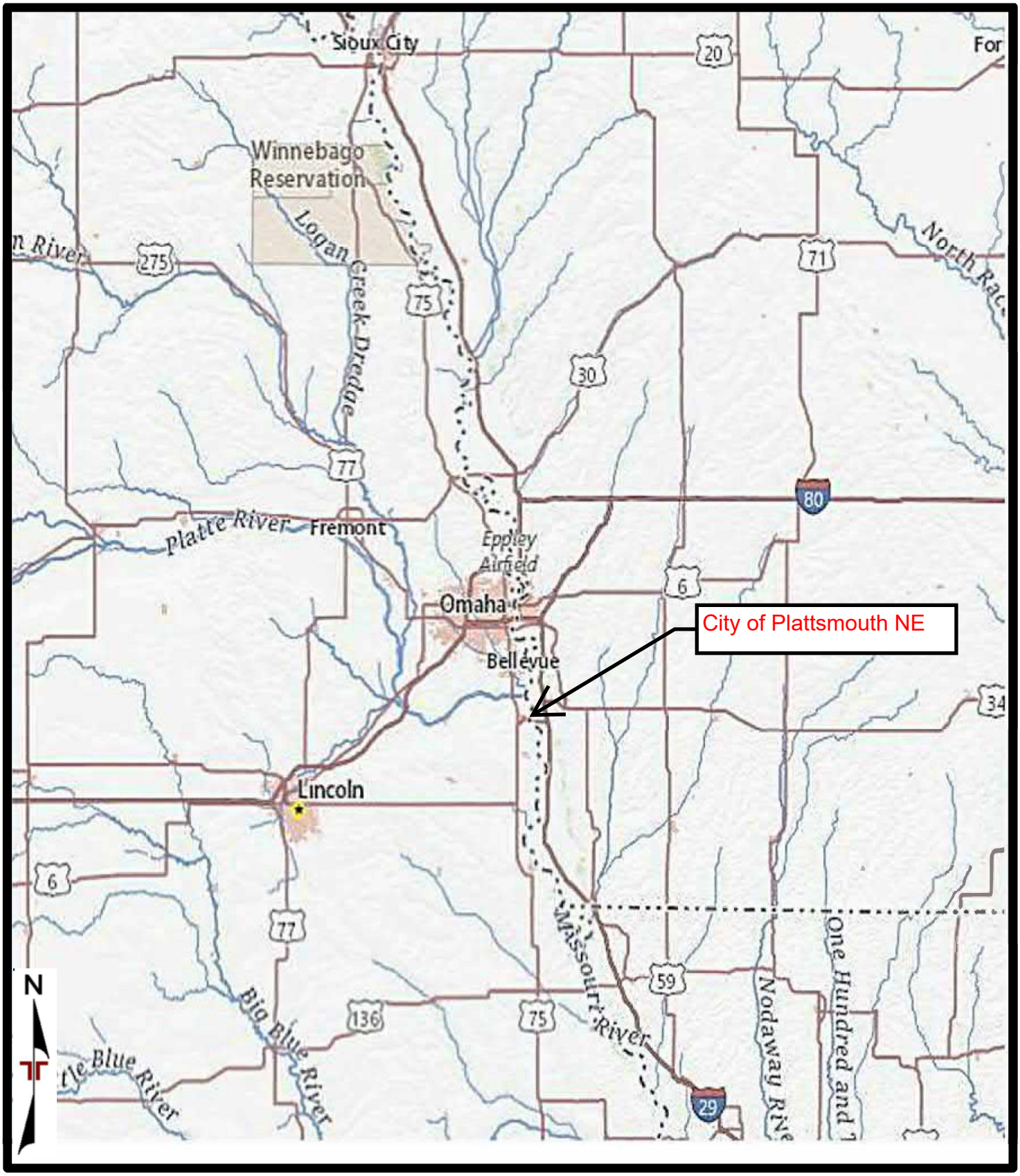
Terracon Consultants, Inc.

Jessica Engelbart

Jessica Engelbart
Environmental Scientist

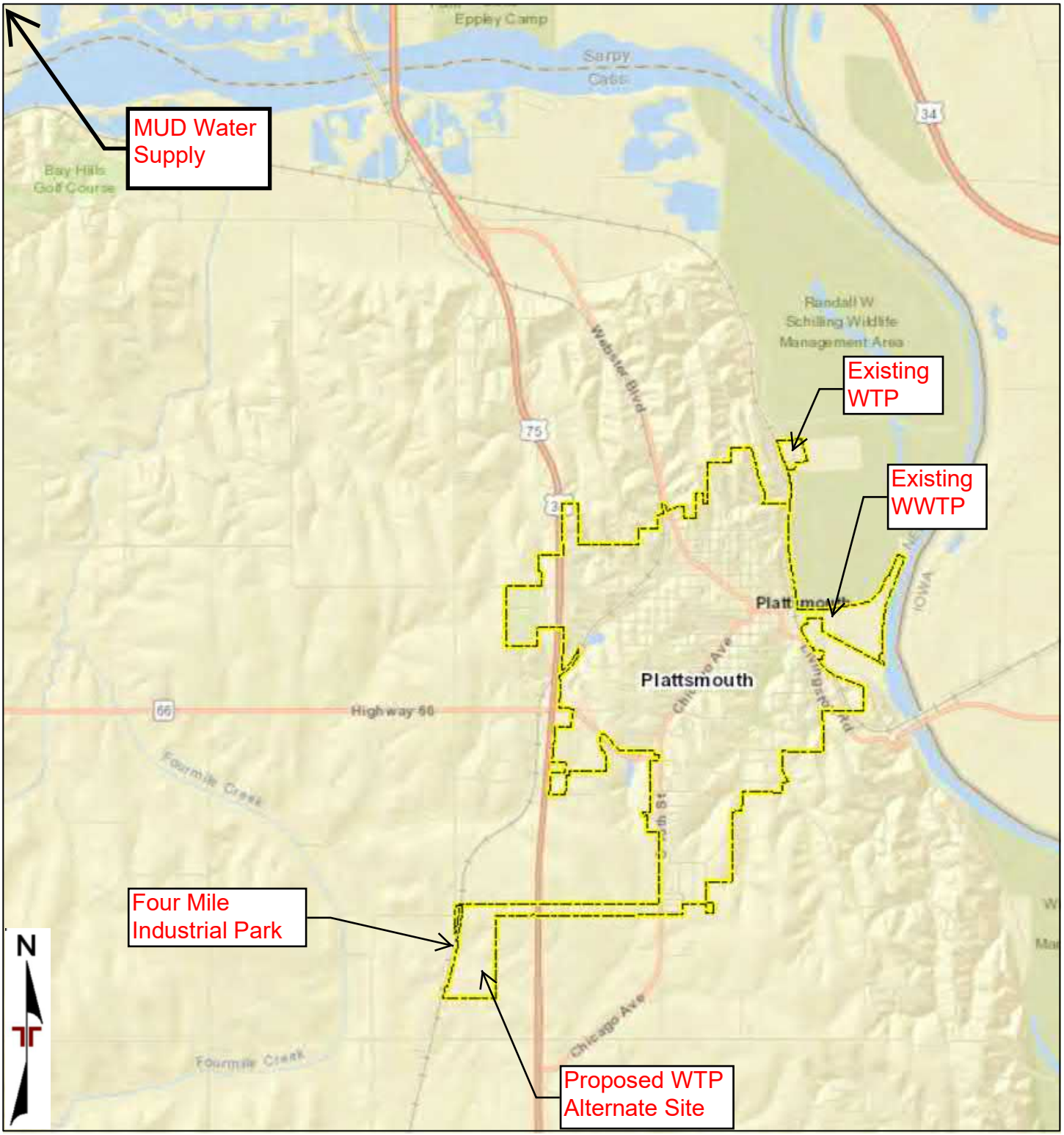
Distribution: Addressee (1)

Attachments: CERT Report
USFWS Species List
Vicinity Map
General Location Map
Conveyance System
Plant Site



VICINITY MAP - EXHIBIT A
Plattsmouth Water Supply Relocation Project
Plattsmouth, Nebraska

gWorks



February 10, 2020

DISCLAIMER: This map is not intended for conveyances, nor is it a legal survey. The information is presented on a best-efforts basis, and should not be relied upon for making financial, survey, legal or other commitments.

Legend

City Limits

1:72,224

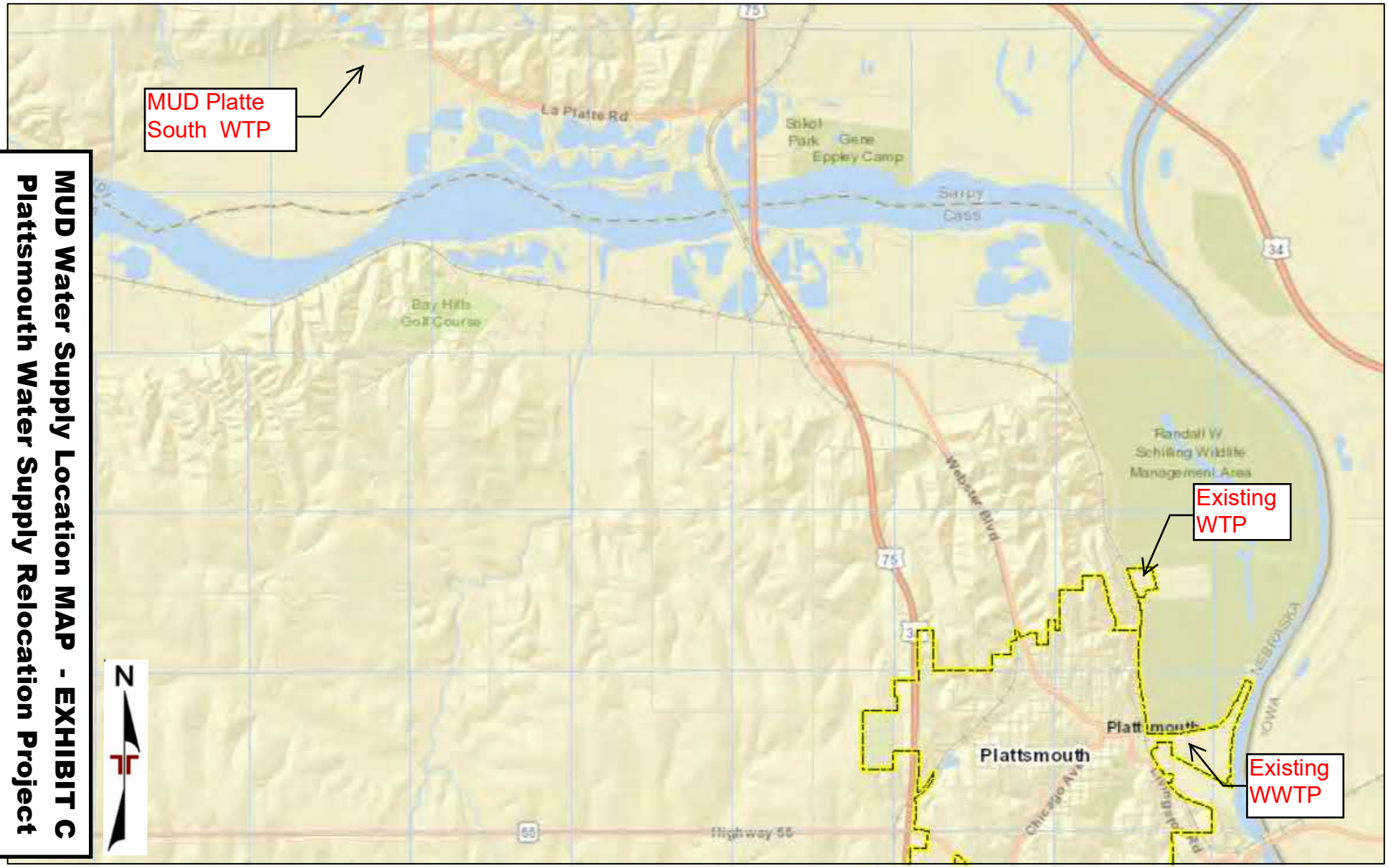
0 0.5 1 2 mi

0 1 2 4 km

Olmsted & Perry Consulting Engineers Inc.
OPCE Project No. 19092

GENERAL LOCATION MAP - EXHIBIT B
Plattsmouth Water Supply Relocation Project
Plattsmouth, Nebraska

MUD Regional Water Supply Site Location Map



MUD Water Supply Location MAP - EXHIBIT C
Plattsmouth Water Supply Relocation Project
Plattsmouth, Nebraska

March 3, 2020
16:07 PM

DISCLAIMER: This map is not intended for conveyances, nor is it a legal survey. The information is presented on a best-efforts basis, and should not be relied upon for making financial, survey, legal or other commitments.

1:72,224

0 3,250 6,500 13,000 ft

0 1,000 2,000 4,000 m

City Limits

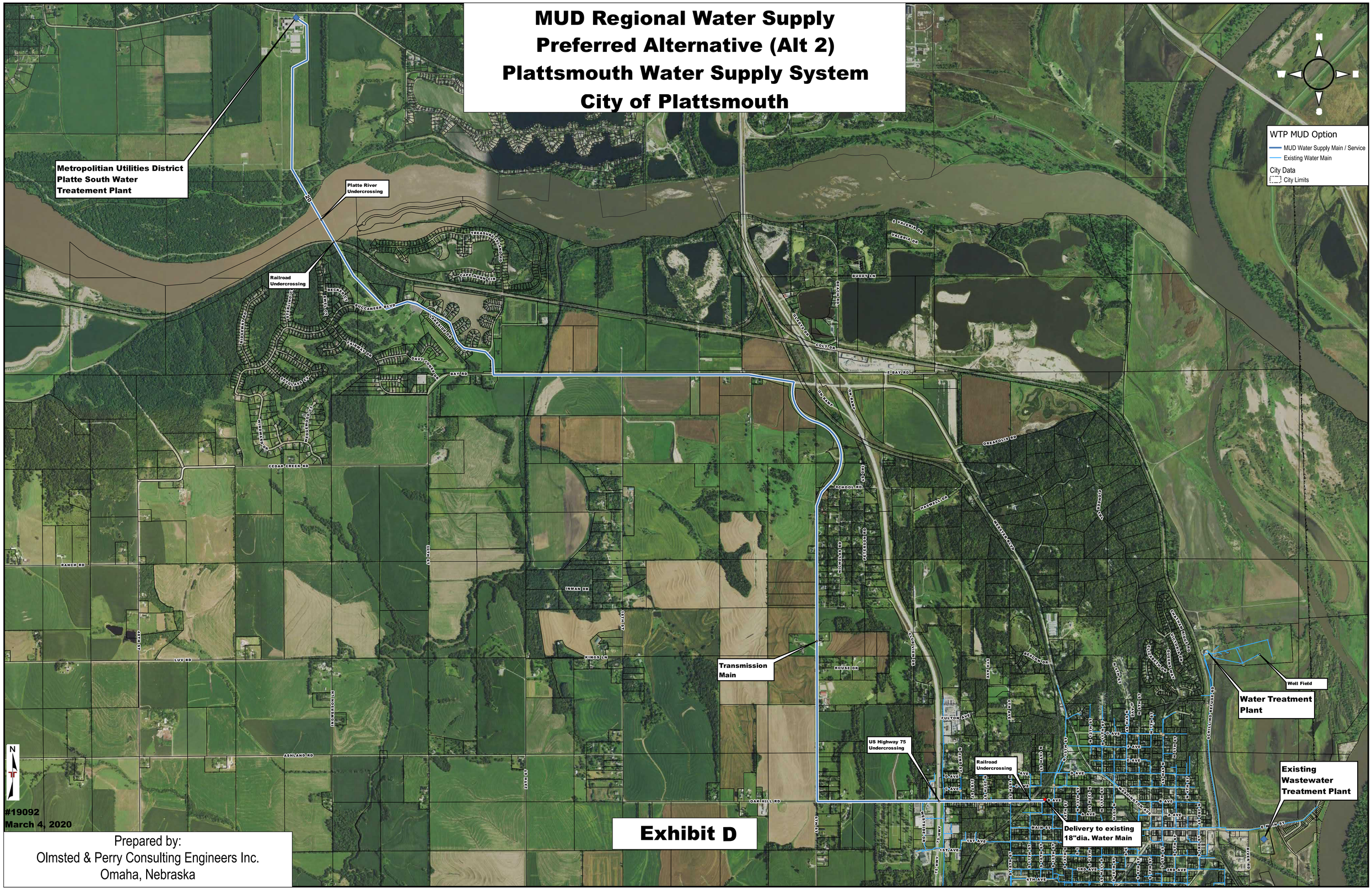
Sections

Olmsted & Perry Consulting Engineers Inc.
OPCE Project No. 19092

Cass County gWorks.

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

MUD Regional Water Supply
Preferred Alternative (Alt 2)
Plattsmouth Water Supply System
City of Plattsmouth



#19092
March 4, 2020

Prepared by:
Olmsted & Perry Consulting Engineers Inc.
Omaha, Nebraska

Exhibit D

Raw Water Transmission Main
Alternative 3 Plattsmouth Water Supply
Relocated Water Treatment Plant
City of Plattsmouth

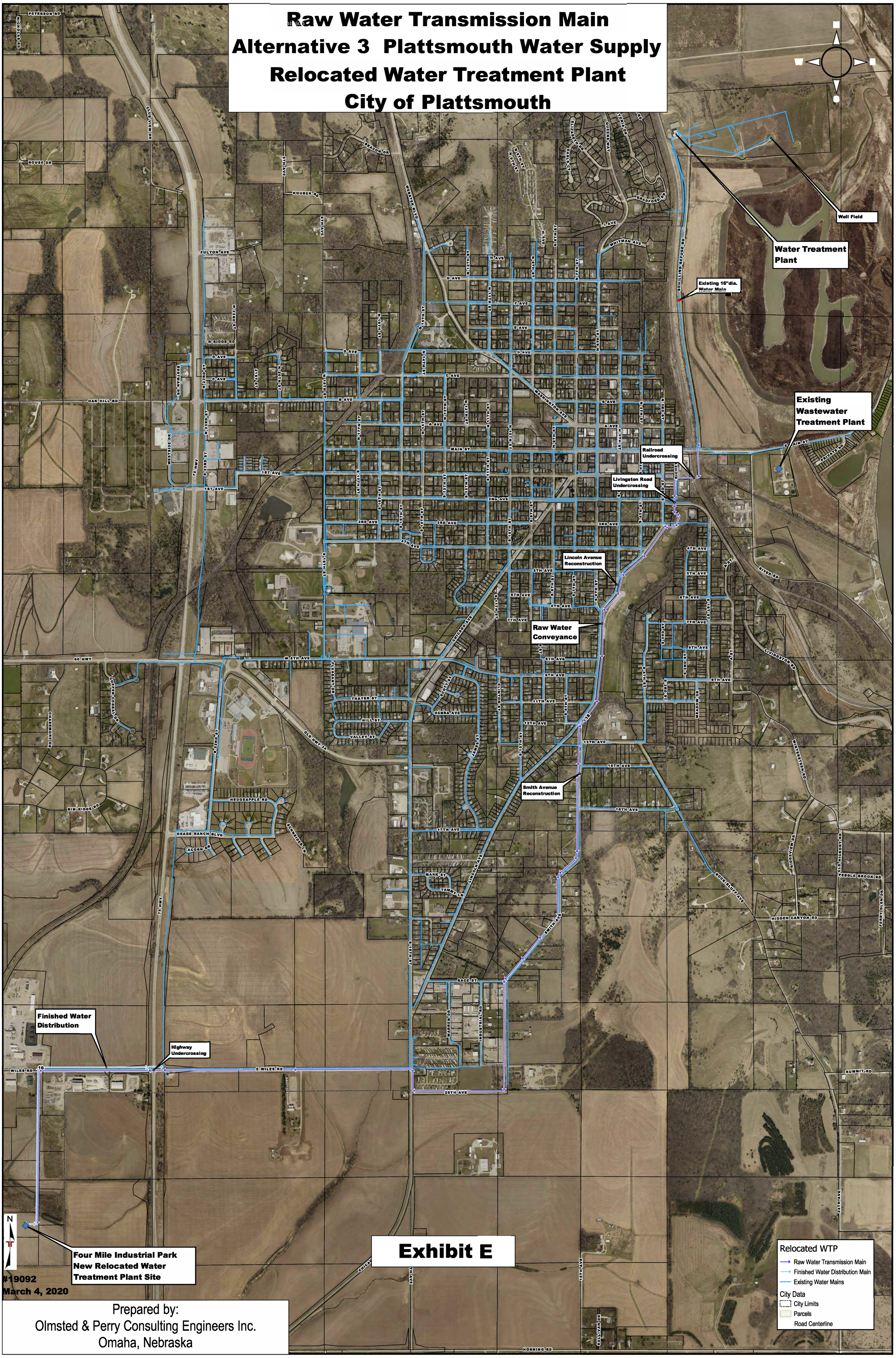


Exhibit E

#19092
March 4, 2020

Prepared by:
Olmsted & Perry Consulting Engineers Inc.
Omaha, Nebraska

APPENDIX D

Phase I Environmental Site Assessments and EDR Corridor Report

NOTE: Due overlapping project areas, the Phase I Environmental Site Assessment and EDR Corridor Report for the Plattsmouth Wastewater Treatment Plant Relocation Project are utilized to document the hazardous materials associated with the Plattsmouth Water Supply/ Water Treatment Plant Relocation Project

Note: Due to the length of the Phase I ESA reports, only the report text and select figures are included in Appendix D. Copies of the full reports may be downloaded via Sharefile:

https://terracon.sharefile.com/d-s7daa6294ca044bc7aa223a1f0a74e22e

ALTERNATIVE 3
Water Conveyance Line

Exhibit D-1

Phase I Environmental Site Assessment

Plattsmouth WWTP Relocation

Headworks Influent Structure and Pump Station

Southwest of S. 1st Street and E. Main Street

Plattsmouth, Cass County, Nebraska

July 6, 2020

Terracon Project No. 05207234

Prepared for:

Olmsted & Perry Consulting Engineers Inc.
Omaha, Nebraska

Prepared by:

Terracon Consultants, Inc.
Omaha, Nebraska

terracon.com

Terracon

Environmental ■ Facilities ■ Geotechnical ■ Materials

July 6, 2020

Olmsted & Perry Consulting Engineers Inc.
10730 Pacific Street, Ste 232
Omaha, NE 68114-4700

Attn: Mr. Steve Perry
P: (402) 399-8552
E: stevep@olmstedperry.com

Re: Phase I Environmental Site Assessment
Plattsmouth WWTP Relocation
Headworks Influent Structure and Pump Station
Southwest of S. 1st Street and E. Main Street
Plattsmouth, Cass County, Nebraska
Terracon Project No. 05207234

Dear Mr. Perry:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed Phase I Environmental Site Assessment (ESA) report for the above-referenced site. This assessment was performed in accordance with Terracon Proposals No. P05207234 and P05207319 dated April 24, 2020.

We appreciate the opportunity to be of service to you on this project. In addition to Phase I services, our professionals provide geotechnical, environmental, construction materials, and facilities services on a wide variety of projects locally, regionally and nationally. For more detailed information on all of Terracon's services please visit our website at www.terracon.com. If there are any questions regarding this report or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,
Terracon Consultants, Inc.

Kari A. Munk
Staff Environmental Engineer

David M. Svingen
Senior Project Manager

Philip E. Lind
Field Scientist

Attachments

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EXECUTIVE SUMMARY

This Phase I Environmental Site Assessment (ESA) was performed in accordance with Terracon Proposals No. P05207234 and P05207319 dated April 24, 2020 and was conducted consistent with the procedures included in ASTM E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. The ESA was conducted under the supervision or responsible charge of Kari A. Munk, Environmental Professional. Philip E. Lind performed the site reconnaissance on May 29, 2020.

Findings and Opinions

A summary of findings is provided below. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein.

Site Description and Use

The site is located southwest of East Main Street and South 1st Street in Plattsmouth, Dawson County, Nebraska. The Plattsmouth Wastewater Treatment Plant (WWTP), which currently operates approximately 850 feet east of the site, plans on relocating its operations. The site is proposed for development of the "Headworks Influent Structure and Pump Station" for the relocated WWTP. The site consists of an approximately one-acre, gravel-paved lot of land which will house the influent structure and pump station. The site also includes the proposed sewer line right-of-way connections between the pump station and sewer main. The proposed sewer utility lines extend approximately 1,500 linear feet south and west of the proposed pump station and terminate at the intersection of 3rd Avenue and South 3rd Street.

The proposed pump station location consists of vacant, gravel-paved land. The proposed sewer utility line extends across a railroad track operated by Burlington Northern Santa Fe (BNSF); vacant land; and concrete-paved street rights-of-way along 1st Avenue, South Richey Avenue, 2nd Avenue, South 3rd Street, and Livingston Highway.

Historical Information

Based on a review of historical information, the proposed pump station site was historically part of the Missouri River bottom lands prior to the construction of levees which rerouted this section of the river in the 1920s-1930s. The proposed pump station site appears to have been vacant since after the river was rerouted further east.

Since at least 1885, the proposed utility transmission line appears to have extended through railroad tracks, paved streets, and commercially-developed and residentially-developed areas. An area along the railroad track, approximately 10-20 feet south of the proposed utility line, was historically developed with an oil warehouse and bulk aboveground storage tanks (ASTs) from

the late 1800s until approximately 1949. As discussed in Section 4.1, soil and groundwater sampling were conducted at the former bulk oil station. The soil and groundwater do appear to be impacted by petroleum hydrocarbons; however, the concentrations reported are below all but the strictest risk-based screening level (RBSL) established by the Nebraska Department of Environment & Energy (NDEE), and the NDEE has issued "No Further Action" letters for this property. The petroleum-impacted soil and groundwater at the historical bulk oil station along the railroad represents a controlled recognized environmental condition (CREC) in connection with the site.

A facility located approximately 40 feet west of the proposed utility line operated as an auto repair shop in approximately 1929-1949. Auto repair is associated with the use of petroleum products and the generation of used oil and spent solvents. Baburek Metal, whose operations include welding and painting, also operated in this building from at least 1980 to the present. Regulatory file review of the Baburek Metal facility indicates that while spills and/or releases have not been reported at this property, the facility stores significant quantities of paints and solvents. Based on proximity and topographically up-gradient position relative to the proposed utility transmission line, the historical uses of the property west of Richey Street for auto service/repair (1929-1949) and metal welding/painting (1980-present) represent RECs in connection with the site.

Records Review

The proposed pump station location was not listed by state or federal regulatory databases or by inquiries made to local regulatory agencies. Several facilities located along or adjacent to the proposed utility transmission line were listed under various regulatory programs, including: the BNSF railroad property that the proposed utility line will extend through, Rhylander Park (an approximately 28-acre area which at its nearest point to the site is located approximately 20 feet south of the southern end of the proposed utility transmission line), and Baburek Metal Preserving Company (approximately 40 feet west of the portion of the proposed utility transmission line which extends along Richey Street).

As discussed in the "Historical Information" summary above and in Section 3.1, an oil warehouse and bulk aboveground oil tanks were historically located along the BNSF railroad track approximately 10 to 20 feet south of the portion of the utility transmission line that will cross the railroad track. According to the leaking underground storage tank (LUST) file obtained from the NDEE, a gasoline UST was also removed from the historical oil warehouse/bulk tank area in 1993. The LUST file indicates that the gasoline UST was in good condition, and the soil sample collected from beneath the UST exhibited only a minor photoionization detector (PID) reading of 1 part per million (ppm). The NDEE issued a No Further Action (NFA) letter and closed the LUST file. A leaking aboveground storage tank (LAST) file obtained from the NDEE was also reviewed. According to the LAST file, in 1997 a Limited Phase II Assessment was conducted in which several soil samples and one groundwater sample were collected from the location of the historical oil warehouse and bulk ASTs and submitted for analysis of total extractable hydrocarbons (TEH). The TEH concentrations reported in the soil samples did not exceed the

strictest RBSLs established by the NDEE. The concentration of TEH as Diesel was reported in the groundwater sample which slightly exceeded the strictest RBSL, however this RBSL is only applicable if a water supply well is present at the contamination source. The NDEE issued a NFA letter for the release. The petroleum contamination present in the soil and groundwater at the historical bulk storage area represents a CREC in connection with the site.

Rhylander Park is an approximate 28-acre city park that was historically occupied by railroad tracks, roundhouses, and machine shops. The park is located approximately 30 feet south of the proposed utility line at its nearest point. A Phase I ESA conducted for Rhylander Park indicates that the railroad roundhouses, engine houses, oil houses, and machine shops were located in the central portion of the park, approximately 600 feet south of the site at the nearest. A coal chute was located approximately 200 feet southeast of the south end of the proposed utility transmission line. A former manufactured gas plant (FMGP) was located on one of the east adjoining properties to the park, approximately 380 feet east of the proposed utility transmission line. During several Phase II ESAs, soil and groundwater samples were collected throughout the park and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Resources Conservation and Recovery Act (RCRA) metals, and TEH. The nearest sampling points to the site were located approximately 200-300 feet east of the proposed utility line (near the FMGP) and approximately 170 feet southeast of the proposed utility line (near the historical coal chute). Contaminant concentrations in groundwater samples collected from the sampling point closest to the site did not exceed NDEE Voluntary Cleanup Program (VCP) remediation goals (RGs) or EPA Maximum Contaminant Limits (MCLs). Surficial soil samples (0 to 2 feet bgs) collected from two of the three sampling points nearest to the site exhibited concentrations of arsenic, chromium, and several SVOCs that exceeded residential VCP RGs but were below industrial RGs. Contaminant concentrations in soil collected from deeper intervals at these sampling points did not exceed VCP RGs. “Hot spots” of VOC, SVOC, TEH, and metal contamination were encountered further south in Rhylander Park where railroad maintenance operations were conducted. A large amount of contaminated soil was removed and replaced with clean fill in the area of the park where contaminant concentrations were highest. Additionally, institutional controls were put in place for Rhylander Park that limited use of the property to a public park, prohibited the installation of water supply wells, and implemented a Materials Management Plan (MMP). The potential for contaminated soil and/or groundwater associated with Rhylander Park to be encountered during site construction activities (particularly along the southern portion of the proposed utility transmission line) represents a CREC since exposure to potentially contaminated subsurface media is controlled by NDEE-approved institutional controls, AULs, and an MMP.

Baburek Metal is a metal preserving facility located approximately 40 feet west of the proposed utility transmission line that extends along Richey Street. According to regulatory files obtained by the NDEE, Baburek Metal has been operated since at least 1980 and their operations include welding and painting. Files related to hazardous waste generation and chemical storage indicate that relatively small quantities (less than 50 pounds per year) of hazardous waste are generated at this facility, namely methyl ethyl ketone (MEK) and mineral spirits mixed with paint waste from

cleaning paint guns. However, Tier II reporting forms from 1993 and 1994 indicate that while relatively small quantities of hazardous waste are produced due to recovery/reuse of many of the cleaning solvents, several thousand pounds of potentially hazardous chemicals (particularly MEK and xylene-containing solvents) are stored on-site. Spills and/or releases of these chemicals have not been reported. However, due to the amount of chemicals (particularly paint solvents) stored and used at the facility, long-term years of operation, and proximity and topographically up-gradient position relative to the proposed utility transmission line, the operations at Baburek Metal Preserving represent a REC in connection with the site.

Site Reconnaissance

A recycling container for recyclable plastic and paper was observed on the north side of the proposed pump station site. Staining, releases, noxious odors, and/or hazardous waste disposal were not observed in the vicinity of the recycling container. Other environmentally notable features were not observed on-site. The observations made during the site reconnaissance do not represent RECs.

Adjoining Properties

The adjoining properties located adjacent to the proposed pump station and/or utility transmission line consist primarily of commercial businesses, although single-family residential homes are also located along the southern portion of the proposed utility line. A BNSF railroad track is located west of the proposed pump station. An auto repair/sales facility is located on the east adjoining property to the proposed pump station site. Based on relatively recent years of operation (2010-present), observations made during the site reconnaissance (concrete pavement, no chemical storage or auto repair on exterior portions of the facility), absence of reported releases, and topographically down-gradient position relative to the site, the use of the east adjoining property for auto repair does not represent a REC in connection with the site. Several businesses of potential environmental concern were observed along the proposed utility transmission line route, including a sandblasting facility, an auto repair shop, and a metal preserving company. The sandblasting facility and auto repair shop do not appear to represent RECs in connection with the site based on distance and/or topographic position relative to the site, site observations, and absence of reported releases. The metal preserving business, Baburek Metal Preserving Company, does represent a REC in connection with the site since they are located in close proximity and topographically up-gradient relative to the site, have been operating since at least 1980, and they store significant quantities of paint and paint solvents, as discussed in Section 4.1.

Significant Data Gaps

No Significant Data Gaps were identified.

Conclusions

We have performed a Phase I ESA consistent with the procedures included in ASTM Practice E 1527-13 at Southwest of S. 1st Street and E. Main Street, Plattsmouth, Cass County, Nebraska, the site. The following Recognized Environmental Conditions (RECs) or Controlled RECs (CRECs) were identified in connection with the site:

- From approximately 1888 through 1952, a bulk oil station was historically located near the area of the railroad track that the proposed utility transmission line extends through. Bulk oil was stored in a warehouse and several ASTs, which appear to have been located approximately 10 to 20 feet south of the proposed utility line route. A gasoline UST was also removed from this location in 1993. Subsurface assessments conducted in 1997 indicate that fairly low concentrations of TEH as Diesel and TEH as Waste Oil are present in the soil and groundwater at the former bulk oil station. The concentration of TEH as Diesel in the groundwater sample exceeded the NDEE's strictest RBSL, which is applicable for sites where a drinking water well is present at the contamination source. The TEH concentrations reported in the soil and groundwater samples did not exceed any other RBSLs. The NDEE closed the release files with "No Further Action". The petroleum-impacted soil and groundwater at the former bulk oil station along the railroad track represents a CREC.
- Rhylander Park, which is located adjacent to the southern portion of the proposed utility transmission line, has undergone soil and groundwater sampling as well as extensive remedial work due to its historical uses as a railroad maintenance yard. Although the most significant areas of contamination appear to be located in the central portion of the park, located approximately 600 feet south of the site, concentrations of arsenic, chromium, and SVOCs were also reported above residential VCP RGs in shallow soil samples collected in closer proximity to the site (approximately 170-300 feet east to southeast of the south end of the proposed utility transmission line). The possibility exists for metal and SVOC contamination associated with Rhylander Park to be encountered during construction activities at the site, particularly those that will disturb soil on the southern portion of the proposed utility transmission line. Institutional controls and a Materials Management Plan have been established for the Rhylander Park facility. Therefore, the contamination associated with Rhylander Park appear to represent a CREC.
- Baburek Metal Preserving Company, whose operations include welding and painting, has operated since at least 1980 to the present on the property located approximately 40 feet west of the proposed utility transmission line. Regulatory file review for the facility indicates that while no releases have been reported, the facility uses and stores several thousand pounds of hazardous chemicals in their operations, most notably MEK and xylene-containing paint solvents. Based on

proximity to the site, topographically up-gradient position relative to the site, long-term operations, and amounts of chemicals stored, the use of the west adjoining property as Baburek Metal Preserving Company from approximately 1980 through the present represents a REC in connection with the site.

- From approximately 1929 to 1949, an auto service/repair facility operated in the building that is currently occupied by Baburek Metal, which is approximately 40 feet west and topographically up-gradient of the section of Richey Street that the proposed utility line will extend through. Auto repair is associated with the use of petroleum products and the generation of used oil and spent solvents. Based on proximity and topographically up-gradient position relative to the proposed utility transmission line, the historical use of the property west of Richey Street for auto service/repair represents a REC in connection with the site.

Recommendations

Based on the scope of services, limitations, and conclusions of this assessment, Terracon recommends the following additional actions.

- Terracon recommends developing a Materials Management Plan to address contaminated soil and/or groundwater that may be encountered during construction activities at the site.

1.0 INTRODUCTION

1.1 Site Description

Site Name	Plattsmouth WWTP Relocation – Headworks Influent Structure and Pump Station
Site Location/Address	Southwest of S. 1st Street and E. Main Street, Plattsmouth, Cass County, Nebraska
Land Area	The proposed pump station location consists of approximately one acre of land. The proposed sewer main right-of-way connections extending from the proposed pump station span a total length of approximately 1,500 linear feet.
Site Improvements	The site is improved with gravel pavement.
Anticipated Future Site Use	Pump station and sewer utility connections for the relocated Plattsmouth wastewater treatment plant.
Purpose of the ESA	Relocation of the Plattsmouth wastewater treatment plant.

The location of the site is depicted on Exhibit 1 of Appendix A, which was reproduced from a portion of the Plattsmouth, Nebraska USGS 7.5-minute series topographic map. The site and adjoining properties are depicted on the Site Diagram, which is included as Exhibit 2 of Appendix A. Acronyms and terms used in this report are described in Appendix F.

1.2 Scope of Services

This Phase I ESA was performed in accordance with Terracon Proposals No. P05207234 and P05207319 dated April 24, 2020 and was conducted consistent with the procedures included in ASTM E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. The purpose of this ESA was to assist the client in developing information to identify RECs in connection with the site as reflected by the scope of this report. This purpose was undertaken through user-provided information, a regulatory database review, historical and physical records review, interviews, including local government inquiries, as applicable, and a visual noninvasive reconnaissance of the site and adjoining properties. Limitations, ASTM deviations, and significant data gaps (if identified) are noted in the applicable sections of the report.

ASTM E1527-13 contains a new definition of "migrate/migration," which refers to “the movement of hazardous substances or petroleum products in any form, including, for example, solid and liquid at the surface or subsurface, and vapor in the subsurface.” By including this explicit reference to migration in ASTM E1527-13, the Standard clarifies that the potential for vapor

migration should be addressed as part of a Phase I ESA. This Phase I ESA has considered vapor migration in evaluation of RECs associated with the site.

1.3 Standard of Care

This ESA was performed in accordance with generally accepted practices of this profession, undertaken in similar studies at the same time and in the same geographical area. We have endeavored to meet this standard of care, but may be limited by conditions encountered during performance, a client-driven scope of work, or inability to review information not received by the report date. Where appropriate, these limitations are discussed in the text of the report, and an evaluation of their significance with respect to our findings has been conducted.

Phase I ESAs, such as the one performed at this site, are of limited scope, are noninvasive, and cannot eliminate the potential that hazardous, toxic, or petroleum substances are present or have been released at the site beyond what is identified by the limited scope of this ESA. In conducting the limited scope of services described herein, certain sources of information and public records were not reviewed. It should be recognized that environmental concerns may be documented in public records that were not reviewed. No ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs. No warranties, express or implied, are intended or made. The limitations herein must be considered when the user of this report formulates opinions as to risks associated with the site or otherwise uses the report for any other purpose. These risks may be further evaluated – but not eliminated – through additional research or assessment. We will, upon request, advise you of additional research or assessment options that may be available and associated costs.

1.4 Additional Scope Limitations, ASTM Deviations and Data Gaps

Based upon the agreed-on scope of services, this ESA did not include subsurface or other invasive assessments, vapor intrusion assessments or indoor air quality assessments (i.e. evaluation of the presence of vapors within a building structure), business environmental risk evaluations, or other services not particularly identified and discussed herein. Pertinent documents are referred to in the text of this report, and a separate reference section has not been included. Reasonable attempts were made to obtain information within the scope and time constraints set forth by the client; however, in some instances, information requested is not, or was not, received by the issuance date of the report. Information obtained for this ESA was received from several sources that we believe to be reliable; nonetheless, the authenticity or reliability of these sources cannot and is not warranted hereunder. This ESA was further limited by the following:

- At the issuance of this report, a response has not been received from the Sarpy/Cass Health Department regarding records of environmental concern. Since responses were received from other local agencies, this does not represent a significant limitation.

- Historical records were not available prior to the first developed use of the site. The earliest ascertainable resource is a Sanborn fire insurance map from 1885, which depicts a portion of the proposed sewer transmission line extending across railroad tracks and through an area that is developed with dwellings and a canning company. Based on the use of the site and the timeframe, the absence of earlier historical records is not deemed to be a significant limitation.

An evaluation of the significance of limitations and missing information with respect to our findings has been conducted, and where appropriate, significant data gaps are identified and discussed in the text of the report. However, it should be recognized that an evaluation of significant data gaps is based on the information available at the time of report issuance, and an evaluation of information received after the report issuance date may result in an alteration of our conclusions, recommendations, or opinions. We have no obligation to provide information obtained or discovered by us after the issuance date of the report, or to perform any additional services, regardless of whether the information would affect any conclusions, recommendations, or opinions in the report. This disclaimer specifically applies to any information that has not been provided by the client.

This report represents our service to you as of the report date and constitutes our final document; its text may not be altered after final issuance. Findings in this report are based upon the site's current utilization, information derived from the most recent reconnaissance and from other activities described herein; such information is subject to change. Certain indicators of the presence of hazardous substances or petroleum products may have been latent, inaccessible, unobservable, or not present during the most recent reconnaissance and may subsequently become observable (such as after site renovation or development). Further, these services are not to be construed as legal interpretation or advice.

1.5 Reliance

This ESA report is prepared for the exclusive use and reliance of Olmsted & Perry Consulting Engineers Inc. Use or reliance by any other party is prohibited without the written authorization of Olmsted & Perry Consulting Engineers Inc. and Terracon Consultants, Inc. (Terracon).

Reliance on the ESA by the client and all authorized parties will be subject to the terms, conditions and limitations stated in the proposal, ESA report, and Terracon's Agreement. The limitation of liability defined in the Agreement is the aggregate limit of Terracon's liability to the client and all relying parties.

Continued viability of this report is subject to ASTM E1527-13 Sections 4.6 and 4.8. If the ESA will be used by a different user (third party) than the user for whom the ESA was originally prepared, the third party must also satisfy the user's responsibilities in Section 6 of ASTM E1527-13.

1.6 Client Provided Information

Prior to the site visit, Mr. Steve Perry, client's representative, was asked to provide the following user questionnaire information as described in ASTM E1527-13 Section 6.

Client Questionnaire Responses

Client Questionnaire Item	Client Did Not Respond	Client's Response	
		Yes	No
Specialized Knowledge or Experience that is material to a REC in connection with the site.		X	
Actual Knowledge of Environmental Liens or Activity Use Limitations (AULs) that may encumber the site.	X		
Actual Knowledge of a Lower Purchase Price because contamination is known or believed to be present at the site.			X
Commonly Known or Reasonably Ascertainable Information that is material to a REC in connection with the site.		X	
Obvious Indicators of Contamination at the site.			X

Mr. Perry indicated that a title search had not been conducted at the time that the Client Questionnaire was requested and therefore he did not answer questions relating to environmental liens or AULs. He indicated that his company, Olmsted & Perry Consulting Engineers Inc., has worked on a combined sewer overflow project for the City of Plattsmouth which included areas where the proposed sewer main right-of-way connections (part of the site) are located. He was aware of potential contamination located along the proposed utility route that are associated with the Rhylander Park. Mr. Perry provided a copy of a Materials Management Plan and Environmental Covenant for the Rhylander Park facility (discussed in Section 4.1). A copy of the questionnaire is included in Appendix C.

2.0 PHYSICAL SETTING

Physical Setting Information		Source
Topography		
Site Elevation	Approximately 967 feet above sea level.	USGS Topographic Map, Plattsmouth, Nebraska Quadrangle, 2014 (Appendix A)
Topographic Gradient	In general, the site slopes downward toward the east with variation toward the southeast and northeast. Toward the north side of the site (the proposed pump station), the topographic gradient has a general southeast downward gradient. However, the area surrounding the proposed utility transmission line exhibits a downward slope toward the northeast.	
Closest Surface Water	A sewage disposal drainageway is depicted adjoining the south side of the proposed pump station site.	
Soil Characteristics		
Soil Type	Haynie silt loam, 0 to 2 percent slopes, occasionally flooded	USDA-SCS Soil Survey of Cass County, Nebraska issued 1984
Description	Deep, nearly level, moderately well drained soil on bottom lands along major rivers.	
Geology/Hydrogeology		
Formation	Shawnee Group	Surficial Geologic Map of the Greater Omaha Area, Nebraska and Iowa, 2001; Geologic Bedrock Map of Nebraska, 1986
Description	The geology of the region consists of flood plain and stream-channel alluvial deposits adjacent to the Missouri River which overlie Late Pennsylvanian aged limestone and shale of the Shawnee Group.	
Estimated Depth to First Occurrence of Groundwater	Approximately 9 to 11 feet below ground surface (bgs).	Monitoring wells installed at Rhylander Park facility (discussed in Section 4.1), located adjacent to the south side of the proposed utility line
*Hydrogeologic Gradient	Not known - may be inferred to be parallel to topographic gradient (primarily to the east with variation to the northeast and southeast).	

* The groundwater flow direction and the depth to shallow, unconfined groundwater, if present, would likely vary depending upon seasonal variations in rainfall and other hydrogeological features. Without the benefit of on-site groundwater monitoring wells surveyed to a datum, groundwater depth and flow direction beneath the site cannot be directly ascertained.

3.0 HISTORICAL USE INFORMATION

Terracon reviewed the following historical sources to develop a history of the previous uses of the site and surrounding area, in order to help identify RECs associated with past uses. Copies of selected historical documents are included in Appendix C.

3.1 Historical Topographic Maps, Aerial Photographs, Sanborn Maps

Readily available historical USGS topographic maps, selected historical aerial photographs (at approximately 10 to 15 year intervals) and historical fire insurance maps produced by the Sanborn Map Company were reviewed to evaluate land development and obtain information concerning the history of development on and near the site. Reviewed historical topographic maps, aerial photographs and Sanborn maps are summarized below.

- Topographic maps:
  - Omaha Vicinity, Nebraska, published **1898** (1:62,500)
  - Plattsmouth, Nebraska, published **1956** and photorevised **1969**, **1975**, and **1984** (1:24,000)
  - Plattsmouth, Nebraska, published **1994** (1:24,000)
  - Plattsmouth, Nebraska, published **2014** (1:24,000)
- Aerial photographs:
  - USDA, **1938** and **1950**, 1”=500’
  - USGS, **1952** and **1969**, 1”=500’
  - USDA, **1970**, 1”=500’
  - USGS, **1975**, 1”=750’
  - USDA, **1982**, 1”=500’
  - USGS, **1988** and **1993**, 1”=750’
  - USGS, **1999**, 1”=500’
  - USGS, **2002**, 1”=750’
  - USDA, **2005**, **2008**, **2011**, **2014**, and **2017**, 1”=500’
- Sanborn Fire Insurance Maps: **1885**, **1888**, **1892**, **1899**, **1906**, **1923**, **1929**, and **1949**

Historical Maps and Aerial Photographs

Direction	Description
Site (Proposed Pump Station)	**1885-1923:** The 1898 topographic map depicts the proposed pump station as part of the Missouri River. The proposed pump station location is located on the very eastern edge of where Sanborn map coverage terminates; therefore, only a small portion of the proposed pump station is depicted on the 1885-1923 Sanborn fire insurance maps. However, it can be assumed that on-site features are similar to the immediately surrounding area, which is labeled as “Missouri River” on 1885-1899 Sanborn maps and “Bottom lands of the Missouri River” on 1906 and 1923

Direction	Description
Site (Proposed Pump Station) (cont.)	Sanborn maps. No specific features or labels are depicted near the proposed pump station on the 1929 or 1949 Sanborn maps. **1938-2017:** The proposed pump station location appears to be vacant land. Areas of disturbance and/or gravel pavement are visible on several of the aerial photographs from 1970 onward.
Site (Proposed Utility Line)	**1885-1892:** The proposed utility line is depicted as extending through BNSF Railroad tracks, along paved streets, and through commercially-developed and residentially-developed areas. Features depicted adjacent to the proposed utility line include dwellings, the Plattsmouth Canning Company, a railroad depot (1885-1892), an AST which is labeled as a railroad water tank (1885) and a railroad tank with an oil trestle (1888-1892), and an oil warehouse (1892). Sanborn map coverage was not available for the southern portion of the proposed utility line until 1899. **1899:** The proposed utility line is depicted as extending through BNSF Railroad tracks, along paved streets, and through commercially-developed and residentially-developed areas. Features depicted adjacent to the proposed utility line include a railroad freight depot, an oil warehouse with two iron oil tanks, a coal shed, dwellings, sheds/garages, and boarding houses. **1906:** Features depicted along or adjacent to the proposed utility line are similar to features depicted in 1899, although the proposed utility line is depicted as extending through a coal house in 1906. The oil warehouse and two iron tanks are depicted as owned by Standard Oil Co. **1923:** The proposed utility line is depicted as extending through BNSF Railroad tracks and two coal sheds, along paved streets, and through commercially-developed and residentially-developed areas. Features depicted adjacent to the proposed utility line include a railroad freight depot, an oil products warehouse and two gasoline tanks, coal sheds, a beer depot, stock pens, dwellings, and the Plattsmouth Artificial Ice Co. **1929:** Features depicted along or adjacent to the proposed utility line are similar to features depicted in 1923, although the two iron oil/gasoline tanks that were depicted in 1899-1923 appear to have been replaced by a single auto garage. An auto sales and service facility (building currently occupied by Baburek Metal) is also depicted west of the proposed utility line. The artificial ice plant depicted in 1923 is labeled as owned by Iowa-Nebraska Light & Power Company. **1938-1952:** The proposed utility line is depicted as extending through BNSF Railroad tracks and a coal shed, along paved streets, and through commercially-developed and residentially-developed areas. Features depicted adjacent to the proposed utility line on the 1949 Sanborn fire insurance map include a railroad freight depot, Standard Oil Co. Bulk Station (oil warehouse and four oil tanks), coal sheds, dwellings, an auto repair facility, the Nebraska-Iowa Light & Power Company artificial ice plant, and a wooden viaduct that is currently developed as Livingston Highway.

Direction	Description
Site (Proposed Utility Line) (cont.)	**1969-2017:** The proposed utility line appears to extend through a railroad track, along paved streets, and through commercially-developed and residentially-developed areas. Features adjoining the proposed utility line appear to be consistent with present-day features. Through 2008, a small structure is also visible west of the railroad track at the approximate location that the oil warehouse is depicted on 1899-1949 Sanborn maps.
North*	**1885-1923:** The adjoining property north of the proposed pump station is depicted as part of the Missouri River (1885-1899) or bottom lands of the Missouri River (1906-1923). **1938-2017:** The adjoining property north of the proposed pump station appears to be developed with East Main Street followed by vacant land and/or agricultural cropland. Several small structures (uses unknown, possible farmstead) are depicted further northeast in 1938-1970.
East*	**1898:** The adjoining property east of the proposed pump station is depicted as part of the Missouri River. **1938-1999:** The adjoining property east of the proposed pump station location appears to be vacant land. Areas of disturbance and/or gravel pavement are visible on several of the aerial photographs from 1970 onward. **2002:** Due to quality of the aerial photograph, specific features cannot be ascertained. **2005-2017:** The adjoining property east of the proposed pump station location appears to be developed with two structures (size consistent with JC's Cash for Cars and M&M Construction buildings as observed during a recent site reconnaissance).
South*	**1885-1923:** The adjoining property south of the proposed pump station is depicted as part of the Missouri River (1885-1899) or bottom lands of the Missouri River (1906-1923). **1938:** The adjoining property south of the proposed pump station appears to be vacant land. **1950-2017:** The adjoining property south of the proposed pump station location appears to be developed with the existing drainageway followed by vacant land. Limited storage of trailers/equipment is visible south of the drainageway from 2005 onward.
West*	**1885-1949:** The adjoining property west of the proposed pump station appears to be developed with railroad tracks and a railroad depot. Structures depicted west of the railroad tracks include stores, dwellings, vacant buildings, restaurants (1885-1906), a lodge (1906-1949), laundry facilities (1885-1892), and a creamery (1929-1949). **1950-1952:** The adjoining property west of the proposed pump station appears to be developed with railroad tracks and a railroad depot. Structures visible west of the railroad tracks appear to be consistent with features depicted on the 1949 Sanborn map.

Direction	Description
West* (cont.)	**1969-2017:** The adjoining property west of the proposed pump station appears to be developed with a railroad track followed by two structures (size consistent with the Cass County DHHS/DMV building and a city storage building as observed during a recent site reconnaissance).

* Relative to the proposed pump station location.

The proposed pump station location was historically part of the Missouri River bottom lands prior to the construction of levees which rerouted this section of the river in the 1920s-1930s. The proposed pump station site appears to have been vacant since after the river was rerouted further east.

Since at least 1885, the proposed utility transmission line appears to have extended through railroad tracks, paved streets, and commercially-developed and residentially-developed areas. The utility line extends west from the proposed pump station location across a railroad track that is currently owned by BNSF. Prior to 1969, the area surrounding where the proposed utility line crosses the track appears to have included additional features associated with the railroad, including coal sheds, a depot, and ASTs. In 1885-1892, a tank is depicted along the railroad track and approximately 10 to 20 feet south of the proposed utility line. The tank is labeled as a “railroad water tank” on the 1885 Sanborn map and a “railroad tank with oil trestle” on the 1888 and 1892 Sanborn maps. In 1899, a small building labeled “oil warehouse” is depicted south of the tank’s location, and the single tank had been replaced with two rectangular iron ASTs containing oil. The oil warehouse is depicted as operated by Standard Oil Co. on 1906-1949 Sanborn maps. The area north of the oil warehouse is depicted as developed with two gasoline tanks in 1923, an auto garage in 1929, and four oil tanks that were part of a bulk station in 1949. As discussed in Section 4.1, in the 1990s soil and groundwater sampling were conducted at the former warehouse and bulk tank areas. The soil and groundwater do appear to be impacted by petroleum hydrocarbons; however, the concentrations reported are below all but the strictest RBSL established by the NDEE, and the NDEE has issued “No Further Action” letters for this property. The petroleum-impacted soil and groundwater at the historical bulk oil station along the railroad represents a CREC in connection with the site.

The 1929 and 1949 Sanborn maps depict an auto service/repair facility approximately 40 feet west of the section of Richey Street that the proposed utility line will extend through. Auto repair is associated with the use of petroleum products and the generation of used oil and spent solvents. Based on proximity and topographically up-gradient position relative to the proposed utility transmission line, the historical use of the property west of Richey Street for auto service/repair represents a REC in connection with the site.

The 1885-1892 Sanborn maps depict laundry facilities on the property located west of the BNSF railroad track and proposed pump station location. It is unlikely that these facilities engaged in dry

cleaning operations given the small facility sizes and years of operation; therefore, these facilities do not represent RECs in connection with the site.

3.2 Historical City Directories

The EDR Digital Archive city directories used in this study were made available through EDR (selected years reviewed: 1992, 1995, 2000, 2005, 2010, 2014, and 2017). Street listings for the site were not available prior to 1992. The current street address for the site was identified as Southwest of S. 1st Street and E. Main Street.

Historical City Directories

Direction	Description
Site (Proposed Pump Station)	Not listed.
Adjacent to Proposed Utility Line	North: ▪ **201 Main Street:** Century Lumber Center (1995), Keeler and Associates (2005), Morehead Construction (2014-2017) East: ▪ **205 Richey Street:** WW Sandblasting/LFW Sandblasting & Painting (2005-2017) West: ▪ **202 Richey Street:** Predators & Prey Animal Care (2005)
North*	Not listed.
East*	**209 East Main Street:** Tilson Auto Repair (2010)
South*	Not listed.
West*	**211 East Main Street:** Justin's Auto Repair (2014-2017) **203 Main Street:** Greg's Body Shop (1995-2017) **207 Main Street:** Plattsmouth Lockers (1995-2017)

* Relative to the proposed pump station location.

Several businesses of potential environmental concern are listed on properties located adjacent to the proposed pump station and/or utility transmission line, including:

- A sandblasting facility (2005-present) located approximately 20 feet east of the section of Richey Street that the utility line will extend through,
- An auto repair facility (2010-present) located approximately 40 feet east of the proposed pump station site,
- An auto repair facility (2014-present) located approximately 80 feet west of the section of Richey Street that the utility line will extend through, and

- An auto body shop (1995-present) located approximately 430 feet west of the proposed pump station and approximately 100 feet north-northwest of the proposed utility line.

The sandblasting and auto repair facilities do not represent RECs in connection with the site based on relatively recent years of operation and absence of reported releases. Additionally, the sandblasting facility and one of the auto repair facilities are located topographically down-gradient relative to the site. The auto body shop located west of the proposed pump station and northwest of the proposed utility line does not represent a REC in connection with the site based on distance from the site and absence of reported releases.

3.3 Site Ownership

Based on a review of information obtained from the Cass County assessor's records, the current site owner is the City of Plattsmouth.

3.4 Title Search

At the direction of the client, a title search was not included as part of the scope of services. Unless notified otherwise, we assume that the client is evaluating this information outside the scope of this report.

3.5 Environmental Liens and Activity and Use Limitations

The EDR regulatory database report included a review of both Federal and State Engineering Control (EC) and Institutional Control (IC) databases. Based on a review of the database report, the site was not listed on the EC or IC databases. Please note that in addition to these federal and state listings, AULs can be recorded at the county and municipal level that may not be listed in the regulatory database report. Environmental lien and activity and use limitation records recorded against the site were not provided by the client. At the direction of the client, performance of a review of these records was not included as part of the scope of services and unless notified otherwise, we assume that the client is evaluating this information outside the scope of this report.

3.6 Interviews Regarding Current and Historical Site Uses

The following individuals were interviewed regarding the current and historical use of the site.

Interviews

Interviewer	Name / Phone #	Title	Date/Time
Kari A. Munk	Neil Frodermann / 402-949-0009	Public Works Director, City of Plattsmouth (Site Owner)	June 2, 2020 / 3:00 PM

The site is owned by the City of Plattsmouth. Mr. Neil Frodermann, the Public Works Director for the City of Plattsmouth, was interviewed regarding historical and current uses of the site. His comments are stated below.

- Mr. Frodermann has been employed as the Public Works Director for Plattsmouth since January 2018.
- He indicated that the City of Plattsmouth owned the site prior to his employment with them, but he did not know how long.
- To his knowledge, the proposed pump station site is currently and has historically been vacant land. However, he is aware of a stormwater outfall structure located directly west of the proposed pump station. To his knowledge, the stormwater outfall structure has occupied this area for several decades, and while the pumping equipment is currently inoperable, the pipe still conveys stormwater to the south-adjoining drainageway.
- He was not aware of the storage of petroleum products or hazardous substances at the site.
- He was not aware of USTs or ASTs at the site.
- He was not aware of septic systems or wells located at the site.
- He was not aware of prior environmental assessments conducted at the site.
- Mr. Frodermann did not have environmentally related concerns for the site or the site vicinity.

3.7 Prior Report Review

Terracon requested the client provide any previous environmental reports they are aware of for the site. Previous reports were not provided by the client to Terracon for review.

4.0 RECORDS REVIEW

Regulatory database information was provided by EDR, a contract information services company. The purpose of the records review was to identify RECs in connection with the site. Information in this section is subject to the accuracy of the data provided by the information services company and the date at which the information is updated. The scope herein did not include confirmation of facilities listed as "unmappable" by regulatory databases.

In some of the following subsections, the words up-gradient, cross-gradient and down-gradient refer to the topographic gradient in relation to the site. As stated previously, the groundwater flow direction and the depth to shallow groundwater, if present, would likely vary depending upon seasonal variations in rainfall and the depth to the soil/bedrock interface. Without the benefit of on-site groundwater monitoring wells surveyed to a datum, groundwater depth and flow direction beneath the site cannot be directly ascertained.

4.1 Federal and State/Tribal Databases

Listed below are the facility listings identified on federal and state/tribal databases within the ASTM-required search distances from the approximate site boundaries. Database definition, descriptions, and the database search report are included in Appendix D.

Federal Databases

Database	Description	Distance (miles)	Listings
CERCLIS	Comprehensive Environmental Response, Compensation, & Liability Information System	0.5	0
CERCLIS / NFRAP	Comprehensive Environmental Response, Compensation, & Liability Information System/No Further Remedial Action Planned	0.5	1
ERNS	Emergency Response Notification System	Site	0
IC / EC	Institutional Control/Engineering Control	Site	0
NPL	National Priorities List	1	0
NPL (Delisted)	National Priorities Delisted List	0.5	0
RCRA CORRACTS/ TSD	RCRA Corrective Action Activity	1	0
RCRA Generators	Resource Conservation and Recovery Act	Site and adjoining properties	1
RCRA Non-CORRACTS/ TSD	RCRA Non-Corrective Action Activity	0.5	0

State/Tribal Databases

Database	Description	Distance (miles)	Listings
Brownfields	Brownfields Inventory Listing	0.5	3
IC	Institutional Control Registry	Site	0
LUST	Leaking Underground Storage Tanks	0.5	12
SHWS	State Hazardous Waste Sites	1	2
SWF/LF	Solid Waste Facilities/Landfills	0.5	0
UST	Underground Storage Tank	Site and adjoining properties	2
VCP	Voluntary Cleanup Program	0.5	1

In addition to the above ASTM-required listings, Terracon reviewed other federal, state, local, and proprietary databases provided by the database firm. A list of the additional reviewed databases is included in the regulatory database report included in Appendix D.

The following table summarizes the site-specific information provided by the database and/or gathered by this office for identified facilities located within approximately 1,000 feet of the site. Facilities are listed in order of proximity to the site. Additional discussion for selected facilities follows the summary table.

Listed Facilities

Facility Name and Location	Estimated Distance / Direction/Gradient from Pump Station	Estimated Distance / Direction/Gradient from Nearest Utility Line	Database Listings	Is a REC, CREC, or HREC to the Site
BNSF RR / Chicago Lumber Co. Approx. 300' S of Main W of Trk / 201 Main Street	Approx. 170 feet / southwest / up-gradient	Approx. 10 feet / south / up-gradient	LUST, LAST	CREC, discussed below
Rhylander Park 3rd Ave & Lincoln Ave	Approx. 960 feet / southwest / up to cross-gradient	Approx. 30 feet / south / up to cross-gradient	BROWNFIELDS, FINDS	CREC, discussed below
Baburek Metal Preserving 141 S. 3rd Street	Approx. 500 feet / west-southwest / up-gradient	Approx. 40 feet / west / up-gradient	AIRS, ECHO, FINDS, ICIS, RCRA NonGen / NLR, US AIRS	REC, discussed below
Nebraska Lighting Co. / People's Natural Gas / Plattsmouth FMGP 201 Livingston Rd /S. 2nd Street / 331 Lincoln Avenue	Approx. 650 feet / south-southeast / cross-gradient	Approx. 380 feet / east / down-gradient	EDR MGP, US BROWNFIELDS, VCP, ASBESTOS, BROWNFIELDS, INST CONTROL	CREC, discussion combined with "Rhylander Park" below
Pro Auto 325 Main Street	Approx. 770 feet / west / up-gradient	Approx. 400 feet / northwest / cross-gradient	RCRA NonGen / NLR	No, based on distance
Hughson Auto Service 318 1st Avenue	Approx. 850 feet / south / cross-gradient	Approx. 850 feet / southeast / down-gradient	RCRA-VSQG	No, based on distance and gradient

Facility Name and Location	Estimated Distance / Direction/Gradient from Pump Station	Estimated Distance / Direction/Gradient from Nearest Utility Line	Database Listings	Is a REC, CREC, or HREC to the Site
Plattsmouth Wastewater Treatment 2219 E. Main Street	Approx. 850 feet / east / down-gradient	Approx. 1,000 feet / east / down-gradient	LUST, TIER 2	No, based on distance and gradient

BNSF Railroad / Chicago Lumber Co.

As discussed in Section 3.1, an oil warehouse and bulk aboveground oil tanks (labeled as gasoline tanks in 1923) were historically located along the BNSF Railroad property located west of the proposed pump station site from approximately 1888 through 1952. The warehouse and bulk tanks appear to have been located approximately 10 to 20 feet south of the proposed route for the utility transmission line that will extend west of the pump station. The NDEE identified this portion of the BNSF Railroad as a LAST and LUST site due to former bulk petroleum storage both aboveground and underground. The NDEE files are discussed below.

- LUST File No. 020194-99-0002: In 1993, a 200-gallon gasoline UST was removed from an area west of the railroad track. The site diagram in the LUST file depicts the UST at the approximate former location of the bulk oil/gasoline ASTs that are depicted on the historical Sanborn fire insurance maps. The Nebraska State Fire Marshal (SFM) Closure Report indicates that no corrosion holes were present in the tank and no signs of contamination, such as discolored soils or petroleum odors, were observed in the excavation. One soil sample was collected from a depth of approximately 3.5 feet and screened using a photoionization detector (PID). The PID reading of the soil sample was 1 part per million (ppm). The NDEE issued a No Further Action (NFA) letter and closed the file.
- LAST File No. 100997-NM-0830: In 1997, a Limited Phase II Assessment was conducted for the area west of the railroad track which was owned by Chicago Lumber Co. at the time. The background information in the Phase II report indicates that a portion of this property was historically leased to an oil company (presumably Standard Oil Co.) which had ASTs and a building used for storage of oil additives. Three borings were advanced to approximately 5 feet bgs in the areas that the oil warehouse and bulk ASTs formerly occupied. Soil samples collected from the borings were submitted for laboratory analysis of TEH. Each of the three soil samples exhibited concentrations of TEH as Diesel ranging from 65 to 355 milligrams per kilogram (mg/kg). A concentration of TEH as Waste Oil of 15 mg/kg was also reported in one of the soil samples. These concentrations do not exceed the strictest RBSLs established by the NDEE for TEH as Diesel (2,390 mg/kg) or TEH as Waste Oil (3,173 mg/kg). The consultant returned to the property to advance an

additional boring in the former bulk tank area to approximately 15 feet bgs, which was then converted into a temporary monitoring well in order to collect a groundwater sample for laboratory analysis of TEH. The groundwater sample exhibited a concentration of TEH as Diesel of 12.1 milligrams per liter (mg/L). This concentration exceeds the strictest RBSL for TEH as Diesel (10 mg/L); however, this RBSL is only applicable to situations where a drinking water well is present at the contamination source. No other RBSLs were exceeded. The NDEE issued an NFA letter for the release.

Based on sampling conducted in 1993 and 1997, soil and groundwater at the former bulk oil storage area along the BNSF railroad track do appear to be impacted by petroleum hydrocarbons. However, the LAST and LUST files associated with this property have received a status of NFA from the NDEE. Additionally, concentrations of TEH reported in the soil and groundwater samples do not exceed RBSLs, with the exception of TEH as Diesel in groundwater, which exceeds an RBSL which does not apply unless a drinking water well is present. The petroleum contamination present in the soil and groundwater at the historical bulk storage area represents a CREC in connection with the site.

Rhylander Park

Rhylander Park is an approximate 28-acre city park that was historically occupied by Burlington & Missouri railroad tracks, roundhouses, and machine shops. The park extends from northeast of 3rd Avenue and Lincoln Avenue (approximately 200 feet east of the south end of the proposed utility transmission line) to 11th Avenue (approximately half a mile south of the proposed utility line). The park is located approximately 30 feet south of the proposed utility line at its nearest point. Phase I and Phase II assessments have been conducted at Rhylander Park under NDEE's Brownfields program. A Phase I ESA conducted for Rhylander Park in 2012 indicates that the railroad roundhouses, engine houses, oil houses, and machine shops were located in the central portion of the park, approximately 600 feet south of the site at the nearest. A coal chute was located approximately 200 feet southeast of the south end of the proposed utility transmission line. A former manufactured gas plant (FMGP—Nebraska Lighting Company/People's Natural Gas) was located on one of the east adjoining properties to the park, approximately 380 feet east of the proposed utility transmission line. During a Phase II ESA, soil and groundwater samples were collected throughout the park and analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Resources Conservation and Recovery Act (RCRA) metals, and TEH. Sampling points nearest to the site include SB-8 (near the FMGP, approximately 300 feet east of proposed utility line, soil samples only), and TW-5 (near the FMGP, approximately 200 feet east of proposed utility line, soil and groundwater samples) and SB-7 (near the former coal chute on the north end of the park, approximately 170 feet southeast of proposed utility line, soil samples only). Groundwater samples collected from TW-5 exhibited several low concentrations of acetone, arsenic, and barium that did not exceed NDEE Voluntary Cleanup Program (VCP) remediation goals (RGs) or EPA Maximum Contaminant Limits (MCLs). The following contaminants were detected in soil samples from TW-5 and SB-7 at concentrations that exceeded residential VCP RGs for direct contact exposure pathways:

- TW-5: Benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and arsenic (exceeded at 0-2' sample only, below RGs in 4-6' sample).
- SB-7: Arsenic and chromium (exceeded at 0-2' sample only, below RGs in 5-7' sample).

Concentrations of VOCs, SVOCs, TEH, and metals reported in soil samples from SB-8 did not exceed NDEE RBSLs or VCP RGs. The above-listed SVOC and metal contaminants reported in soil samples from TW-5 and SB-7 exceeded the VCP RGs for a residential setting but were below RGs for an industrial setting. Additionally, the contamination was only reported in the soil samples collected from the upper 2 feet and did not appear to be part of contamination "hot spots" that were reported further south in the park.

Additional soil sampling to assess metal contamination was conducted across Rhylander Park in a Supplemental Phase II ESA. Composite soil samples were collected throughout the park, including the two areas closest to the site: near the FMGP (designated as DU1) and south of 3rd Avenue near the former coal chute area (designated as Comp1). Composite samples collected across these two areas closest to the site did not exceed VCP RGs for metals or site-specific target goals for lead that had been established by the Nebraska Department of Health & Human Services (DHHS). Similar to the results of the earlier Phase II ESA, "hot zones" for contamination (particularly lead) appeared to be located further south of the site, in the central portion of Rhylander Park near the historical railroad maintenance areas.

In 2013, approximately 126 tons of lead-contaminated soil were removed from the portion of the park exhibiting the highest concentrations (designated DU9). The excavated soil was replaced with approximately 12 to 18 inches of clean fill. An environmental covenant was placed on the Rhylander Park property which restricts land use to a city park, prohibits installation of water wells (other than monitoring wells), and requires that excavation or other activities causing soil disturbance be conducted in accordance with a Materials Management Plan (which was developed in 2015). The Materials Management Plan (MMP) indicates that the NDEE must be notified prior to major construction activities at Rhylander Park (including sewer repair). The MMP also states that excavated soils should be returned in relative proximity and depth from which they were disturbed. If returning the soils to the excavation area is not feasible, samples from the excavated soil must be analyzed for Toxic Characteristic Leaching Procedure (TCLP) for 8 RCRA Metals and VOCs to determine whether it should be disposed of as hazardous or non-hazardous waste. The MMP also indicates that groundwater encountered during construction activities may be sent to the sanitary sewer system with prior approval from the Plattsmouth Wastewater Treatment Plant.

Based on review of the regulatory files for Rhylander Park, which is located adjacent to the south end of the proposed utility transmission line that is part of the site, the "hot spots" of VOC, SVOC, TEH, and metal contamination appear to be located in the central portion of the park where railroad maintenance historically was conducted, approximately 600 feet south of the site. However, concentrations of arsenic, chromium, and several SVOCs exceeding the residential

VCP RG have also been reported in shallow soil samples (0 to 2 feet bgs) collected in relative proximity (approximately 170-300 feet) to the proposed utility line. Based on this information, the potential exists for contamination from Rhylander Park (particularly SVOCs and metals) to be encountered during construction activities at the site, especially along the south end of the proposed utility transmission line which is adjacent to the park. Institutional controls and an MMP are in place for Rhylander Park to address potential exposure to contaminated soil and/or groundwater; therefore, the contamination at Rhylander Park represents a CREC in connection with the site.

Baburek Metal Preserving

Baburek Metal is a metal preserving facility located approximately 40 feet west of the proposed utility transmission line that extends along Richey Street. Their primary type of business, according to a memorandum to the NDEE in 1994, is repair of water towers (painting, welding). This facility is regulated under AIRS programs and was historically regulated under RCRA due to its painting operations. Based on the facility's profile on EPA's Enforcement Compliance History Online (ECHO) website, this facility holds a minor air emissions permit and is under compliance. According to RCRA files obtained from NDEE, the facility applied for a RCRA hazardous waste profile number in 1980. Hazardous Waste Generator Annual Report Forms and correspondence with the NDEE indicated that the facility generated less than 50 pounds per year of methyl ethyl ketone (MEK) and mineral spirits mixed with paint waste, as well as a few empty paint cans. The solvent/paint waste was reportedly generated from washing spray guns and waste was stored in drums on the south side of the building (approximately 60 feet west of the site) before disposal at the landfill. In 1984 the NDEE changed Baburek Metal's RCRA status from a small quantity generator (SQG) to non-generator. Tier II reporting forms from 1993 and 1994 indicate that while relatively small quantities of hazardous waste are produced due to recovery/reuse of many of the cleaning solvents, several thousand pounds of potentially hazardous chemicals (particularly MEK and xylene-containing solvents) are stored on-site. Spills and/or releases of these chemicals have not been reported. However, due to the amount of chemicals (particularly paint solvents) stored and used at the facility, long-term years of operation, and proximity and topographically up-gradient position relative to the proposed utility transmission line, the operations at Baburek Metal Preserving represent a REC in connection with the site.

The remaining facilities listed in the database report do not appear to represent RECs to the site at this time based upon regulatory status, apparent topographic gradient, and/or distance from the site.

Unmapped facilities are those that do not contain sufficient address or location information to evaluate the facility listing locations relative to the site. The report listed one facility in the unmapped section, a LUST listing associated with the BNSF Railroad. This listing appears to be adjacent to the site and therefore is included in the table and discussion in Section 4.1.

4.2 Local Agency Inquiries

Agency Contacted/ Contact Method	Response
Sarpy/Cass Health Department / By email at jsteventon@sarpycass.org	At the issuance of this report, a response had not been received from the Health Department.
Plattsmouth Volunteer Fire Department / By email at Wilson@liquidtrucking.org	Fire Chief Mike Wilson responded stating that he was not aware of reported spills or fire-related emergency responses for the site.

5.0 SITE RECONNAISSANCE

5.1 General Site Information

Information contained in this section is based on a visual reconnaissance conducted while walking through the site and the accessible interior areas of structures, if any, located on the site. The site and adjoining properties are depicted on the Site Diagram, which is included in Exhibit 2 of Appendix A. Photo documentation of the site at the time of the visual reconnaissance is provided in Appendix B. Credentials of the individuals planning and conducting the site visit are included in Appendix E.

General Site Information

Site Reconnaissance	
Field Personnel	Philip E. Lind
Reconnaissance Date	May 29, 2020
Weather Conditions	80s, Sunny
Site Contact/Title	N/A

5.2 Overview of Current Site Occupants

The site is located southwest of East Main Street and South 1st Street in Plattsmouth, Dawson County, Nebraska. The Plattsmouth Wastewater Treatment Plant (WWTP), which currently operates approximately 850 feet east of the site, plans on relocating its operations. The site is proposed for development of the “Headworks Influent Structure and Pump Station” for the relocated WWTP. The site consists of an approximately one-acre, gravel-paved lot of land which will house the influent structure and pump station. The site also includes the proposed sewer line right-of-way connections between the pump station and sewer main. The proposed sewer utility lines extend approximately 1,500 linear feet south and west of the proposed pump station and terminate at the intersection of 3rd Avenue and South 3rd Street.

5.3 Overview of Current Site Operations

The proposed pump station location consists of vacant, gravel-paved land. The proposed sewer utility line extends across a railroad track operated by Burlington Northern Santa Fe (BNSF); vacant land; and concrete-paved street rights-of-way along 1st Avenue, Richey Avenue, 2nd Avenue, South 3rd Street, and Livingston Highway.

5.4 Site Observations

The following table summarizes site observations and interviews. Affirmative responses (designated by an "X") are discussed in more detail following the table.

Site Characteristics

Category	Item or Feature	Observed or Identified
Site Operations, Processes, and Equipment	Emergency generators	
	Elevators	
	Air compressors	
	Hydraulic lifts	
	Dry cleaning	
	Photo processing	
	Ventilation hoods and/or incinerators	
	Waste treatment systems and/or water treatment systems	
	Heating and/or cooling systems	
	Paint booths	
	Sub-grade mechanic pits	
	Wash-down areas or carwashes	
	Pesticide/herbicide production or storage	
	Printing operations	
	Metal finishing (e.g., electroplating, chrome plating, galvanizing, etc.)	
	Salvage operations	
	Oil, gas or mineral production	
	Other processes or equipment	
Aboveground Chemical or Waste Storage	Aboveground storage tanks	
	Drums, barrels and/or containers ≥ 5 gallons	
	MSDS or SDS	

Category	Item or Feature	Observed or Identified
Underground Chemical or Waste Storage, Drainage or Collection Systems	Underground storage tanks or ancillary UST equipment	
	Sumps, cisterns, French drains, catch basins and/or dry wells	
	Grease traps	
	Septic tanks and/or leach fields	
	Oil/water separators, clarifiers, sand traps, triple traps, interceptors	
	Pipeline markers	
	Interior floor drains	
Electrical Transformers/ PCBs	Transformers and/or capacitors	
	Other equipment	
Releases or Potential Releases	Stressed vegetation	
	Stained soil	
	Stained pavement or similar surface	
	Leachate and/or waste seeps	
	Trash, debris and/or other waste materials	X
	Dumping or disposal areas	
	Construction/demolition debris and/or dumped fill dirt	
	Surface water discoloration, odor, sheen, and/or free floating product	
	Strong, pungent or noxious odors	
	Exterior pipe discharges and/or other effluent discharges	
Other Notable Site Features	Surface water bodies	
	Quarries or pits	
	Wastewater lagoons	
	Wells	

Releases or Potential Releases

Trash, debris and/or other waste materials

A three-compartment recycling container, used for collection of recyclable plastic and paper, was observed on the north side of the proposed pump station site. Signage on the recycling container indicated that the contents are collected by Papillion Sanitation. Staining, releases, noxious odors, and/or hazardous waste disposal were not observed in the vicinity of the recycling container. The recycling container on the proposed pump station site does not represent a REC.

6.0 ADJOINING PROPERTY RECONNAISSANCE

Visual observations of adjoining properties (from site boundaries) are summarized below.

Adjoining Properties

Direction	Description
North	The adjoining properties north of the proposed pump station include Main Street followed by vacant land.
East	The adjoining properties east of the proposed pump station include JC's Cash for Cars (209 E. Main Street) and M&M Construction (16348 River Road).
South	The adjoining properties south of the proposed pump station include a sewage drainageway and trailer/equipment storage for Morehead Construction (16100 River Road).
West	The adjoining properties west of the proposed pump station include the existing pump station, a BNSF Railroad track, the Cass County Department of Motor Vehicles and Department of Health & Human Services (201 Main Street), and city storage garages. A diesel AST was observed south of the larger city storage building.
Along Proposed Sewer Utility Line	The properties located adjacent to the proposed sewer utility line include trailer/equipment storage for Morehead Construction (16100 River Road), a BNSF Railroad track, the Cass County Department of Motor Vehicles and Department of Health & Human Services (201 Main Street), city storage garages, WW Sandblasting (205 Richey Street), Baburek Metal Preserving Company (141 S. 3rd Street), Justin's Auto Repair (202 Richey Street), Quality Signs (213 S. 3rd Street), and single-family residences.

An auto repair/sales facility, JC's Cash for Cars, was observed approximately 40 feet east of the proposed pump station site. Based on a review of historical information, this facility appears to have been used as an auto repair shop since approximately 2010. At the time of the site reconnaissance, this area was observed to be concrete-paved and no vehicles were parked or being repaired on the exterior portion of the facility. Based on limited years of operation, site observations, and topographically down-gradient position relative to the site, the auto repair/sales facility on the east adjoining property does not represent a REC in connection with the site.

A diesel AST was observed south of a city storage garage and approximately 40 feet north of the proposed utility transmission line. The AST was located on concrete pavement and staining/releases were not observed beneath the AST. The diesel AST located near the proposed utility line does not represent a REC.

A sandblasting facility was observed approximately 20 feet east of the proposed utility transmission line. Chemical storage and/or sandblasting operations were not observed on exterior portions of this facility. This facility does not represent a REC in connection with the site based on

topographically down-gradient position relative to the site, absence of reported releases, site observations, and relatively recent years of operation (2005-present).

Baburek Metal Preserving Company, whose operations include welding and painting, was observed operating in a building approximately 40 feet west of the proposed utility transmission line. As discussed in Section 4.1, this facility represents a REC in connection with the site based on the long-term years of operation, proximity and topographically up-gradient position relative to the site, and significant quantities of paint and paint solvents that are stored at this facility.

An auto repair shop, Justin's Auto Repair, was observed approximately 100 feet west of the proposed utility transmission line. A review of historical information indicates that this auto repair shop has been operating from approximately 2014 through the present. The facility was observed to be concrete-paved and no outdoor chemical storage was observed. Based on distance from the site, absence of reported releases, site observations, and recent years of operation, this facility does not represent a REC in connection with the site.

7.0 ADDITIONAL SERVICES

Per the agreed scope of services specified in the proposal, additional services (e.g. asbestos sampling, lead-based paint sampling, wetlands evaluation, lead in drinking water testing, radon testing, vapor encroachment screening, etc.) were not conducted.

8.0 DECLARATION

I, Kari A. Munk, declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in Section 312.10 of 40 CFR 312; and I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the site. I have developed and performed the All Appropriate Inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

_____

Kari A. Munk
Staff Environmental Engineer

UNITED STATES - DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY

SCALE 1:24 000

KILOMETERS 1 .5 0 1 2

1000 0 1000 2000

METERS 1 .5 0 1

FEET 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

CONTOUR INTERVAL 10 FEET

NORTH AMERICAN VERTICAL DATUM OF 1988

PLATTSMOUTH, NEBRASKA
QUADRANGLE
2017
7.5 MINUTE SERIES (TOPOGRAPHIC)

N

ProjectMngr: KAC	ProjectNo. 05207234	Terracon Consulting Engineers and Scientists	TOPOGRAPHIC / LOCATION MAP
Drawn By: PAI	Scale: AS SHOWN	15080 A CIRCLE OMAHA, NE 68144	HEADWORKS INFLUENT STRUCTURE AND PUMP STATION
Checked By: KAM	File No. 05207234C01	PH. (402) 330-2202 FAX. (402) 330-7606	SOUTHWEST OF EAST MAIN & SOUTH 1st STREETS
Approved By: MRH	Date: 5/11/20		PLATTSMOUTH NEBRASKA

FIG. No. 1A

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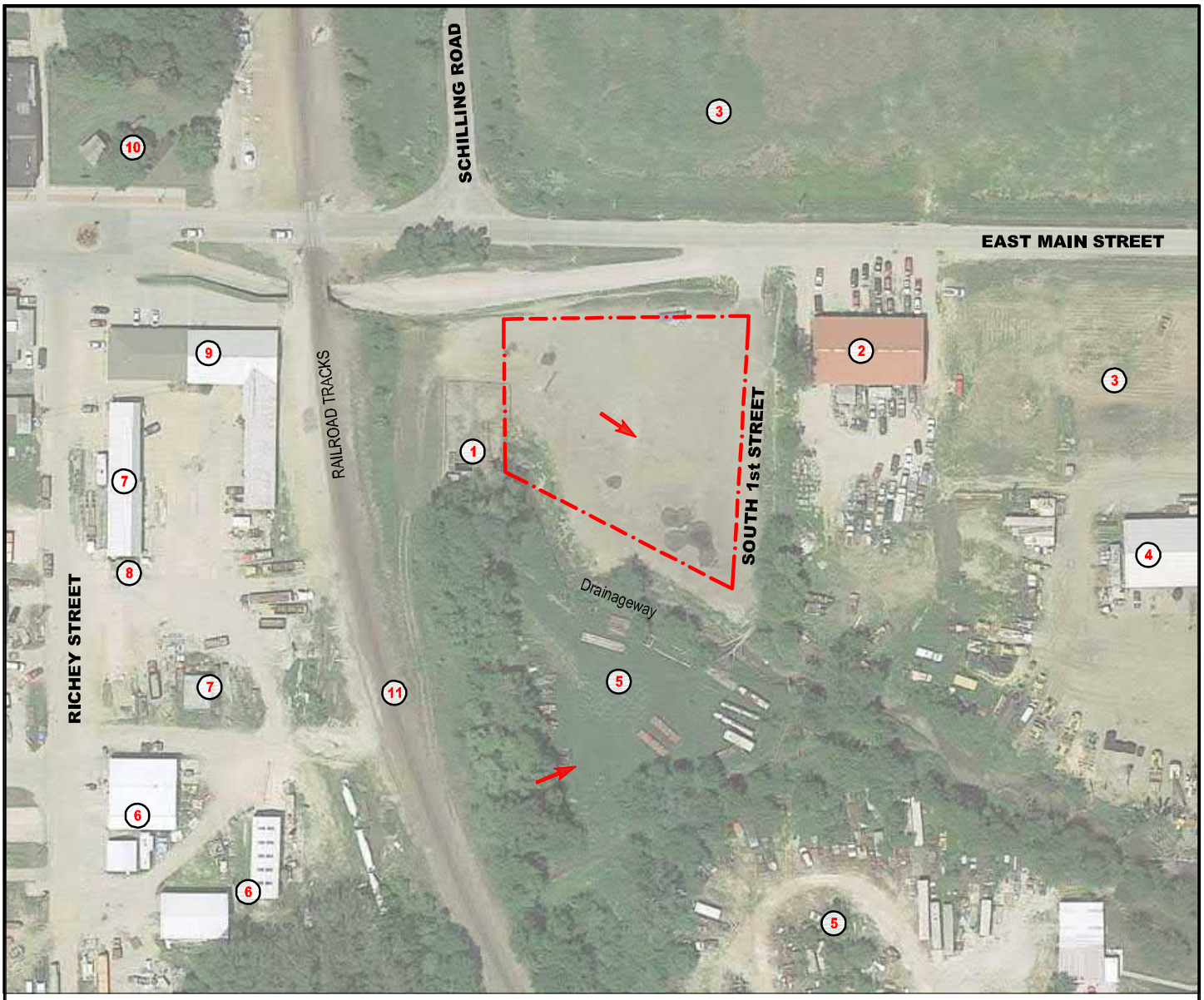

1. STORMWATER OUTFALL STRUCTURE
2. JC's CASH FOR CARS, 209 EAST MAIN STREET
3. VACANT LAND
4. M&M CONSTRUCTION, 16348 RIVER ROAD
5. MOREHEAD CONSTRUCTION, 16100 RIVER ROAD
6. WW SANDBLASTING, 205 RICHEY STREET
7. CITY STORAGE GARAGES
8. DIESEL AST
9. CASS COUNTY DEPARTMENT OF HEALTH & HUMAN SERVICES/DMV, 201 EAST MAIN STREET
10. HISTORICAL TRAIN CAR & DEPOT
11. APPROXIMATE FORMER LOCATION OF 200-GALLON GASOLINE UST LUST FILE NO. 020 194-99-0002

APPROXIMATE PUMP STATION SITE BOUNDARY

ESTIMATED GROUNDWATER FLOW DIRECTION

N

0 75 150

SCALE IN FEET

IMAGE SOURCE: GOOGLE EARTH PRO, 2018

Project Mngr: KAC	Project No. 05207234	Terracon Consulting Engineers and Scientists	PROPOSED PUMP STATION LOCATION
Drawn By: PAI	Scale: AS SHOWN	15080 A CIRCLE OMAHA, NE 68144	HEADWORKS INFLUENT STRUCTURE AND PUMP STATION
Checked By: KAM	File No. 05207234C01	PH. (402) 330-2202 FAX. (402) 330-7606	SOUTHWEST OF EAST MAIN & SOUTH 1st STREETS
Approved By: MRH	Date: 5/11/20		PLATTSMOUTH NEBRASKA

EXHIBIT 2A

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1. STORMWATER OUTFALL STRUCTURE
2. JC's CASH FOR CARS, 209 EAST MAIN STREET
3. M&M CONSTRUCTION, 16348 RIVER ROAD
4. MOREHEAD CONSTRUCTION, 16100 RIVER ROAD
5. WW SANDBLASTING, 205 RICHEY STREET
6. CITY STORAGE GARAGES
7. DIESEL AST
8. CASS COUNTY DEPARTMENT OF HEALTH & HUMAN SERVICES/DMV, 201 EAST MAIN STREET
9. GREG'S BODY SHOP, 203 MAIN STREET
10. PLATTSMOUTH LOCKERS / MEAT GARDEN, 207 MAIN STREET
11. TWO VEHICLE GARAGE
12. BABUREK METAL PRESERVING, 141 SOUTH 3rd STREET
13. JUSTIN'S AUTO REPAIR, 202 RICHEY STREET
14. QUALITY SIGNS, 213 SOUTH 3rd STREET
15. RESIDENTIAL
16. RHYLANDER PARK
17. BLACK HILLS ENERGY
18. APPROXIMATE FORMER LOCATION OF 200-GALLON GASOLINE UST LUST FILE NO. 020 194-99-0002

ESTIMATED GROUNDWATER FLOW DIRECTIONS

PUMP STATION SITE BOUNDARY

PROPOSED UTILITY TRANSMISSION LINE

IMAGE SOURCE: GOOGLE EARTH PRO, 2018

N

0 50 100 200

SCALE IN FEET

DESIGNED BY:	KAM
DRAWN BY:	PAI
APPV'D. BY:	MRH
SCALE:	AS SHOWN
DATE:	6/10/20
JOB NO.	05207234
ACAD NO.	05207234C01
EXHIBIT NO.:	3A

6/10/2020 10:14:35 AM

PROPOSED PUMP STATION LOCATION & PROPOSED UTILITY LOCATION

HEADWORKS INFLUENT STRUCTURE AND PUMP STATION
SOUTHWEST OF EAST MAIN & SOUTH 1st STREETS
PLATTSMOUTH NEBRASKA

Layout: UTIL 3A

Terracon
Consulting Engineers and Scientists
15080 A CIRCLE OMAHA, NE 68144
PH. (402) 330-2202 FAX. (402) 330-7606

REV.	DATE	BY	DESCRIPTION

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ALTERNATIVE 3
WTP Plant Site

Exhibit D-2

Phase I
Environmental Site Assessment

Fourmile Industrial Park

NW ¼ of SE ¼ and SW ¼ of NW ¼,
Section 26, Township 12 N, Range 13 E
Cass County, NE

Prepared for

City of Plattsmouth, Nebraska

Report Dated: June 29, 2020

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rdg Geoscience & Engineering, Inc.
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PH (402) 894-2678 FAX (402) 894-9043

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- **2.2 Current and Historical Land Use**
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APPENDICES

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1.0 INTRODUCTION

This report documents a Phase I Environmental Site Assessment (ESA) conducted by RDG Geoscience & Engineering, Inc. (RDG) for the Fourmile Industrial Park that is located near 6th Street and East Wiles Road in Plattsmouth, Nebraska.

The purpose of the Phase I ESA was to identify, to the extent feasible pursuant to the methods described herein, recognized environmental conditions in connection with the subject property and to render an opinion regarding the significance of any data collected. The ESA involved a review of regulatory files and databases, review of other historical records, questionnaires, and a site inspection.

Most of the information included in this Phase I ESA was field-verified; however, some of the information included in the report was obtained from outside sources, including government agencies and private database services. In accordance with the procedures for performing Phase I ESAs described in ASTM E 1527-13, attempts were made to identify obvious errors or insufficiencies in information obtained from these outside sources. This does not guarantee all errors or omissions in the data were identified and corrected.

The primary findings and conclusions from the Phase I ESA are as follows.

- **The assessment revealed no evidence of recognized environmental conditions or concerns in connection with the past or present activities that occurred on or are occurring on the subject property.**

2.0 SITE DESCRIPTION

2.1 Location

The Fourmile Industrial Park is located within the NW ¼ of the SE ¼ and the SW ¼ of the NW ¼ of Section 26, Township 12 N, Range 13 E in Cass County, Nebraska and will be referred to as the subject property (Figure 1) in this report. The area encompassed within an approximate ¼ -mile radius from the boundary of the subject property will be referred to as the "study area"; however, this area was expanded as appropriate to include sites within the distances specified by ASTM 1527-13.

2.2 Current and Historical Land Use

The subject property includes land Parcels 130392735 through 130392747 and 13098137 that are currently owned by the City of Plattsmouth. The site location and layout are shown in the attached Figure 1 and 2, respectively, and in the parcel map included in Appendix 5. There are no permanent buildings located on the property and it is used primarily for agricultural purposes and is occupied by row cropland, wetlands, and vegetated runoff areas. The property is believed to have been owned by the City of Plattsmouth since 2003 and is also believed to have been used for farmland since its initial development.

2.3 Topography/Geology/Hydrogeology/Hydrology

The subject property is located within the Nebraska Glacial Drift ground water region of eastern Nebraska. Ground water in this region is generally obtained from buried valley and alluvial sand and gravel aquifers along stream valleys or from the deeper Dakota sandstone aquifer when significant yields are not available from shallower geologic materials. The elevation of the property ranges from 1080 ft-MSL at the north and south boundaries to 1,040 ft-MSL in the western area where drainage collects. The topography of the area is moderately steep in places and runoff is toward collection locations the west-central area. Runoff occurs onto the subject property from industrial areas to the north and northeast and from agricultural areas in other directions

Information from nearby well logs are not available. However, it is estimated that the depth to ground water at the site likely ranges from 0 feet below grade in lower elevation areas to 30 feet below grade in higher elevation areas.

The property includes areas mapped as 'Freshwater Emergent Wetlands" on National Wetlands Inventory maps that are included in Appendix 5 of this Phase I ESA report. The identified wetlands are located along the drainage channels primarily on the south side of the property.

3.0 HISTORICAL RECORDS REVIEW

3.1 Historic Aerial Photograph Review

Aerial photos from 1941, 1949, 1955, 1959, 1965, 1971, 1979, 1987, 1993, 1999, 2003, 2006, 2009, 2014, and 2019 were reviewed to examine the past history of the subject property and surrounding area.

- 1941 – The site appears to have been used completely for agricultural purposes and there are no buildings or structures present.
- 1949 – Development on the subject property is similar to the 1941 air photo.
- 1955 - Development on the subject property is similar to the 1949 air photo.
- 1959 – Development on the subject property is similar to the 1955 air photo.
- 1965 – Development on the subject property is similar to the 1959 air photo.
- 1971 – Development on the subject property is similar to the 1965 air photo. However, the drainage that enters the property from the northeast appears to have been straightened and channelized.
- 1979 – Development on the subject property is similar to the 1971 air photo.
- 1987 – Development on the subject property is similar to the 1979 air photo.
- 1993 – Development on the subject property is similar to the 1987 air photo. However, there is development visible on the north side of East Wiles Road (in the current location of Wiles Brothers Fertilizer).
- 1999 – Development on the subject property is similar to the 1993 air photo.
- 2003 – Development on the subject property is similar to the 1999 air photo. However, there is more channelized drainage that is visible and the industrial area to the northeast (current location for Cretex Concrete Products) is visible. There is also a lagoon visible at the far southeast corner of the Cretex property. The use for the lagoon is not known.
- 2006 – Site development and surrounding land use appears to be similar to what exists today, although the vineyard and commercial buildings located immediately to the north of the subject property are visible.
- 2009 - Site development and surrounding land use appears to be similar to what exists today
- 2014 – Site development and surrounding land use appears to be similar to what exists today.
- 2019 – Site development and surrounding land use appears to be similar to what exists today.

The aerial photos are included in Appendix 1.

3.2 Deed Search

A chain of title deed search for the subject property was performed from records of the Cass County Registrar of Deeds. The findings are summarized below.

Grantor	Grantee	Date	Instrument
Catherine Borland	City of Plattsmouth	11/26/2003	Warranty deed
E. Belle Metzger	Public	4/20/1966	Will and decree
C.E. Metzger	E. Belle Metzger	10/13/1934	Warranty deed
Charles McGrew	C.E. Metzger	9/20/1924	Warranty deed
Will Jean	Fred Bodie	10/2/1923	Warranty deed
Catherine Paramle	Will Jean	12/20/1919	Warranty deed
Will Porter	C.H Parmale	Unknown	Warranty deed

No recognized environmental conditions were identified from the deed search and the findings from the deed search were similar to other findings from this Phase I ESA.

3.3 Sanborn Maps

No Sanborn Maps were available for the site and a copy of the Sanborn map “No Coverage” report is included as Appendix 3. This is not believed to be a significant data gap for this Phase I ESA.

3.4 Historical Topographic Maps

Historical topographic maps were not reviewed as part of this Phase I ESA and this is not believe to be a significant data gap for the findings.

3.5 City Directory Search

City Directory records for the property were not available so a search could not be performed and this is not believed to be a data gap for the findings from this Phase I ESA.

3.6 Interviews

An interview was done with Steve Perry, the City Engineer for the City of Plattsmouth, as being an individual who was familiar with the history of the subject property. Mr. Perry indicated that the property has been owned by the City since 2003 and is believed to have been only farmland since it was initially developed. He also indicated that there has been channelization of runoff and impoundment constructed on the property in order to improve runoff conditions. Mr. Perry provided engineering and layout maps for the site from 2003 and

2009. No recognized environmental conditions were identified from the interview with Mr. Perry and the findings were consistent with all other findings from this Phase I ESA.

4.0 REGULATORY FILE SEARCH/ENVIRONMENTAL DATABASE REVIEW

4.1 Environmental Data Resources, Inc. (EDR)

RDG requested records from publicly accessible and private databases in order to obtain and review information that may help identify recognized environmental conditions in connection with the subject property. The requested search area included pertinent information concerning the subject property and other facilities within the distances specified in the ASTM guidelines (Standard E 1527-13).

Information was acquired from the database maintained by Environmental Data Resources, Inc. (EDR) concerning records compiled by various federal and state agencies. At the federal level, information from the CERCLIS, ERNS, NPL, RCRIS, CONSENT, CORRACTS, FINDS, HMIRS, MLTS, NPL LIENS, PADS, RAATS, ROD, TRIS, and TSCA databases (among others) were obtained. At the state level, information from the SWF/LF, LUST, UST and AST databases were obtained. An explanation of the above mentioned acronyms are included within EDR's report.

A summary of regulated sites were identified from the EDR report that are located within the subject property study are listed below.

Leaking or Releases from Above Ground Storage Tanks

Site Name	Address	Distance	Comments/Status
Wiles Brothers Fertilizer	606 Wiles	1/8 mile N	Incident from 2016 closed, no further investigation anticipated and not believed to be a rec to subject property.

The EDR Radius Maps and Reports are included in Appendix 2. Note that the EDR report was found to contain over 380 pages of listings for chemical stored at the Wiles Brothers Fertilizer facility. These pages were reviewed, but are not included in the report included with Appendix 2. No recognized environmental conditions for the subject property were identified from the pages of the EDR report that are not included with this Phase I ESA report.

4.2 Nebraska Department of Environmental Quality Online Database Search

The NDEQ online facility database was referenced to provide information on other area spills, releases, or incidents that had not been otherwise identified.

No reports on spills or releases from regulated sites were identified from the online search. However, information on a 2013 violation that occurred due to burning of a residential

structure on the Wiles Fertilizer property was identified in NDEQ records. This issues appears to have been resolved and is not a recognized environmental condition for the subject property. Other identified permits for nearby sites included permits for onsite wastewater treatment (septic) systems on the Schott Enterprises and Vireo Resources facilities. No stormwater or other permits were identified for neighboring properties.

4.3 Orphan (Non-Mappable) Sites

RDG has reviewed the list of orphan (or non-mappable sites based on address descriptions) sites indicated in the EDR regulatory database report. Based on an inspection of the subject property and surrounding properties and a review of the list, none of the sites listed on the Orphan Summary list were recognizable additional sites with the potential to impact environmental conditions at the subject property.

4.4 Nebraska Department of Natural Resources Well Database

There were no registered water supply wells identified within a ½ mile radius of the subject property.

5.0 SITE RECONNAISSANCE AND DISCUSSION OF FINDINGS

A site visit was conducted by Robert Kalinski of RDG Geoscience and Engineering, Inc. on June 23, 2020. Note that a Phase I ESA was completed for the subject property by RDG in July of 2015. Photographs were taken of the subject property at the time of the June 2020 site visit and are included with this report in Appendix 4.

At the time of the June 2020 site visit, most of the subject property was covered with established corn and some of the ground surface of the property could not be readily observed. Given that the site was visited in 2015 and the available of recent aerial photographs taken at times when the ground was relatively non-vegetated, however, the lack of direct surface visibility of much of the ground surface is not believe to represent a data gap to the finding from this Phase I ESA.

The subject property includes thirteen (13) parcels of land as identified on Cass County records as being owned by the City of Plattsmouth. The parcels are currently being used and have been used for agricultural purposes since they were developed. The parcels have been owned by the City of Plattsmouth since 2003 and are located within the boundaries of the city limits.

There are currently no utilities believed to be on the subject property lots. Surrounding properties include a Union Pacific rail line that runs along the perimeter to the adjacent west, a vineyard on the northwest corner, a commercial and storage building north of the vineyard that has various occupants, Wiles Brothers Fertilizer to the north across East Wiles Road, a commercial building occupied by Vireo Resources to the north, and Forterra Pipe and Precast to the northeast. There is what appears to be a former farmstead in a heavily vegetated area south the Vireo Resources building (but north or the subject property). Some discarded building materials were observed on the former farmstead area. Other adjacent properties to the east, southeast, and south are all agricultural.

Access to the subject property is from unpaved access paths that enter from the north. Other parts of the property are is surrounded by fencing. There are no buildings located on the subject property. The property has drainage channels that receive runoff from adjacent industrial properties located to the northeast and from farmland to the and west. Other areas that receive runoff were observed to be heavily vegetated, and some extend to the east side of the property. There is are areas indicated as mapped wetland on U.S. Fish and Wildlife maps that is located on the west side of the property and along the drainage channels (see wetlands map in Appendix 5).

In the 2015 Phase I ESA, areas of dead vegetation were observed on the far north side of the property (north side of Lot 13092736) and in areas where runoff entered the property

from the former Cretex Concrete Products area (east side of Lot 13092736). However, the areas of stressed vegetation were not observed during the Phase I ESA site visit on June 23, 2020 and on recent aerial photographs of the site. It should be noted, however, that no permit for Industrial Stormwater runoff for adjacent industrial properties could be located on online formation available from NDEQ.

No evidence of any stored and/or disposed liquid and/or hazardous materials or chemicals were observed anywhere on the subject property and no recognized environmental conditions (RECs) were observed.

6.0 EVIRONMENTAL LIENS AND PURCHASE PRICE RELATIVE TO MARKET VALUE

6.1 Environmental Liens

No environmental liens were identified for the property.

6.2. Value of Property Relative to Fair Market Value

The assessed value of the property is believed to be reduced or influenced due to environmental conditions.

7.0 CONCLUSIONS AND RECOMMENDATIONS

RDG has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-13 for the property that is the Fourmile Industrial Park in Plattsmouth, NE. Any exceptions to, or deletions from, this practice are described in the Introduction Section of this report.

- **This assessment revealed no evidence of recognized environmental conditions or concerns in connection with the past or present activities on the subject property.**

The general scope and limitations for this assessment are described in the following section.

LIMITATIONS

This report is prepared for the use of City of Plattsmouth to whom this report is submitted. Use of this report by third parties who are not designated under our proposal or without our express written permission, are not authorized to obtain a copy of this report.

This environmental site assessment was conducted in areas which were readily accessible using common engineering practices existing at the time this assessment is performed.

No environmental samples were collected as part of this Phase I ESA.

Most of the information included in this Phase I ESA report was verified by RDG. However, some of the information included in the report was obtained from outside sources, including government agencies and database services. In accordance with the procedures described in ASTM E 1527-13 ("Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Practice") RDG did not attempt to identify all mistakes or insufficiencies in information obtained from these outside sources because we observed no obvious errors or omissions in the data that was provided to RDG, except as noted in the body of the report. Information furnished to RDG in the interviews is taken as true and correct; we are not responsible if inaccurate information is furnished by others.

There is no warranty or guarantee either expressed or implied that the site is free of contamination or that only the contamination, pollutants, toxins, and hazardous substances as identified herein exist at this site or surrounding areas.

Unless expressly included in the Phase I report, the following are ASTM E1527-13 non-scope considerations not included in the Phase I scope:

- asbestos containing materials
- lead based paint
- lead in drinking water
- PCBs
- radon
- cultural and historical risks
- wetlands
- industrial hygiene
- regulatory compliance
- health and safety
- indoor air quality
- mold
- high voltage power lines
- ecological resources
- endangered species

“We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312” and “we have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.”

This report prepared by:	This report reviewed by:
Robert Kalinski, Senior Engineer	Jon Gross, Senior Geologist

PROFESSIONAL QUALIFICATIONS

Robert Kalinski has a Ph.D. in Civil Engineering from the University of Nebraska-Lincoln. He is a licensed Professional Civil Engineer (P.E.) in Nebraska, Iowa, Kansas, and Wyoming, a Certified Groundwater Professional in Iowa, and Professional Geologist (P.G.) in Nebraska. Mr. Kalinski has over 35 years of experience with environmental, hydrogeologic, and geological engineering.

Jon Gross has an M.S. in Geology from the University of Nebraska-Lincoln and is a licensed Professional Geologist in Nebraska and a certified groundwater professional in Iowa. Mr. Gross has over 35 years of experience with underground storage tank closures and site assessments (while at RDG and the Nebraska State Fire Marshal’s office), hydrogeologic investigations, environmental compliance monitoring, and remediation.

REFERENCES

Nebraska Department of Environmental Quality On-Line Facility Locator Database.

Nebraska Department of Water Resources Registered Well Database.

Environmental Data Resources, Inc. (EDR) Radius Map with GeoCheck®.

Environmental Data Resources, Inc. (EDR) Certified Sanborn Maps

Steve Perry, Olmsted & Perry Consulting Engineers, Personal interview.

Aerial Photographs; Historical Information Gatherers, Inc.

Cass County GIS, Plattsmouth, NE

Cass County Registrar of Deeds, Deed records.

U.S. Fish and Wildlife Service. Online Wetlands Inventory Map.

Figures

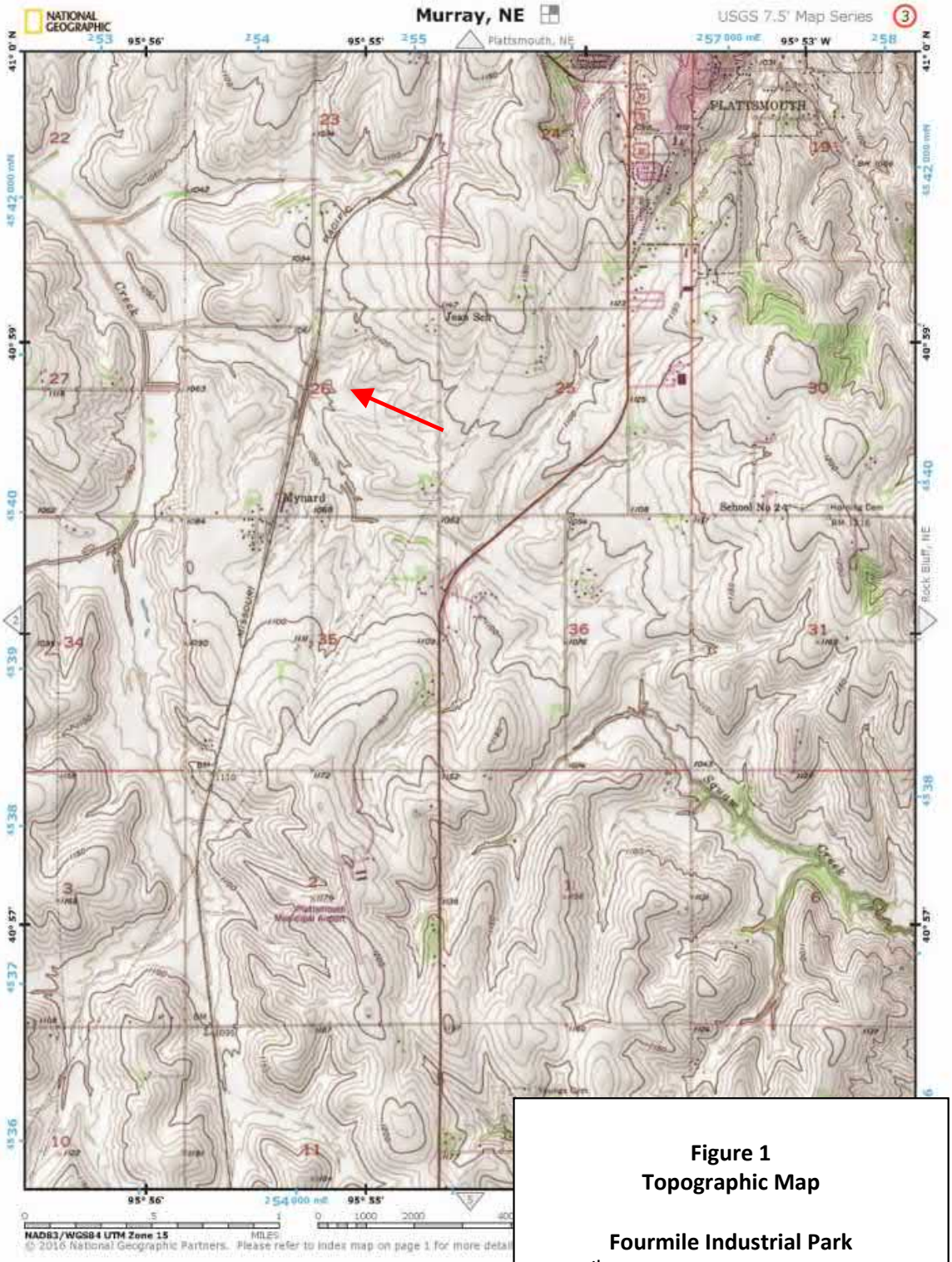

Figure 1
Topographic Map

Fourmile Industrial Park
6th Street and East Wiles Road
Plattsmouth, NE

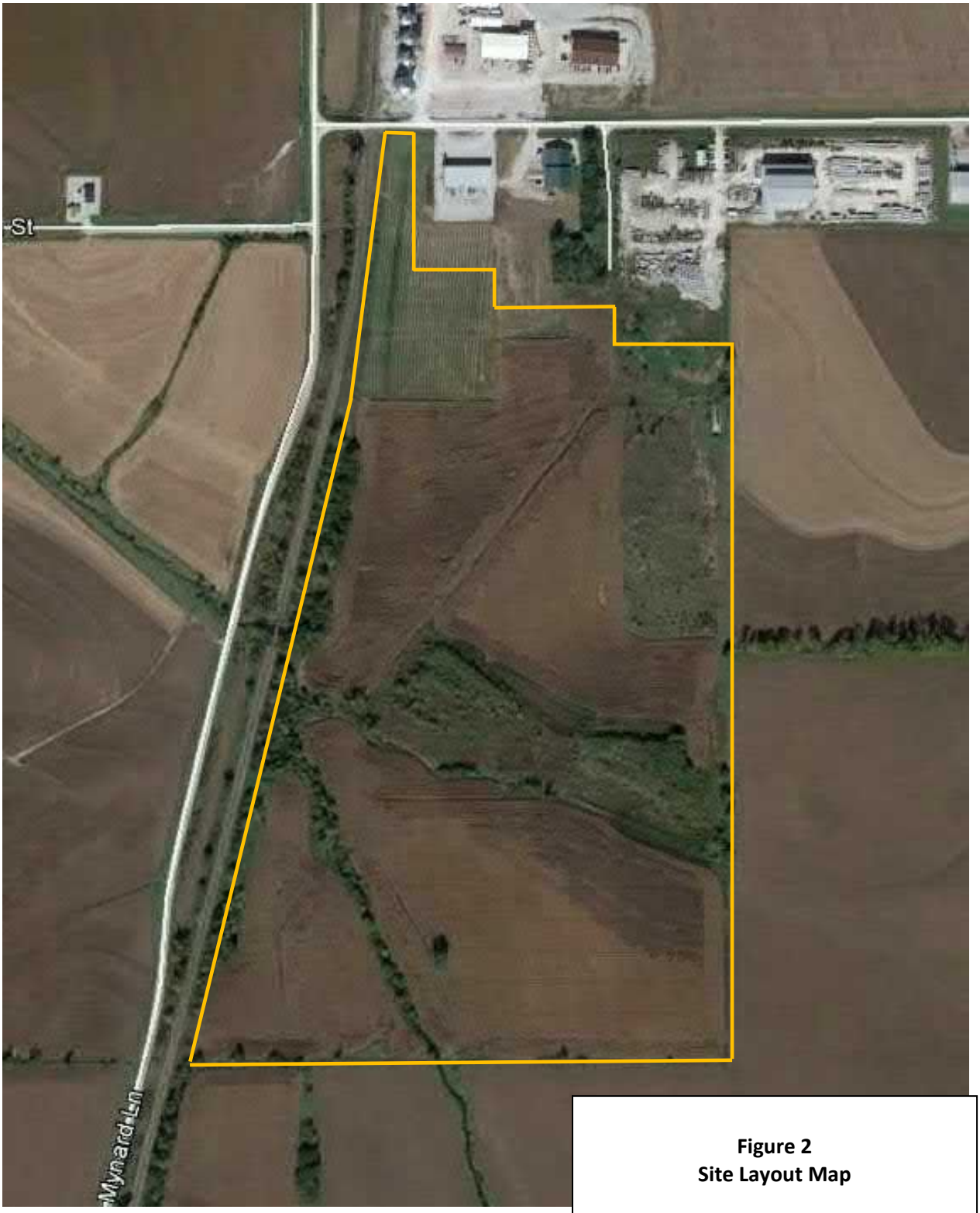

Figure 2
Site Layout Map

Fourmile Industrial Park
6th Street and East Wiles Road
Plattsmouth, NE

ALTERNATIVE 2, Proposed Action
EDR Corridor Report

Exhibit D-3

Plattsmouth Water Supply System
Plattsmouth Water Supply System
Plattsmouth, NE 68048

Inquiry Number: 6162568.5s
August 20, 2020

EDR Area / Corridor Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

SUBJECT PROPERTY INFORMATION

ADDRESS

PLATTSMOUTH WATER SUPPLY SYSTEM
PLATTSMOUTH, NE 68048

TARGET PROPERTY SEARCH RESULTS

The Target Property was identified in the following databases.

Page Numbers and Map Identifcations refer to the EDR Area/Corridor Report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

STANDARD ENVIRONMENTAL RECORDS

Federal ERNS list

ERNS: Emergency Response Notification System

A review of the ERNS list, as provided by EDR, and dated 03/22/2020 has revealed that there are 2 ERNS sites within the requested target property.

Site	Address	Map ID / Focus Map(s)	Page
Not reported NRC Report #: 820991 Incident Date Time: 2006-12-14 10:00:00		A1 / 3	22
Not reported NRC Report #: 765189 Incident Date Time: 2005-07-11 23:00:00	3600 WEST BAY ROAD	A2 / 3	22

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Page Numbers and Map Identifcations refer to the EDR Area/Corridor Report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

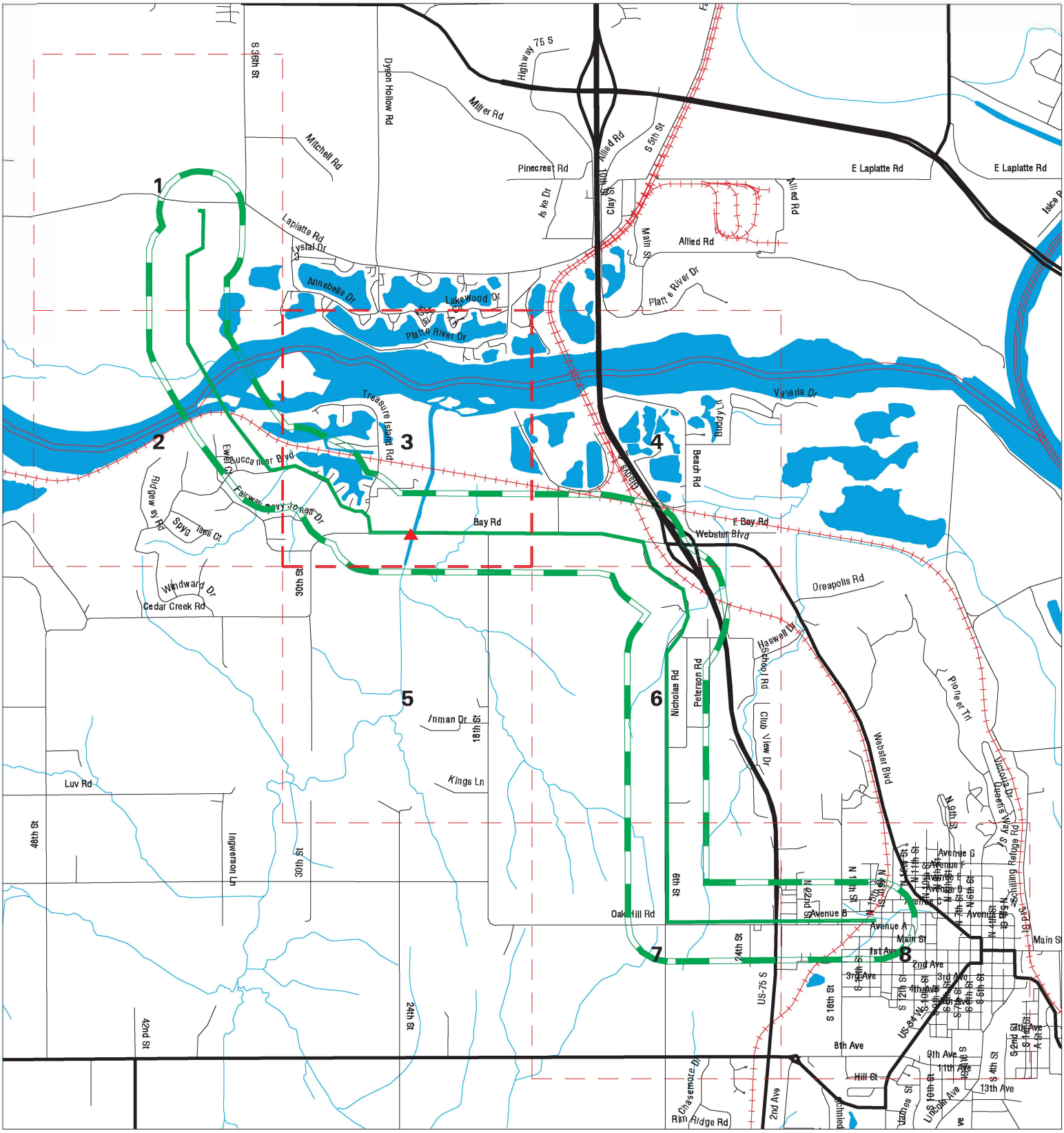
Unmappable (orphan) sites are not considered in the foregoing analysis.

MAPPED SITES SUMMARY

Target Property:
PLATTSMOUTH WATER SUPPLY SYSTEM
PLATTSMOUTH, NE 68048

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
A1 / 3			ERNS	TP
A2 / 3		3600 WEST BAY ROAD	ERNS	TP

Key Map - 6162568.5s



SITE NAME: Plattsmouth Water Supply System	CLIENT: Terracon
ADDRESS: Plattsmouth Water Supply System	CONTACT: Kari Munk
CITY/STATE: Plattsmouth NE	INQUIRY #: 6162568.5s
ZIP: 68048	DATE: 08/20/20 9:46 AM

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	0.125		0	NR	NR	NR	NR	0
Proposed NPL	0.125		0	NR	NR	NR	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	0.125		0	NR	NR	NR	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.125		0	NR	NR	NR	NR	0
SEMS	0.125		0	NR	NR	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.125		0	NR	NR	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	0.125		0	NR	NR	NR	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.125		0	NR	NR	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	TP		NR	NR	NR	NR	NR	0
RCRA-SQG	TP		NR	NR	NR	NR	NR	0
RCRA-VSQG	TP		NR	NR	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	TP		NR	NR	NR	NR	NR	0
US ENG CONTROLS	TP		NR	NR	NR	NR	NR	0
US INST CONTROLS	TP		NR	NR	NR	NR	NR	0
Federal ERNS list								
ERNS	TP	2	NR	NR	NR	NR	NR	2
State- and tribal - equivalent CERCLIS								
SHWS	0.125		0	NR	NR	NR	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.125		0	NR	NR	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.125		0	NR	NR	NR	NR	0
LAST	0.125		0	NR	NR	NR	NR	0
INDIAN LUST	0.125		0	NR	NR	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST	TP		NR	NR	NR	NR	NR	0
AST	TP		NR	NR	NR	NR	NR	0
INDIAN UST	TP		NR	NR	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
INST CONTROL	TP		NR	NR	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.125		0	NR	NR	NR	NR	0
VCP	0.125		0	NR	NR	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.125		0	NR	NR	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.125		0	NR	NR	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	TP		NR	NR	NR	NR	NR	0
ODI	TP		NR	NR	NR	NR	NR	0
DEBRIS REGION 9	TP		NR	NR	NR	NR	NR	0
IHS OPEN DUMPS	TP		NR	NR	NR	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
HIST UST	TP		NR	NR	NR	NR	NR	0
HIST AST	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
SPILLS 80	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	TP		NR	NR	NR	NR	NR	0
FUDS	TP		NR	NR	NR	NR	NR	0
DOD	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SCRD DRYCLEANERS	TP		NR	NR	NR	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	TP		NR	NR	NR	NR	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	TP		NR	NR	NR	NR	NR	0
FUSRAP	TP		NR	NR	NR	NR	NR	0
UMTRA	TP		NR	NR	NR	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	TP		NR	NR	NR	NR	NR	0
ABANDONED MINES	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	TP		NR	NR	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
ASBESTOS	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.125		0	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
TIER 2	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	0.125		0	NR	NR	NR	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA HWS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		2	0	0	0	0	0	2

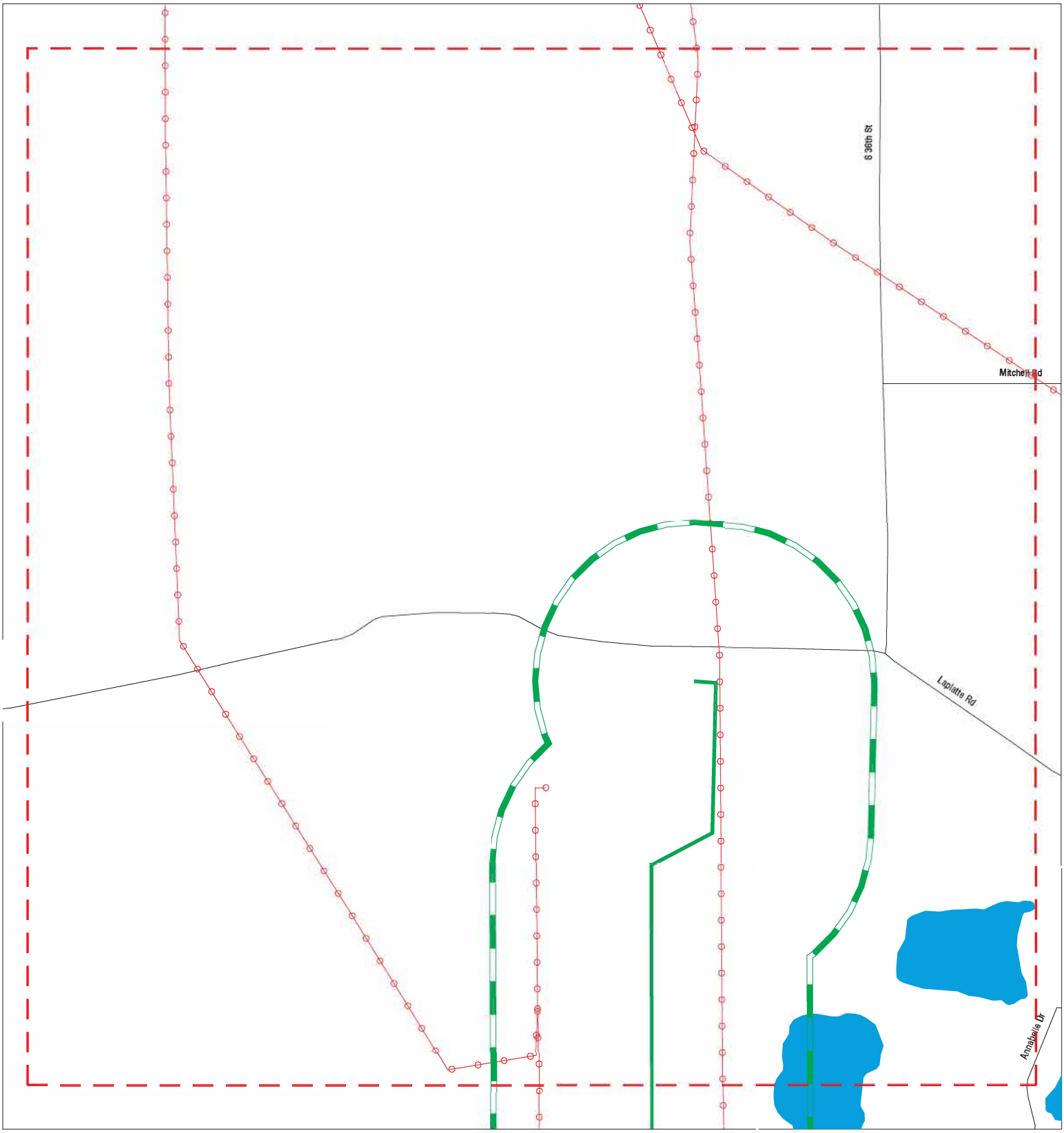
NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Focus Map - 1 - 6162568.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
Pipe Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Plattsmouth Water Supply System ADDRESS: Plattsmouth Water Supply System CITY/STATE: Plattsmouth NE ZIP: 68048	CLIENT: Terracon CONTACT: Kari Munk INQUIRY #: 6162568.5s DATE: 08/20/20

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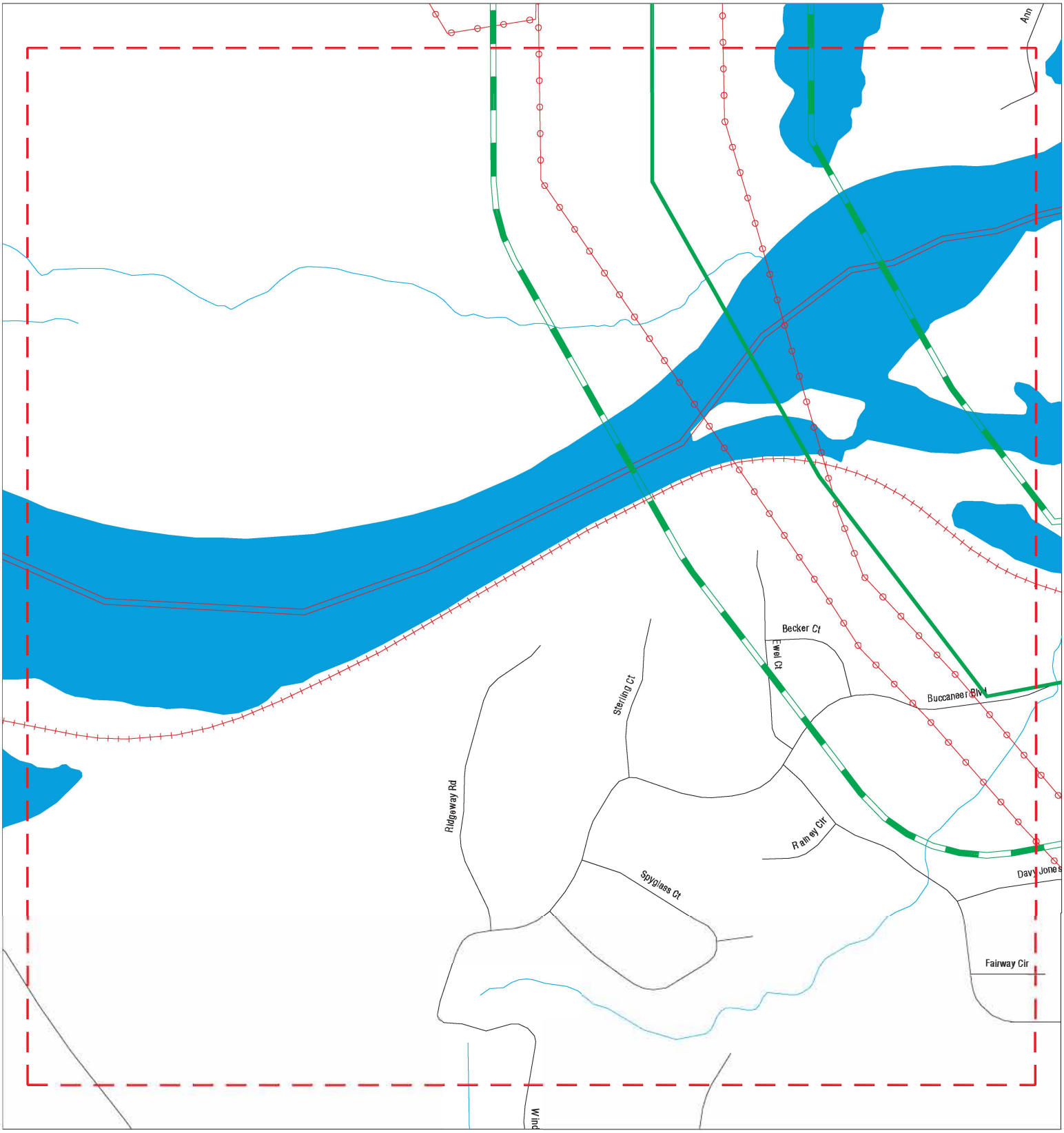
MAPPED SITES SUMMARY - FOCUS MAP 1

Target Property:
PLATTSMOUTH WATER SUPPLY SYSTEM
PLATTSMOUTH, NE 68048

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 2 - 6162568.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
Pipe Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Plattsmouth Water Supply System	CLIENT: Terracon
ADDRESS: Plattsmouth Water Supply System	CONTACT: Kari Munk
CITY/STATE: Plattsmouth NE	INQUIRY #: 6162568.5s
ZIP: 68048	DATE: 08/20/20

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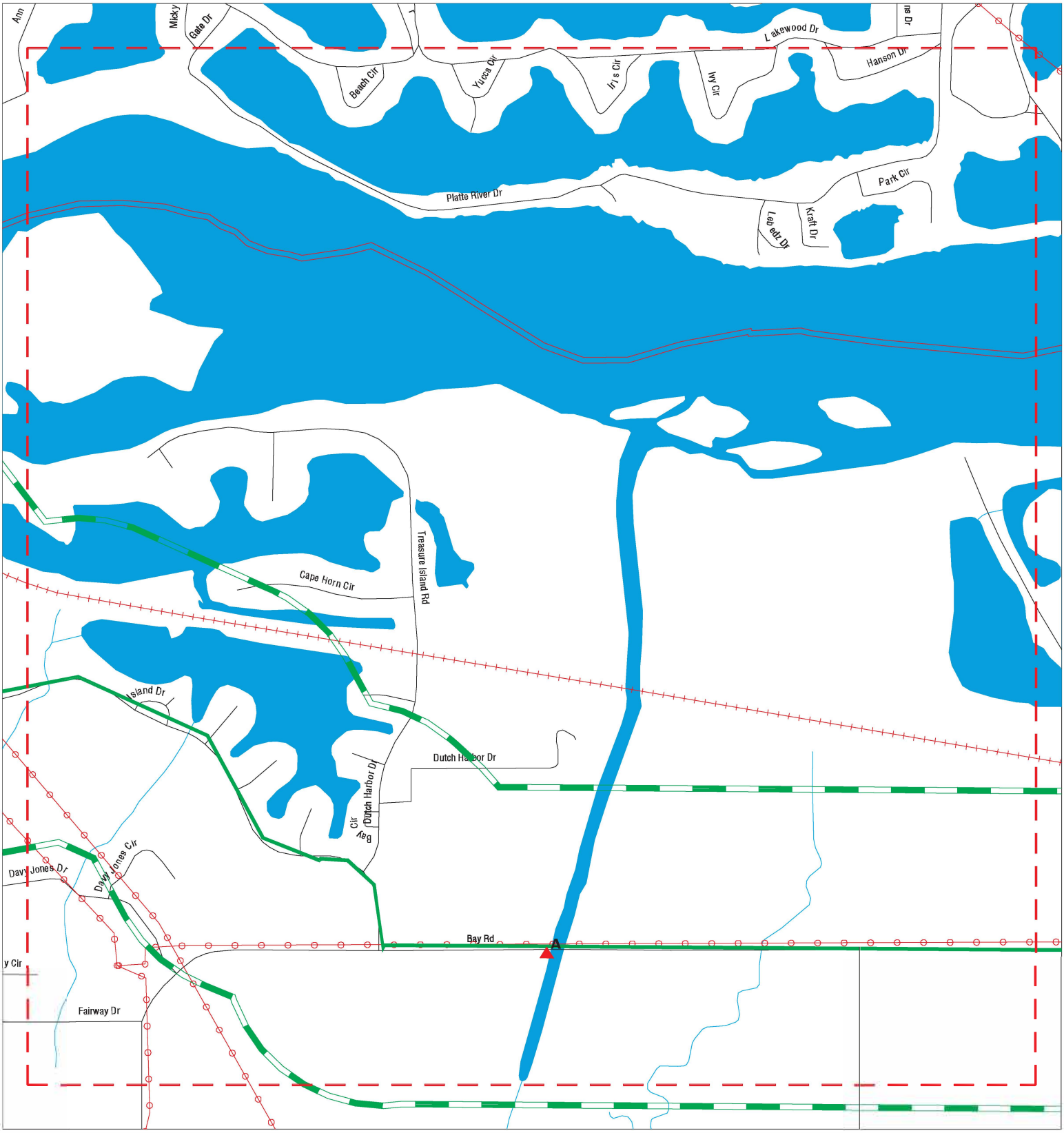
MAPPED SITES SUMMARY - FOCUS MAP 2

Target Property:
PLATTSMOUTH WATER SUPPLY SYSTEM
PLATTSMOUTH, NE 68048

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 3 - 6162568.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
Pipe Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Plattsmouth Water Supply System	CLIENT: Terracon
ADDRESS: Plattsmouth Water Supply System	CONTACT: Kari Munk
CITY/STATE: Plattsmouth NE	INQUIRY #: 6162568.5s
ZIP: 68048	DATE: 08/20/20

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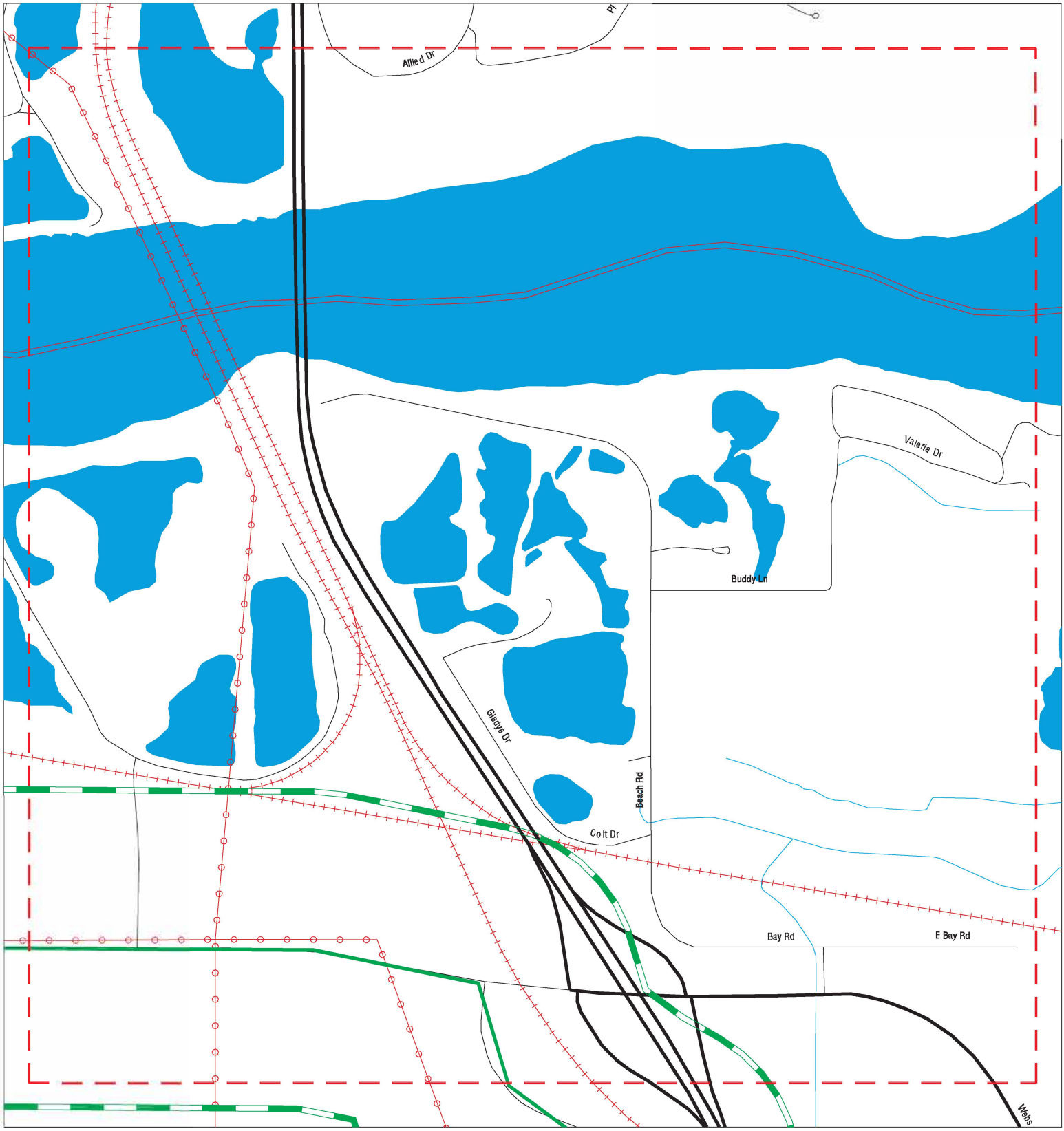
MAPPED SITES SUMMARY - FOCUS MAP 3

Target Property:
PLATTSMOUTH WATER SUPPLY SYSTEM
PLATTSMOUTH, NE 68048

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
A1 / 3			ERNS	TP
A2 / 3		3600 WEST BAY ROAD	ERNS	TP

Focus Map - 4 - 6162568.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
Pipe Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Plattsmouth Water Supply System ADDRESS: Plattsmouth Water Supply System CITY/STATE: Plattsmouth NE ZIP: 68048	CLIENT: Terracon CONTACT: Kari Munk INQUIRY #: 6162568.5s DATE: 08/20/20

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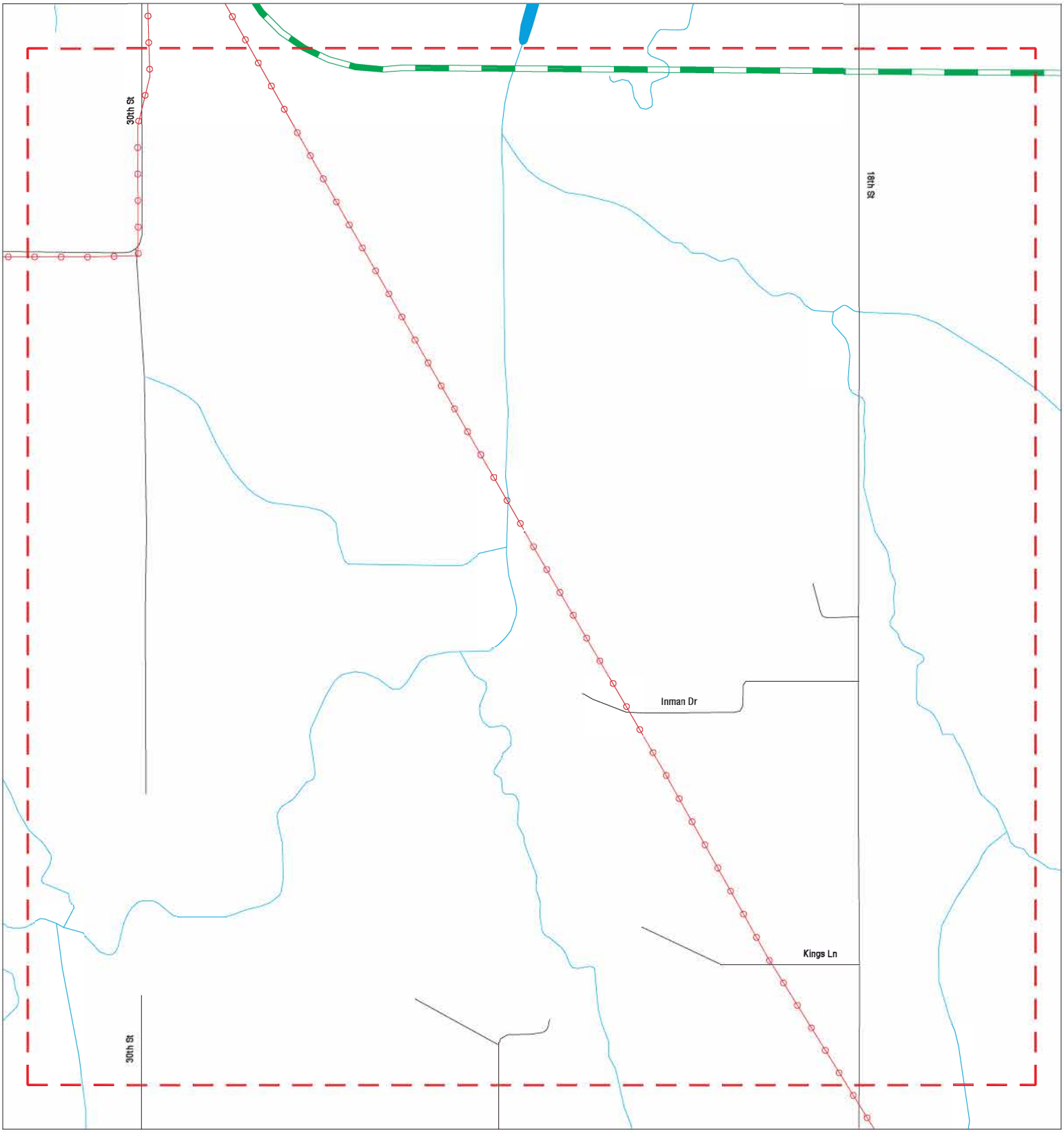
MAPPED SITES SUMMARY - FOCUS MAP 4

Target Property:
PLATTSMOUTH WATER SUPPLY SYSTEM
PLATTSMOUTH, NE 68048

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 5 - 6162568.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
Pipe Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Plattsmouth Water Supply System	CLIENT: Terracon
ADDRESS: Plattsmouth Water Supply System	CONTACT: Kari Munk
CITY/STATE: Plattsmouth NE	INQUIRY #: 6162568.5s
ZIP: 68048	DATE: 08/20/20

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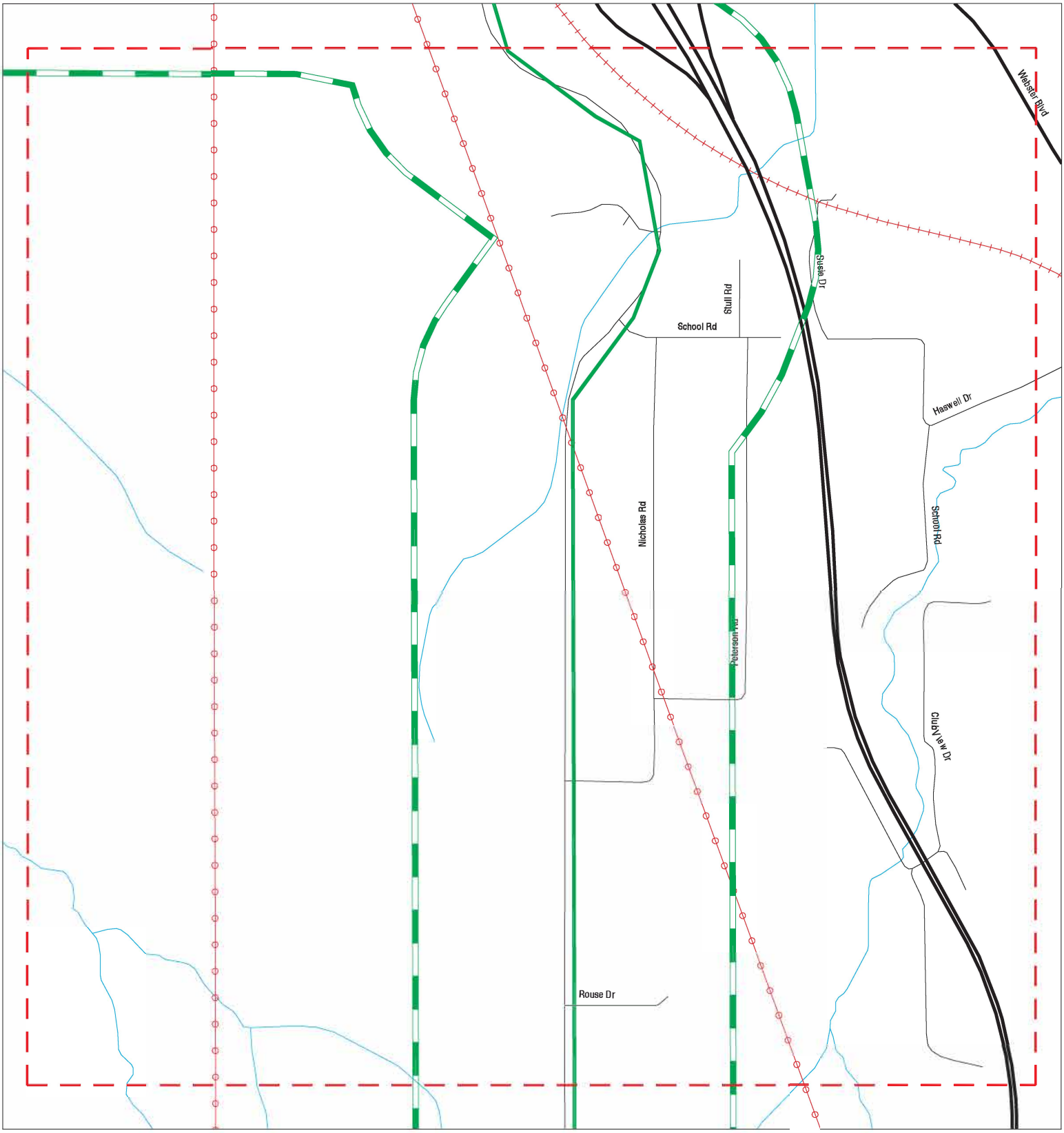
MAPPED SITES SUMMARY - FOCUS MAP 5

Target Property:
PLATTSMOUTH WATER SUPPLY SYSTEM
PLATTSMOUTH, NE 68048

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 6 - 6162568.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
Pipe Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Plattsmouth Water Supply System	CLIENT: Terracon
ADDRESS: Plattsmouth Water Supply System	CONTACT: Kari Munk
CITY/STATE: Plattsmouth NE	INQUIRY #: 6162568.5s
ZIP: 68048	DATE: 08/20/20

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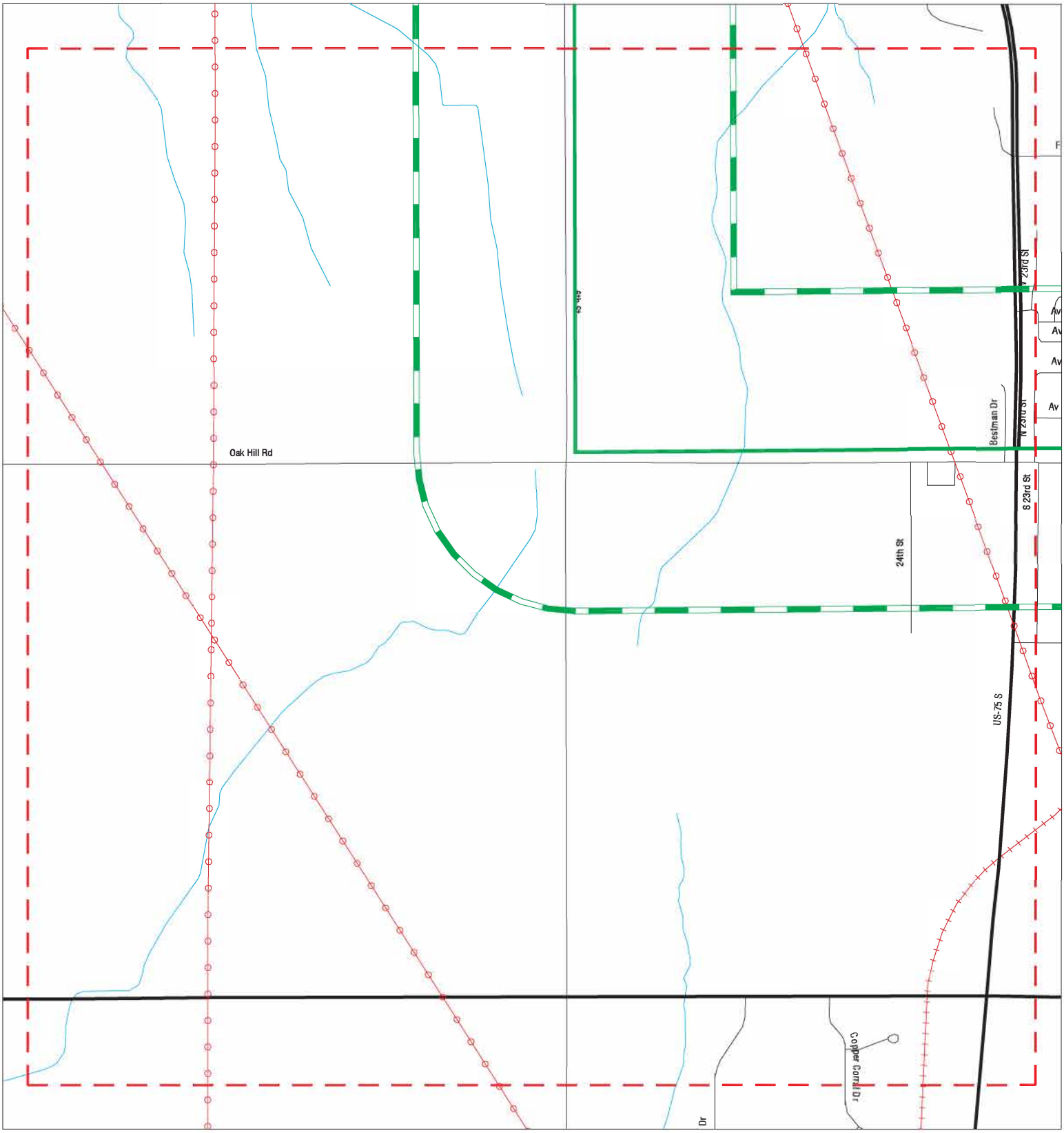
MAPPED SITES SUMMARY - FOCUS MAP 6

Target Property:
PLATTSMOUTH WATER SUPPLY SYSTEM
PLATTSMOUTH, NE 68048

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 7 - 6162568.5s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
Power Line
Pipe Line
National Priority List Sites
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Plattsmouth Water Supply System	CLIENT: Terracon
ADDRESS: Plattsmouth Water Supply System	CONTACT: Kari Munk
CITY/STATE: Plattsmouth NE	INQUIRY #: 6162568.5s
ZIP: 68048	DATE: 08/20/20

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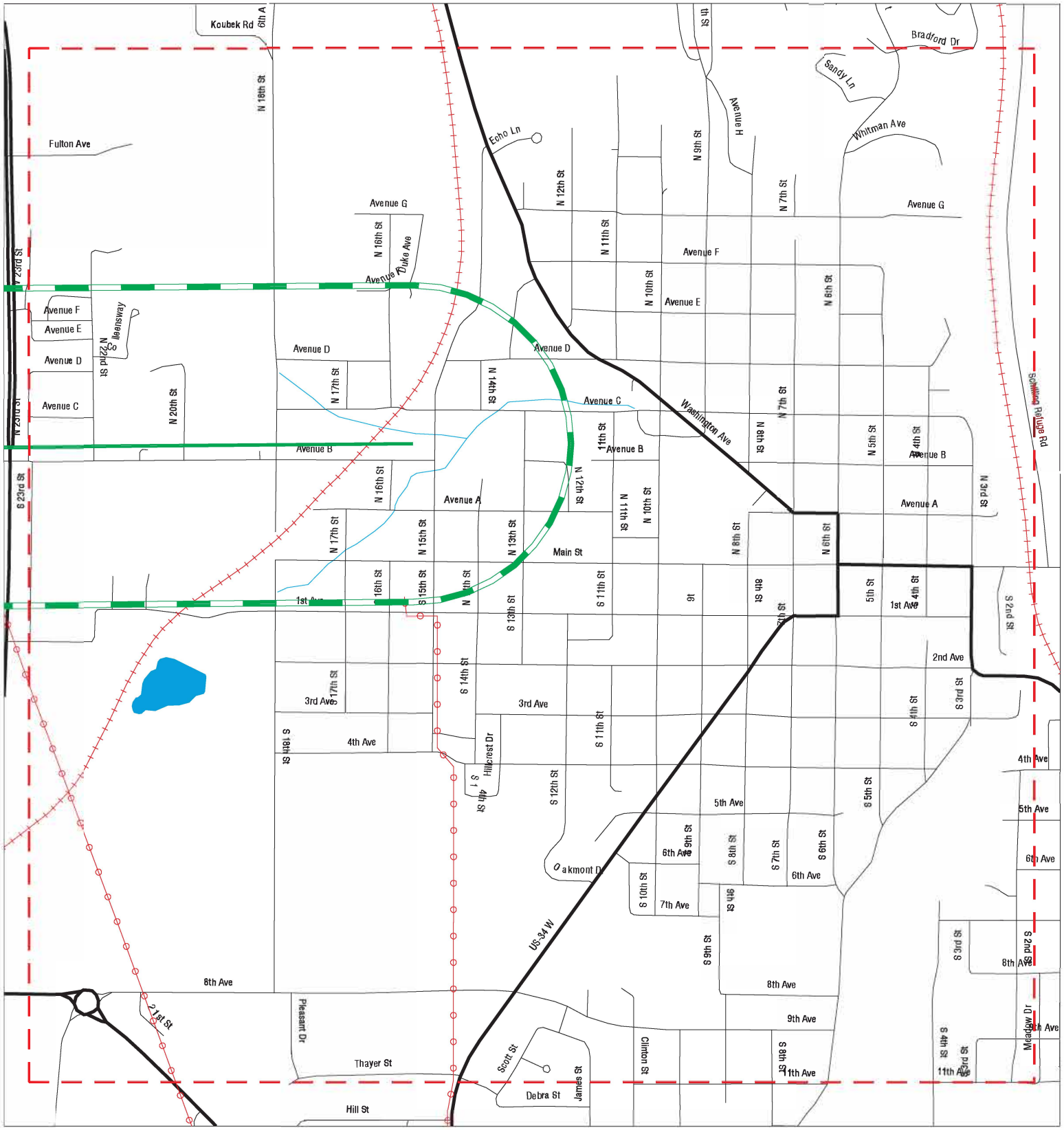
MAPPED SITES SUMMARY - FOCUS MAP 7

Target Property:
PLATTSMOUTH WATER SUPPLY SYSTEM
PLATTSMOUTH, NE 68048

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 8 - 6162568.5s



Sites	Focus Map - Sites	Dept. Defense Sites
Target Property	Power Line	Indian Reservations BIA
Search Buffer	Pipe Line	
Focus Map - No Sites	National Priority List Sites	

0 1/8 1/4 Miles

SITE NAME: Plattsmouth Water Supply System	CLIENT: Terracon
ADDRESS: Plattsmouth Water Supply System	CONTACT: Kari Munk
CITY/STATE: Plattsmouth NE	INQUIRY #: 6162568.5s
ZIP: 68048	DATE: 08/20/20

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MAPPED SITES SUMMARY - FOCUS MAP 8

Target Property:
PLATTSMOUTH WATER SUPPLY SYSTEM
PLATTSMOUTH, NE 68048

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number
A1 **Target** **Property**	**PLATTSMOUTH, NE** **Site 1 of 2 in cluster A**	**ERNS**	**2006820991** **N/A**
Actual: **971 ft.** **Focus Map:** **3**	Click this hyperlink while viewing on your computer to access additional ERNS detail in the EDR Site Report.		

A2 **Target** **Property**	**3600 WEST BAY ROAD** **RURAL PLATTSMITH, NE** **Site 2 of 2 in cluster A**	**ERNS**	**2005765189** **N/A**
Actual: **970 ft.** **Focus Map:** **3**	Click this hyperlink while viewing on your computer to access additional ERNS detail in the EDR Site Report.		

Count: 36 records

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
BELLEVUE	S106255990	WILES BROTHERS FERTILIZER	36TH ST & PLATTSMOUTH ROAD		SPILLS
PLATTSMOUTH	S120626539	OFE OIL COMPANY	NORTH 15TH AVE-BULK PLANT		LAST
PLATTSMOUTH	S120626544	OFE OIL BULK PLANT	BULK PLANT N 15TH ST		LAST
PLATTSMOUTH	S117395825	IN & OUT MART	1302 S 15TH STREET		LUST
PLATTSMOUTH	S105689859	CUBBYS	303 BESTMAN DR		LUST
PLATTSMOUTH	S101290597	CASS CO SHERIFF'S SHOP	SHERIFFS SHOP PLATTSMOUTH		LUST
PLATTSMOUTH	S103219847	CASS CO DEPT OF ROADS	RR - PLATTSMOUTH		LUST
PLATTSMOUTH	U004055277	CUBBYS INC	303 BESTMAN DR	68048	UST
PLATTSMOUTH	A100478087	PACE MAINTANENCE BUILDING	11720 22ND ST	68048	AST
PLATTSMOUTH	A100459199	NDOR-PLATTSMOUTH MAINTENANCE YARD	1000 S 22ND ST	68048	AST
PLATTSMOUTH	S105622407	HWY 75 - PLATTSMOUTH	HWY 75 NEAR AVENUE B		SPILLS
PLATTSMOUTH	S121269410	TRK LEAK: N 6TH ST/AVE A	BTWN N 6TH & AVENUE A		SPILLS
PLATTSMOUTH	S106966193	CAR ACCDT: BAY RD & 4 MI	BRIDGE OVER 4 MI CREEK, BAY RD		SPILLS
PLATTSMOUTH	S109011975	CAR ACCDNT: BAY RD & 4 MI	BAY RD AT FOUR MILE CRK, N SID		SPILLS
PLATTSMOUTH	S105242019	UNKNOWN	PLATTSMOUTH BOAT DOCK		SPILLS
PLATTSMOUTH	S105529166	CAR ACCNDT-BOAT DOCK	1 MI S OF PLATTSMOUTH BOAT DOC		SPILLS
PLATTSMOUTH	S105954338	HWY 75, .5 MI N OF PLATTS	HWY 75, .5 MI N OF PLATTSMOUTH		SPILLS
PLATTSMOUTH	S125692443	PLATTSMOUTH NPPD TRNSFRMS	FLOODED AREAS IN PLATTSMOUTH		SPILLS
PLATTSMOUTH	1016694590	WOODHOUSE FORD	HIGHWAY 75 & OSAGE RANCH RD	68048	FINDS
PLATTSMOUTH	1015895682	DIAL ENERGY ETHANOL FACILITY	HIGHWAY 75 S	68048	FINDS
PLATTSMOUTH	1015929360	DARLOW BURDIC LIVESTOCK	HIGHWAY 75 N	68048	FINDS
PLATTSMOUTH	1015973851	WILES CROSSING	JCT HIGHWAY 75 & E WILES RD	68048	FINDS
PLATTSMOUTH	1015805439	WESTSIDE COMMERCIAL	JCT HIGHWAY 75 & OAK HILL RD	68048	FINDS
PLATTSMOUTH	1012120234	LYMAN-RICHEY SAND & GRAVEL W	E BAY RD	68048	FINDS, ECHO
PLATTSMOUTH	1015763603	PINK GRADING INC	18TH ST	68048	FINDS, ECHO
PLATTSMOUTH	S107849105	BUCCANEER BAY	19457 TREASURE ISLAND RD	68048	AIRS, NPDES
PLATTSMOUTH	S112150703	PINK GRADING INC	18TH ST	68048	AIRS, NPDES
PLATTSMOUTH	S109276251	LYMAN-RICHEY SAND & GRAVEL W	E BAY RD	68048	AIRS, NPDES
PLATTSMOUTH	S123131133	NNG-MYNARD	U.S. HIGHWAY 75	68048	ASBESTOS
PLATTSMOUTH	S125079093	NNG-PLATTSMOUTH	U.S. HIGHWAY 75 AND MYNARD ROAD	68048	ASBESTOS
PLATTSMOUTH	S125080282	NNG-PLATTSMOUTH	6TH STREET AND SR66	68048	ASBESTOS
PLATTSMOUTH	S125965348	NORTHERN NATURAL GAS - PLATTSMOUTH NE	6TH STREET & WILES ROAD	68048	ASBESTOS
PLATTSMOUTH	S122302401	BOMGAARS	1350 S 22ND ST	68048	NPDES
PLATTSMOUTH	S111345422	WESTSIDE COMMERCIAL	JCT HIGHWAY 75 & OAK HILL RD	68048	NPDES
PLATTSMOUTH	S108272999	DIAL ENERGY ETHANOL FACILITY	HIGHWAY 75 S	68048	NPDES
PLATTSMOUTH	S108917852	WILES CROSSING	JCT HIGHWAY 75 & E WILES RD	68048	NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 08/03/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 08/03/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 08/03/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/02/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/03/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/03/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 913-551-7003
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 913-551-7003
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 913-551-7003
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 913-551-7003
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/15/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 06/18/2020
Number of Days to Update: 30

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/04/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 05/15/2020
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/15/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 05/15/2020
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/15/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 03/22/2020
Date Data Arrived at EDR: 03/24/2020
Date Made Active in Reports: 06/18/2020
Number of Days to Update: 86

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

SHWS: Superfund State Program List

The Nebraska Department of Environmental Quality is providing this information from it's own database. The data, although not verified to be the most current or accurate for any specific site, is generally based on the contents of the physical documents in the files. You may contact the Records Management Unit at (402) 471-3557 to make arrangements to view or to get a photocopy of the physical file.

Date of Government Version: 03/17/2020
Date Data Arrived at EDR: 03/18/2020
Date Made Active in Reports: 05/27/2020
Number of Days to Update: 70

Source: Dept. of Environmental Quality
Telephone: 402-471-3557
Last EDR Contact: 06/10/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Varies

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Licensed Landfill List

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/27/2020
Date Data Arrived at EDR: 02/27/2020
Date Made Active in Reports: 05/06/2020
Number of Days to Update: 69

Source: Department of Environmental Quality
Telephone: 402-471-4210
Last EDR Contact: 06/10/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Varies

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank Sites

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/08/2020
Date Made Active in Reports: 06/25/2020
Number of Days to Update: 78

Source: Department of Environmental Quality
Telephone: 402-471-3557
Last EDR Contact: 07/07/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Quarterly

LAST: Leaking Aboveground Storage Tank Sites

Releases from an aboveground storage tank system.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/08/2020
Date Made Active in Reports: 06/25/2020
Number of Days to Update: 78

Source: Department of Environmental Quality
Telephone: 402-471-3557
Last EDR Contact: 07/07/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/15/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 02/01/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/06/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Varies

UST: Facility and Tank Data
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 04/22/2020
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/16/2020
Number of Days to Update: 78

Source: Nebraska State Fire Marshal
Telephone: 402-471-9664
Last EDR Contact: 07/27/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Annually

AST: AST Data
A listing of aboveground storage tank site locations. Aboveground storage tanks dispensing hazardous substances must register such tank with this office. Storage tanks of 1000 gallons or less are exempt from this requirement.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/05/2019
Date Made Active in Reports: 11/14/2019
Number of Days to Update: 70

Source: State Fire Marshal
Telephone: 402-471-9465
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: No Update Planned

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/03/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/29/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/23/2020
Next Scheduled EDR Contact: 11/01/2020
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 85

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/26/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 78

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/14/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/24/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

INST CONTROL: Nebraska's Institutional Control Registry

A list of sites within Nebraska that have institutional controls. According to the Environmental Protection Agency (EPA), institutional controls are "non-engineering measures designed to prevent or limit exposure to hazardous substances left in place at a site, or assure effectiveness of the chosen remedy. Institutional controls are usually, but not always, legal controls, such as easements, restrictive covenants, and zoning ordinances." In short, institutional controls are a type of environmental covenant typically used when property is to be cleanup to a level determined by the potential environmental risks posed by a planned use, rather than to unrestricted use standards. This method of control has proven to be both environmentally and economically beneficial.

Date of Government Version: 02/04/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/03/2020
Number of Days to Update: 76

Source: Department of Environmental Quality
Telephone: 402-471-2214
Last EDR Contact: 06/19/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Annually

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/17/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Varies

VCP: RAPMA Sites

The Remedial Action Plan Monitoring Act (RAPMA), initially created in 1995, provides property owners and parties responsible for contamination with a mechanism for developing voluntary environmental cleanup plans which are reviewed and approved by the Department.

Date of Government Version: 02/04/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/03/2020
Number of Days to Update: 76

Source: Department of Environmental Quality
Telephone: 402-471-2186
Last EDR Contact: 06/19/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Annually

State and tribal Brownfields sites

BROWNFIELDS: Potential Brownfields Inventory Listing

"NDEQ defines a brownfields site as subpart (A) of CERCLA ? 101(39): 'Real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.' This is a broad-based approach to capture all potential brownfields sites. In the event that CERCLA 128(a) State Response Program funds are utilized - for example, conducting a Section 128(a) Assessment - the exclusions, site-by-site determinations, and further definitions as provided by the law would need to be met. This would be done on a site-by-site basis." A preliminary Survey and Inventory of Brownfields Sites in Nebraska was constructed based on previously submitted information including sites named specifically by city representatives. The list was built on facility characteristics, which were founded on previous, broad-based contamination experience. Additions to the inventory were made by looking for other sources of potential brownfields sites using Standard Industrial Classification (SIC) codes. A general sector list was constructed to serve as an inventory guide. This list shows all of the different types of sites that are within the inventory (sorted by SIC code), and the number of sites there are of each type. Color-coated blocks, which group together similar SIC codes and the sites that they encompass also sort the sectors.

Date of Government Version: 03/17/2020
Date Data Arrived at EDR: 03/17/2020
Date Made Active in Reports: 05/27/2020
Number of Days to Update: 71

Source: Department of Environmental Quality
Telephone: 402-471-2186
Last EDR Contact: 06/16/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/01/2020
Date Data Arrived at EDR: 06/02/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/02/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: Recycling Resource Directory

A listing of recycling facilities.

Date of Government Version: 10/07/2019
Date Data Arrived at EDR: 10/07/2019
Date Made Active in Reports: 12/05/2019
Number of Days to Update: 59

Source: Department of Environmental Quality
Telephone: 402-471-6974
Last EDR Contact: 06/10/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: No Update Planned

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/14/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 07/31/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/18/2020
Date Data Arrived at EDR: 03/19/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Quarterly

PFAS: PFAS Site Contamination Listing
The purpose of the Perfluorinated Compounds (PFCs) inventory is to develop a statewide list of facilities that used or produced PFCs in Nebraska. This includes the high profile Perfluorooctanoic Acid (PFOA) and Perfluoroctane Sulfonate (PFOS), which were used in Aqueous Film Forming Foam (AFFF) formulations for fire suppression. In addition to AFFF, PFCs were used in a variety of surface treatments and performance chemicals including fabric and leather treatments, various surfactants, food containers, pesticides, rubber products, antifogging, non-stick cookware, paints and special coatings, airplane hydraulic fluid, waterproof fabric, metal plating, photographic processes, and electronic manufacturing.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 02/07/2020
Date Made Active in Reports: 03/11/2020
Number of Days to Update: 33

Source: Department of Environment & Energy
Telephone: 402-471-3557
Last EDR Contact: 07/22/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

HIST UST: Underground Storage Tank Database Listing
A listing of underground storage tank locations. This listing contains detail information that the UST listing does not. It is no longer updated by the agency. For current information see the UST listing.

Date of Government Version: 02/28/2005
Date Data Arrived at EDR: 09/01/2006
Date Made Active in Reports: 10/11/2006
Number of Days to Update: 40

Source: State Fire Marshal
Telephone: 402-471-2027
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

HIST AST: Aboveground Storage Tank Database Listing
A listing of aboveground storage tank locations. This listing contains detail information that the AST listing does not. It is no longer updated by the agency. For current information see the AST listing.

Date of Government Version: 10/19/2004
Date Data Arrived at EDR: 09/01/2006
Date Made Active in Reports: 10/11/2006
Number of Days to Update: 40

Source: State Fire Marshal
Telephone: 402-471-2027
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 08/03/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 02/27/2020
Date Data Arrived at EDR: 03/24/2020
Date Made Active in Reports: 06/18/2020
Number of Days to Update: 86

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/23/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

SPILLS: Surface Spill List
Releases of petroleum or hazardous substances to the air, land, or water.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/08/2020
Date Made Active in Reports: 06/25/2020
Number of Days to Update: 78

Source: Department of Environmental Quality
Telephone: 402-471-2186
Last EDR Contact: 07/07/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 10/09/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 03/06/2013
Number of Days to Update: 62

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SPILLS 80: SPILLS80 data from FirstSearch

Spills 80 includes those spill and release records available from FirstSearch databases prior to 1990. Typically, they may include chemical, oil and/or hazardous substance spills recorded before 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 80.

Date of Government Version: 04/15/2003
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 03/06/2013
Number of Days to Update: 62

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: 913-551-7003
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 05/13/2020
Date Data Arrived at EDR: 05/18/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 86

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/13/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/09/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/06/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/05/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/24/2020
Date Made Active in Reports: 06/18/2020
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 07/31/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/06/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/17/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 79

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/14/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 03/01/2020
Date Data Arrived at EDR: 04/21/2020
Date Made Active in Reports: 07/15/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/21/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 08/03/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 01/31/2020
Date Data Arrived at EDR: 05/13/2020
Date Made Active in Reports: 08/03/2020
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/15/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 06/09/2020
Number of Days to Update: 34

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 08/03/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/13/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 06/30/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 10/25/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 82

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 07/20/2020
Next Scheduled EDR Contact: 11/02/2020
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 42

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 06/05/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/01/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/06/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 06/24/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 07/27/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2020
Date Data Arrived at EDR: 07/15/2020
Date Made Active in Reports: 07/21/2020
Number of Days to Update: 6

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 07/06/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Varies

BRS: Biennial Reporting System
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/22/2020
Next Scheduled EDR Contact: 10/05/2020
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/07/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program
DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites
Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/18/2020
Next Scheduled EDR Contact: 08/31/2020
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 08/03/2020
Next Scheduled EDR Contact: 10/12/2020
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/28/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 77

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 05/27/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Quarterly

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 05/01/2020
Date Data Arrived at EDR: 05/21/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 84

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/21/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/27/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/21/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/05/2020
Date Data Arrived at EDR: 03/06/2020
Date Made Active in Reports: 05/29/2020
Number of Days to Update: 84

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 06/19/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/03/2020
Date Data Arrived at EDR: 03/03/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 86

Source: EPA
Telephone: (913) 551-7003
Last EDR Contact: 06/02/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 07/09/2020
Next Scheduled EDR Contact: 10/26/2020
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 04/04/2020
Date Data Arrived at EDR: 04/07/2020
Date Made Active in Reports: 06/26/2020
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 07/02/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 12/07/2020
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 05/18/2020
Date Data Arrived at EDR: 05/19/2020
Date Made Active in Reports: 08/03/2020
Number of Days to Update: 76

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/17/2020
Next Scheduled EDR Contact: 11/30/2020
Data Release Frequency: Quarterly

AIRS: Air State Program List
A listing of air program facilities.

Date of Government Version: 03/17/2020
Date Data Arrived at EDR: 03/18/2020
Date Made Active in Reports: 05/27/2020
Number of Days to Update: 70

Source: Department of Environmental Quality
Telephone: 402-471-3389
Last EDR Contact: 06/10/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Quarterly

ASBESTOS: Asbestos Notification Listing
Asbestos notification sites

Date of Government Version: 03/10/2020
Date Data Arrived at EDR: 03/12/2020
Date Made Active in Reports: 05/27/2020
Number of Days to Update: 76

Source: Department of Health & Human Services
Telephone: 402-471-0549
Last EDR Contact: 07/28/2020
Next Scheduled EDR Contact: 11/16/2020
Data Release Frequency: Varies

DRYCLEANERS: Drycleaner Facility Listing
A listing of drycleaner facilities in Nebraska.

Date of Government Version: 03/17/2020
Date Data Arrived at EDR: 03/18/2020
Date Made Active in Reports: 05/27/2020
Number of Days to Update: 70

Source: Department of Environmental Quality
Telephone: 402-471-3557
Last EDR Contact: 06/10/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Varies

Financial Assurance: Financial Assurance Information Listing
Financial assurance information for solid and hazardous waste sites.

Date of Government Version: 12/01/2019
Date Data Arrived at EDR: 12/17/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 72

Source: Department of Environmental Quality
Telephone: 402-471-2186
Last EDR Contact: 06/15/2020
Next Scheduled EDR Contact: 09/28/2020
Data Release Frequency: Annually

NPDES: Wastewater Database Listing
A listing of permitted wastewater facilities.

Date of Government Version: 05/28/2020
Date Data Arrived at EDR: 05/29/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 76

Source: Department of Environmental Quality
Telephone: 402-471-3557
Last EDR Contact: 08/19/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Quarterly

TIER 2: Tier 2 Facility Listing
A listing of facilities which store or manufacture hazardous materials that submit a chemical inventory report.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 06/03/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 71

Source: Department of Environmental Quality
Telephone: 402-471-3557
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Varies

UIC: Undergound Injection Control Database
A listing of underground injection well locations. The UIC Program is responsible for regulating the construction, operation, permitting, and closure of injection wells that place fluids underground for storage or disposal.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/08/2020
Date Made Active in Reports: 04/29/2020
Number of Days to Update: 21

Source: Department of Environmental Quality
Telephone: 402-471-2186
Last EDR Contact: 07/22/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Varies

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 07/09/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Semi-Annually

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 06/08/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Semi-Annually

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 07/01/2020
Next Scheduled EDR Contact: 10/19/2020
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 05/21/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List
The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Nebraska.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/03/2014
Number of Days to Update: 186

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank
The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Nebraska.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/03/2014
Number of Days to Update: 186

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/12/2020
Date Data Arrived at EDR: 05/12/2020
Date Made Active in Reports: 07/27/2020
Number of Days to Update: 76

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/10/2020
Next Scheduled EDR Contact: 11/23/2020
Data Release Frequency: No Update Planned

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 72

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 07/31/2020
Next Scheduled EDR Contact: 11/09/2020
Data Release Frequency: Quarterly

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/04/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Child Care Listing
Source: Department of Health & Human Srevices
Telephone: 402-471-2306

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: National Wetlands Inventory
Source: Department of Natural Resources
Telephone: 402-471-2363

STREET AND ADDRESS INFORMATION

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APPENDIX E
Cultural Resource Studies

AN INTENSIVE

CULTURAL RESOURCES INVENTORY

OF THE

PLATTSMOUTH WATER SUPPLY PROJECT

Cass and Sarpy Counties, Nebraska

T13N, R13E, Sections 29, 32 & 33

Quality Services, Inc. *Project #NE2520023*

September 22, 2020

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Abstract

Quality Services, Inc. (***QSI***) was contracted to perform an intensive cultural resources inventory for a proposed water supply line in Cass and Sarpy Counties, Nebraska. Inventory was performed on September 4th, 2020 using 10 meter transects covering a total of 12 acres with a single subsurface test.

Cultural resources records search revealed no cultural resources within the proposed project area. Twenty-eight previously recorded cultural resources were identified within one mile of the inventory area during records search. No new cultural resources were identified during the intensive cultural resources inventory.

A determination of **no effect** to historic properties is recommended.

If any cultural resources are located during project implementation work should cease in the vicinity of the find, and the Nebraska State Historic Preservation Office and ***QSI*** should be notified immediately.

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Introduction & Project Description

QSI was contracted to conduct a cultural resource investigation for the project in order to fulfill the requirements of Section 106 of the National Historic Preservation Act of 1966 (P.L. 89-665) as amended and 36 CFR part 800, which serves to implement the Act. The project research design was to determine if any cultural resources would be impacted by the development and to provide appropriate documentation to Federal and State review agencies.

The City of Plattsmouth proposed a waterline route associated with a water treatment plant near Plattsmouth, Nebraska. The proposed project includes approximately 8,800 ft. of pipeline routed across privately owned land or within the public right-of-way (ROW). Funding of the project will be received through Federal Emergency Management Agency (FEMA) and the Nebraska Department of Environment and Energy (NDEE).

Project Location

The project area includes 14 acres of farmland, riparian and river land, and deciduous forest, southwest of the city of Plattsmouth, Nebraska. The area of potential effect (APE) for this project is limited to the proposed waterline route.

Table 1. Legal locations for the project.

County	T	R	Sections	USGS 7.5' Topographic Quadrangle
Cass	13N	13E	29 & 32	Plattsmouth, Nebraska-Iowa 1994
Sarpy	13N	13E	32 & 33	Plattsmouth, Nebraska-Iowa 1994

Figure 1. General project location within Nebraska.

Figure 2. Project map for the proposed water supply line.

Environmental Overview

The project area is located within the Western Corn Belt Plains region of eastern Nebraska, known for its fertile soils. The Nebraska/Kansas Loess Hills ecoregion is characterized by "dissected hills with deep, silty, well drained soils" (Bryce 1998). These soils support natural vegetation and dryland agriculture.

Climate conditions in eastern Nebraska vary throughout the seasons. Winters are typically mild to cold, with moderate precipitation and moderate humidity. Summers see a marked decrease in precipitation, moderate to high humidity, rapid evaporation, and generally warm to mildly hot temperatures. The spring and autumn seasons are typically cool to cold, with temperatures that can drop below freezing at night. Roughly 65 to 75 percent of the region's precipitation occurs between April and September annually.

In the project area, flora and fauna consists of plains species. This included different mixed grasses, such as those from the bluestem variety, as well as pod grass, sweetgrass, and sage (Minnehaha Conservation District 2018). Cottonwood trees are commonly found along water, such as the southern edge of the project area. Primary fauna local to the region include mule deer, prairie dogs, coyotes, and foxes (USDA 2017).

Figure 3. Typical view of agricultural fields, undeveloped ground, and bordering trees on left within the project area facing north. S. Connolly 09/04/2020.

Topography in eastern Nebraska is flat. Soils within the project area are derived from glacial till deposits. Soils present within the project areas include mostly fine silt loam and clay loam (Soil Survey Staff 2020). Primary use of the land is for agriculture and grazing (Soil Survey Staff 2020). The Platte River intersects the central portion of the proposed project.

The project area consists of agricultural fields, a river and tributaries, forested riparian areas, manicured golf course greens, and fallow fields. Vegetation consists of mixed tall grasses, corn, reeds, and deciduous trees. The project area was mostly relatively flat agricultural fields. Ground surface visibility ranged from 0 to 40 percent with mixed grasses, corn, and other vegetation covering the ground.

Figure 4. Typical view of manicured grassy area and access road facing north. Note portion of golf course green within ROW. S. Connolly 09/04/2020.

Figure 5. Typical view of the Platte River facing north.
S. Connolly 09/04/2020.

Culture History Overview

The central Great Plains on which Nebraska is located have been known as 'the Great American Desert' by many. During the contact period this grassland was largely treeless and had vast areas without natural running water. The entire state is located within the drainage area of the Missouri River, which also forms the eastern border. One of the Missouri's most important tributaries, the Platte River, flows through the state. It is joined by its own tributaries, the Loup, Elkhorn, Niobrara, Republican and Blue Rivers.

The Central Plains has been the focus of anthropological study for decades. Archeological, ethnographic, oral traditional and historical research carried out for more than a century provides evidence of human occupation in the region for at least 10,000 years. The full range of Central Plains cultural and temporal periods are represented in the area, from nomadic Paleo-Indian and Archaic hunters to sedentary Plains Village farmers and historic era tribes.

The Paleo-Indian period is not particularly well understood in the Missouri River basin, although work in surrounding regions indicates the period extended from 12,000-8,000 B.C. and was characterized by large mammal hunting and the manufacture of a variety of well-crafted distinctive spear points. Paleo-Indians led a nomadic lifestyle organized around small mobile bands (Hoffman and Graham 1998). Paleo-Indian sites are more common in western Nebraska and Kansas, in contrast to the central and eastern Plains because early and mid-Holocene landscapes are often at or near the surface in the west.

Clovis, Folsom, and the Paleoindian Period

Clovis people entered the Great Plains by about 11,500 years ago and occupied the region until about 10,900 years ago (Hoffman and Graham 1998). Surface finds of Clovis points are not entirely uncommon; however intact sites are rare. The Folsom Complex dates from 10,900 to 10,200 years ago and occurs throughout the Great Plains although intact components have not been identified in the Blue River drainage. The Rocky Mountains form the western boundary of Folsom territory although the eastern limits are not well understood. Folsom is traditionally viewed as a cultural complex adapted to specialized bison hunting. Folsom bison procurement sites typically involve small numbers of animals that were dispatched using jumps and natural traps. Indeed, the majority of sites reflect bison kills and associated campsite and processing areas. However, the dependence on bison may be more apparent than real and procurement of smaller game and plant resources were likely part of the Folsom economy.

> The late Paleoindian period from 10,200 to 8000 years ago is represented by a series of complexes known collectively as Plano. Hoffman and Graham (1998) suggest further subdivision into: Plano (Agate Basin, Plainview, Milnesand, and Hell Gap), Cody (Alberta, Scottsbluff, Eden, Firstview and Kersey), and Frederick/Allen. These groups post-date Clovis and Folsom and had abandoned fluted point technology although projectiles remained lanceolate in form. The number of surface finds expands somewhat after Clovis and Folsom, including a few components in eastern Nebraska and Kansas. Excavated sites are more common to the west and demonstrate a significant diversity in technology, economy and social organization. While bison remained a major subsistence item, evidence for procurement of a broad spectrum of other animals and plants is clear (Hoffman and Graham 1998).

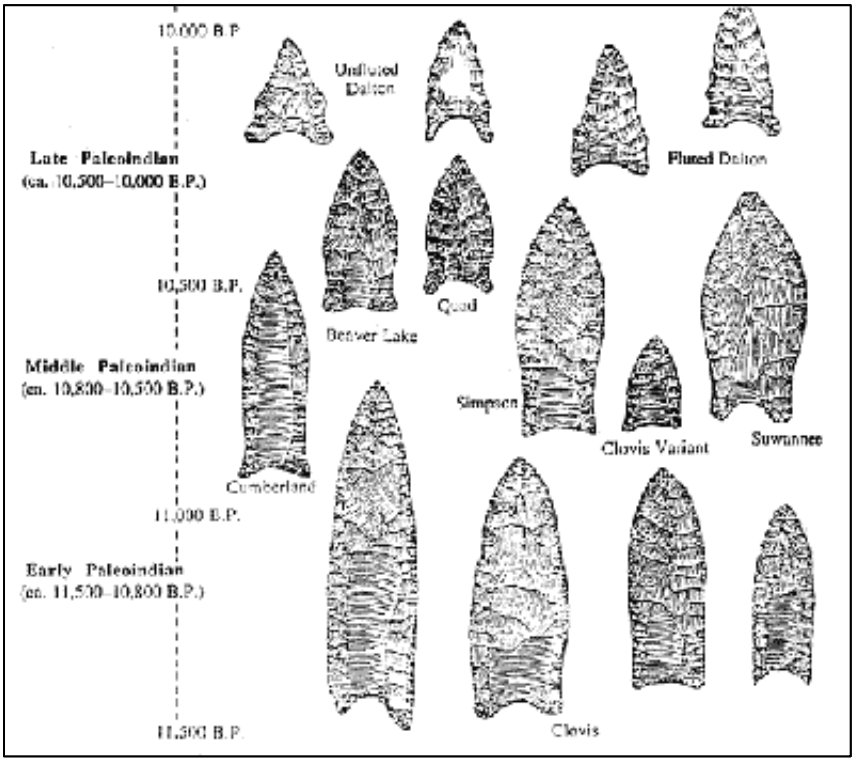

Figure 6. Examples of Paleoindians points
(NPS 2015).

Archaic

Archaic is the lengthiest major North American cultural tradition and is divided into Early, Middle and Late periods. Similar to Paleoindian, Archaic cultures on the Plains were essentially nomadic or semi-nomadic although some elements of Archaic reflect increased sedentism, seasonality, economic diversity, and social stratification.

On the eastern Plains, most Early Archaic culture is related to the Logan Creek complex recognized most readily in eastern Nebraska and western Iowa and dating from roughly 8600 to 6000 years ago (Kay 1998). The Cherokee Sewer site in northwest Iowa and the Logan Creek site in east-central Nebraska are the two most extensively studied components and both reflect intensive Plains bison hunting at the eastern margin of the drought-ridden Central Plains. Both sites are stratified series of probably closely spaced Logan Creek bison hunting base camp occupations.

In the interior of the Central Plains, Logan Creek is represented only by occasional surface finds. The one notable exception is the Spring Creek site in southwest Nebraska – also evidently a bison hunting base camp. Radiocarbon dates (circa 5000-6000 years ago) from Spring Creek are somewhat later than the eastern components and the site could have been occupied at a time when the Hypsithermal had begun to dissipate. Only one Early Archaic site is recorded in Gage County; a Logan Creek surface find south of Beatrice.

The tempo of occupation in the Missouri basin accelerates dramatically during the Middle and Late Archaic periods. Wide varieties of projectile styles have been reported from locations throughout the region and are dominated by Munker's Creek, Table Rock Stemmed, Nebo Hill, and Stone Square Stemmed styles. Middle and Late Archaic artifacts are frequently reported from Blue and Nemaha valley gravel bars, suggesting well-preserved buried components are likely present throughout the drainages. Nearly thirty surface finds have been reported in Gage County, Nebraska.

Woodland and Plains Village

The archeological record of the Woodland and Plains Village traditions is significantly more robust than that of Archaic and Paleoindian cultures on the eastern Plains. 2000 years ago, several important cultural changes occurred including the development of horticulture, increased population, and establishment of semi-permanent villages that were home to dozens if not hundreds of people. These cultures constructed semi-permanent earth and timber lodges, often with large numbers of associated storage and refuse pits, fireplaces, and burials.

The Plains Woodland tradition (2000 - 1000 years ago) adaptation is characterized as limited population aggregates, probably at the family or band level, living in small villages and camps, subsisting on produce from hunting and gathering, and possibly practicing horticulture. Woodland is characterized by the introduction of the bow and arrow, ceramic cooking and storage vessels, and other technological innovations. Woodland influences, or populations, from the Midwest appear in eastern Nebraska and Kansas by 100 B.C. and possibly earlier. Woodland people remained in place until about A.D. 1000. Woodland sites are not uncommon in eastern Nebraska.

Central Plains and Middle Missouri

The Central Plains and Middle Missouri traditions (A.D. 1000 - 1400) are characterized by a marked increase in the number of sites accompanied by significant changes in architecture, settlement pattern, subsistence practices, and material culture inventory. This spatial distribution of the Central Plains tradition includes most of Nebraska, northern Kansas, western Iowa, and portions of eastern Wyoming and northeast Colorado.

The Central Plains tradition is widely considered to be involved in development of the Initial Coalescent Variant and ultimately may be related to the historic Pawnee, Arikara, and Wichita. The Middle Missouri tradition is roughly contemporaneous with the Central Plains tradition. It was located along the Missouri River of South and North Dakota but is also represented by complexes in northwest Iowa, southeast South Dakota, and northeast Nebraska. These complexes include the Great Oasis (often considered to be transitional Late Woodland/Plains Village), Cambria and Mill Creek.

Central Plains people lived in small villages or isolated farmsteads of substantial rectangular houses. The artifact inventory includes small side-notched projectile points, stone knives, bison scapula digging tools, and a diverse ceramic assemblage of globular vessels with a variety of lip, rim, and shoulder decorative motifs. Gardens of corn and other vegetable goods were an important supplement to hunted resources. Villages may have been abandoned for a period of the year during seasonal bison hunts.

The origins of the Central Plains tradition are uncertain but the earliest sites (ca. A.D. 1000) appear in the Solomon and Republican River valleys of north-central Kansas and south-central Nebraska**,** suggesting a southern entrance. Early sites have also been recognized in the lower Platte River valley of eastern Nebraska. These two core areas happen to be the richest sources of flakeable stone in the Central Plains, which very well may explain why these localities were the first to be settled. While the Upper Republican, Nebraska, and Smoky Hill phases were apparently the first to emerge, northern phases such as Itskari, St. Helena, and even the Initial Coalescent variant of southern South Dakota, were active by the 1200s.

By the 1300s, several factors, most likely including climate change, population pressure, and conflict, caused the Central Plains Tradition occupancy of the Central Plains to come to an end. The movements and eventual fate of these people are, as of yet, poorly understood but by some point in the 15th century they are no longer archeologically detectable in the region. Again, although unproven, the most widely accepted assumption among archeologists is that they were involved in the development of the Coalescent tradition, centered along the Missouri River trench in South Dakota and portions of northeastern Nebraska. The Coalescent tradition represented an immigration (or invasion) of people into regions long held by the Middle Missouri tradition. These movements were not entirely peaceful and led to violent conflict in some cases. Several historic tribes are believed to have emerged from this dramatic culture contact, including the Mandan, Hidatsa, Arikara, and Pawnee. Linguistic research suggests the Pawnee and Arikara split after 1300. For the most part, the Arikara remained in the Middle Missouri subarea and the Pawnee migrated to the Central Plains.

Oneota

Oneota is the term applied to the widespread group of late prehistoric/protohistoric archeological complexes in the eastern Plains and the Midwest Prairie Peninsula (Henning 1998, 2001). Oneota

migration into the Central Plains occurred twice. The first took place from A.D. 1200-1400 and is reflected at several large villages in Nebraska, most notably Leary and Ashland, as well as a series of smaller communities and camps referred to as the White Rock phase. The hallmark of Oneota is high-quality, shell-tempered, and shoulder-decorated ceramic assemblages. A diverse assortment of lithic and bone tools is also recovered from Oneota sites as are abundant faunal and floral remains. Exploitation of bison herds likely relates to the incursion of Oneota populations into the region.

Some Oneota peoples arrived in eastern Nebraska in the 1200s and 1300s and are evident at several sites, including the Leary site (25RH1) in Richardson County, the Stanton site (25ST1) in Stanton County and the Ashland site (25CC1) in Cass County, as well as hunting camps in south-central Nebraska and north-central Kansas (Henning 1998, 2001). These populations apparently retreated to the Midwest by the 1400s and, with the available data, cannot be linked with known historic tribes. Oneota-descendent tribes did not appear again in Nebraska until after 1700.

Much of the Central Plains appears to have been abandoned by the central plains tradition and Oneota people from A.D. 1400 to 1600 probably because of climatic deterioration. Conditions improved, and portions of the region were (re-) occupied by the Pawnee starting about 1600 and Oto, Ioway, Missouria, and Kansa a century later. The Caddoan-speaking Pawnee and Arikara are in some way descended from the Central Plains tradition and the other tribes are Siouan-speakers that developed out of the Oneota tradition (Bailey and Young 2001; Johnson 1998; O'Shea 1989; Parks 2001a, 2001b; Schweitzer 2001; M. Wedel 2001 and W. Wedel 2001).

Cheyenne

The Cheyenne people have a rich and deeply rooted cultural tradition that for centuries allowed the people to live off the land and to adapt most aspects of their daily lives to frequent changes in location and environment. The Cheyenne utilized several different subsistence strategies as they moved across the landscape. In its earliest form, Cheyenne subsistence probably resembled those of other northeastern Algonquian tribes. Small game hunting and the gathering of local plants would have been the main source of sustenance (Jablow 1994).

As the tribe moved further west, they came into contact with the sedentary groups of the northeastern Great Plains, a shift in subsistence occurred. The Cheyenne, or at least a portion of the tribe, settled and adopted moderate-scale farming that they learned from the Mandan, Hidatsa and Arikara. Although their camps tended to be permanent, local hunting was still practiced and the tribe remained semi-nomadic. Before the introduction of the horse, hunting buffalo involved the erection of fences that could direct a stampede towards a cliff where the animals would plummet to their death (Jablow 1994, Grinnell 1972).

The introduction of the horse to Cheyenne in the late eighteenth century resulted in a transformation of their society to a full-scale nomadic and buffalo-based subsistence strategy. Likely acquired from raids against the Spanish or trading with other tribes, the horse allowed the Cheyenne to move freely across the plain and hunt bison in record numbers (Jablow 1994).

Because of the ease and speed of movement engendered by the horse, trade routes could be expanded to cover greater distances at a much quicker pace. By 1830, the Cheyenne had become completely dependent upon the bison herds. As a result, they, with the exception of a few bands that remained near

the banks of the Missouri River, had practically abandoned the crop raising techniques of the prior century and were migrating southwest in to the Great Plains (Grinnell 1972). This migration put them in to contact with the semi-sedentary groups of the Hidatsa, Mandan and Arikara. Some Cheyenne bands settled in that area for nearly a century, practicing small scale agriculture and building earthen lodges. Meanwhile other groups continued moving westward. The westward expansion of the Cheyenne is believed to be the result of hostilities from neighboring tribes, although which tribe was the cause is debatable. The Sioux, Assiniboine, Cree, Mandan, and Ojibwa have all been accused of aggression towards the Cheyenne (Hoebel 1960, Grinnell 1972).

Contact with European traders and settlers happened late for the Cheyenne, due to their western location. The pattern of European settlement in the area indicates that the earliest meetings with Europeans would have been with the Spanish, who were located to the southwest (Grinnell 1972).

In 1802, Perrin du Lac reported meeting Cheyenne Indians at the mouth of the White River and claims that most had never see a white person before. However, this is unlikely, as French trappers and traders had been within the area where the Cheyenne lived for years (Grinnell 1972, Jablow 1994). Jean Baptiste Trudeau was known to have had contact with the Cheyenne and Arikara as early as 1795, and Lewis and Clark recorded the Cheyenne as being spread across the Black Hills region in 1803. It must be noted that during these early encounters, the Cheyenne were still moving slowly westward and were often highly mobile and therefore unrecorded encounters between traders further to the west were likely (Grinnell 1972, Berthrong 1986).

By 1830, the Cheyenne were completely nomadic and were strongly allied with the Arapaho. Cheyenne hunters used newly acquired guns to kill record numbers of buffalo, which were used to supply the tribe with needed resources and as trade units. Increases in the number of European traders and settlers through Cheyenne lands led to an increase in violence between settlers and the nomadic group. However, the main conflicts in the area continued to be between resident native groups. Disputes over trade goods, especially with the Arikara, were common (Hoebel 1960, Jablow 1994).

The United States government entered the first major treaty with Northern Plains groups in 1851. This treaty attempted to end intra-tribal warfare, determine tentative tribal land boundaries, cease native raids on white caravans and establish forts and roads within tribal lands. However, due to their nomadic tendencies the Cheyenne rarely kept to their government determined boundaries and encounters with white settlers and U.S. Army units continued (Kapplar 1904, Marquis 1978).

When gold was discovered near Pikes Peak in 1858, the Arapaho and Cheyenne area was flooded with prospectors and other settlers who wanted the Tribes out of the area. The Smoky Hill Trail, which cut diagonally through the area occupied by the Cheyenne and Arapaho, became a major Euro-American thoroughfare due to the gold rush. As settlements and protection zones popped up along this trail, it became harder for the Cheyenne and Arapaho bands that lived on either side of the trail to communicate, or even meet for important occasions. This eventually split the tribes into northern and southern units (Fowler 1989, Salzmann 1988, Berthrong 1986). The gradual division of the two halves of the tribe led to the Northern Cheyenne to form an alliance with the Northern Arapaho and the Sioux. The Southern Arapaho attempted to remain in Colorado, below the increasingly crowded Denver area (Fowler 1989, Salzmann 1988, Berthrong 1986).

This newly formed alliance had a clash of ideas with the Southern Arapaho and the Kiowa on how to respond to the ever-growing numbers of settlers and traders in the area. The Kiowa's were ready to fight whereas the Cheyenne, Northern Arapaho and the Sioux wanted to negotiate and avoid a backlash of hostilities. The Arapaho and Cheyenne were angry as they felt that peaceful actions would result in better treatment and fighting would make the Euro-Americans fight even harder to destroy the tribes. Both knew that the white settlers and military units often did not differentiate between hostile and friendly Native American groups (Berthrong 1986).

Representatives from both tribes went to William Bent with their concerns and offered to "punish" the Kiowa, if necessary, to keep them from fighting. While Bent felt that the Kiowa were a problem that needed to be "gotten rid of" and that they "needed a whipping," he also did not want a war to break out between the tribes and told the Cheyenne and Arapaho not to attack the Kiowa. The Cheyenne and Arapaho then pressured Bent to have the U.S. Government develop a new treaty, which hopefully would move them farther away from the settlers. The U.S. Government, looking for a solution to the growing tensions in Colorado, agreed and worked with Bent to negotiate a treaty (Berthrong 1986).

During 1860, negotiations took place between the Bureau of Indian Affairs, the Southern Arapaho, and the Peace Chiefs of the Southern Cheyenne, which included Chief Black Kettle. A large portion of the Cheyenne were not present for these negotiations, but Black Kettle and the other Cheyenne chiefs present felt that this was acceptable and that the remainder of the tribe would accept the treaty as long as the peace chiefs supported it. Negotiations lasted until September and resulted in a new reservation. When the government officials left, Black Kettle and the other Cheyenne peace chiefs assured them that the absent tribal members, which included most of their warriors and the Dog Soldiers, would accept the treaty once they were told about it. Once the negotiations were concluded, William Bent resigned his position as Agent, and recommended that Albert Boone, grandson of Daniel Boone, take over his position (Berthrong 1986).

The Northern Cheyenne, who had not participated in the treaty negotiations, refused to comply with the treaty. They wanted to maintain their hunting areas further to the north. Both the northern and southern bands said the treaty had been negotiated and signed by a small minority of the chiefs without the consent or approval of the rest of the tribe. They also protested that the signatories had not understood what they signed, and that they had been bribed to sign by a large distribution of gifts. The whites, however, claimed the treaty was a "solemn obligation" and considered those Indians who refused to abide by it hostile and planning a war (Berthrong 1986, Fowler 1989).

Sand Creek Massacre

By 1863, the buffalo hunts produced very meager results and the Cheyenne, Northern Arapaho and other tribes in the area were supplementing their food supply by taking livestock from the settlers.

The taking of livestock from white settlers by Arapaho and Cheyenne tribal members, which became more prevalent by 1863, and the results of small scale raiding by both sides sparked a movement against the Native Americans in Colorado. Kiowa, and Comanche raids in southern Colorado Territory along the Arkansas River, and Sioux actions along the South Platte River along the Great Platte River Road, the eastern portion of the Overland Trail in Nebraska, only added to the problem (Berthrong 1986).

It appears that by April, Colonel Chivington may have been looking for any excuse to execute his plans. When 175 cattle were reported as having stampeded or wandered off from a work ranch along the Smoky Hill Trail, Chivington informed his superior, Major General Samuel Curtis that the Cheyenne had driven the cattle off and stolen them (an army inquiry after the coming massacre became a public scandal could find no proof that any tribe was involved). He requested permission to get the cattle back and proceeded to use his volunteers to attack four Cheyenne villages that likely were not even aware of why they were being shot at (Debo 1984).

Hostilities continued, and Governor Evans ordered all friendly tribes to move to U.S. Army posts for protection. By August 11, he had noted that few tribal groups had headed his order. He then declared that any Native Americans that did not report to Fort Lyon (previously known as Ft. Wise), Ft. Larned, Ft. Laramie or Camp Collins would be seen as hostile, and dealt with severely (Berthrong 1986).

In August, the Cheyenne, Sioux, and Arapaho intensified their raids on the Oregon/California Trail, Mormon Trail in Nebraska. Raids along these trails, collectively known as the Great Platte River Road stopped all emigration along them for a period of 12 days. Native American warriors made coordinated attacks on wagon trains, stagecoaches, homesteads, stage stations and road ranches. At least 51 Euro-American adults and children were killed. Another seven white women and children were taken captive (NPS 2010, Berthong 1986).

Two of the major incidents in Nebraska during these raids were an attack on a supply train near Hastings. This wagon train was headed for Denver and was ambushed by a large Cheyenne war party. Six teamsters were killed. The second incident involved at least 100 Cheyenne and allied tribes that hit two wagon trains west of Plum Station, outside Lexington. Three Euro-Americans and two warriors were killed. Three settlers were wounded, while a woman and a small child were taken captive (NPS 2010, Berthong 1986, Michno 2003).

Around that same time, Cheyenne warriors, likely accompanied by Arapaho allies, raided travelers, and homesteads along the Oregon Trail where it runs along the Little Blue River in Nebraska. These raids killed at least another 27 settlers and at least three settlers were captured there as well. One of these raids occurred on August 7th and 8th at Oak Grove Station, where 20 Cheyenne killed two workers and wounded two, causing the station to be abandoned the next day. The Cheyenne returned on the 8th to burn the station buildings (NPS 2010, Berthong 1986).

The raids were so disruptive that by Fall 1864, politicians in Colorado Territory were calling for the removal of all Native Americans from their borders, and similar calls were being made in Kansas and Nebraska. To respond to the raids and other hostile Native American actions, and because the majority of the U.S. Army was tied up in the Civil War, Colorado Territorial Governor, John Evans, along with his militia commander Colonel John Chivington, soon made plans to either drive the tribes out of the territory, or, potentially, kill them off entirely (Berthrong 1986, Steere 2009).

In September, several bands of Cheyenne and Arapaho went to Fort Lyon in southeastern Colorado and met with the officers in charge. Once it had been established that these bands were not hostile, they moved to the banks of Sand Creek, about 40 miles north of the fort (Berthrong 1986, Steere 2009).

On November 29, 1864 Colonel Chivington led the Colorado militia in an unprovoked attack on the Cheyenne and Arapaho encampment at Sand Creek. The militia attacked at dawn, even though they

were assured that the government knew the bands were peaceful, were flying an American flag to show that they were not hostile and were under the protection of a flag of truce. Witnesses state that the militia used four 12-pound cannons on the Native American camp. The Native Americans that were wounded or did not flee were killed and mutilated by the militia. It has been reported that approximately 130-150 Native Americans were killed in the massacre. However, witnesses gave numbers as low as 70 to 80, mostly women and children, and Chivington claimed as many as 500-600 warriors killed. Militia reports stated that 24 soldiers were killed and 52 were wounded. The exact number of those killed at Sand Creek is for the most part unknown (Berthrong 1986).

Because of the massacre the Arapaho and Cheyenne sent emissaries to the Sioux and asked them to join in reprisal attacks. The Sioux agreed, so the tribes banded together and began reprisal attacks on settlers and the military. The Sioux, Cheyenne and Arapaho warriors attacked forts, wagon trains and settlements along the Oregon/Mormon, Santa Fe and Smoky Hill trails, in western Kansas, western Nebraska, Wyoming and eastern Colorado. Only Little Raven's band of Southern Arapaho appears to have stayed completely out of these fights (Halaas and Masich 2003, Michno and Michno 2008, Berthrong 1986).

As a result of the increased tensions and fighting, the army began another round of fort construction in 1864 and 1865, including: Ft. Dodge, along the Santa Fe Trail near what is now Dodge City, Kansas; Ft. Fletcher (Later renamed Ft. Hays in 1866), along the Smokey Hill Trail near Walker Kansas; and Fort Wallace, near Wallace, Kansas. Ft. Wallace would end up being in an area where some of the most intense hostilities of the Indian Wars would occur (Barnes 2012).

In October 1865, the U.S. offered terms of peace with the Southern Arapaho and Cheyenne. The negotiations lasted into 1866, many taking place between the Government, Arapaho and Cheyenne at Ft. Zarah, Kansas. However, the negotiations were completed in spurts, as new raids and attacks would result in one side or the other leaving the talks. As part of the terms of this new treaty, the government accepted responsibility for the massacre at Sand Creek and gave monetary compensation to the survivors. It also moved the Southern Arapaho and Cheyenne to an area between the Cimarron and Arkansas River in Southwest Kansas and Northwestern Oklahoma. However, this reservation is not formally established because the state government in Kansas refused to allow Indian reservations within their borders. Finally, the treaty established Ft. Dodge as the designated annuity distribution point for the Southern Arapaho (Oliva 1998, Salzmann 1988, Gibson 1981, Fowler 2001, Berthrong 1986).

Red Cloud's War

1866 appears to have been quiet regarding the Southern Arapaho and Cheyenne, as not much is recorded about the tribe from that year beyond the fact that they participated in negotiations at Ft. Zarah. The Northern Arapaho, Cheyenne and Sioux re-established their presence along the North Platte River, however, and continued to raid throughout the region. Historical records indicate though that these raids were happening with less frequency, and at a smaller scale than in the period soon after Sand Creek. Events in Wyoming, however, reignited the fighting, resulting in what is now called Red Cloud's War (Berthrong 1986, Fowler 2001).

Red Cloud's War (also referred to as the Bozeman War) involved the allied Lakota, Northern Cheyenne, and Northern Arapaho, who were fighting the United States over control of the Powder River Country in north central Wyoming. In 1863, European Americans had blazed the Bozeman Trail through the heart

of the traditional hunting territory of the Cheyenne, Arapaho, and Lakota. It was the shortest and easiest route from Fort Laramie and the Oregon Trail to the Montana gold fields. From 1864 to 1866, the trail was traversed by about 3,500 miners, emigrant settlers, and others. The emigrants competed with the tribes for the diminishing bison herds and other resources near the trail (Berthrong 1986, Fowler 2001, Utley 1973).

In 1866, negotiations began between the U.S. Government and the tribes at Ft. Laramie to arrange for safe passage for emigrants along the Bozeman. Negotiations were proceeding amicably, when, almost at the point when a treaty was to be signed, a large U.S. Military force appeared at the fort. This force had plans to construct forts along the Bozeman to enforce the treaty and protect travelers along the trail. The tribal chiefs negotiating the treaty were not happy with this development as they did not want a military presence on the trail and especially did not want forts (Berthrong 1986, Fowler 2001, Utley 1973).

Red Cloud, a prominent Oglala Lakota Chief, spoke for the tribes and declared that they would not sign the treaty. He also informed the U.S. officials that if the planned forts were built, the tribes would be at war with the U.S. The U.S. Government ignored Red Cloud and the tribes and began refurbishment of Ft. Reno on the Powder River, which was a base for the 1865 Powder River expeditions, near what is today Sussex, Wyoming. Two other forts, Phil Kearney between what are now the cities of Buffalo and Sheridan, Wyoming and C. F. Smith near today's Ft. Smith, Montana were soon constructed, and new fighting between the army and the tribes began (Berthrong 1986, Fowler 2001, Utley 1973).

Between 1866 and 1868, the combined tribes harassed work parties and attacked patrols at the forts, as well as attacked civilian travelers along the Bozeman. The largest action of the war, the Fetterman Fight at Ft. Phil Kearney in 1866, was the worst military defeat suffered by the U.S. on the Great Plains until the Battle of the Little Bighorn ten years later, with 81 men killed on the U.S. side (Berthrong 1986, Fowler 2001, Utley 1973, Appleman 1960). In 1867, Red Cloud and the tribes intensified their attacks against the northern two forts, virtually cutting off travel along the Bozeman Trail. Even though technically victories for the U.S. troops, fights such as the Wagon Box Fight near Ft. Phil Kearney and the Hayfield Fight near Fort C. F. Smith, made the army realize that it was not worth the cost to maintain forts along the Bozeman (Berthrong 1986, Fowler 2001, Utley 1973).

Treaty negotiations were held at Fort Laramie and resulted in a new pact in November 1868, where the Bozeman could be used, but the military presence was removed. The Sioux, as well as the Northern Cheyenne were promised a reservation that encompassed the Black Hills and covered what is now the western half of South Dakota and parts of western North Dakota, the southeast corner of Montana and part of eastern Wyoming. The forts along the Bozeman were abandoned in 1868 and were almost immediately burned to the ground once the soldiers left (Berthrong 1986, Fowler 2001, Utley 1973).

An executive order by President Grant in August 1869 changed the boundaries of the Cheyenne and Arapaho reservation to a five-million-acre parcel south of the Cherokee Outlet between the 98th and 100th Meridians, along the North Canadian and Upper Washita rivers. Small scale raiding by the Northern and Southern Cheyenne, as well as their allies. For the most part, however, relations between the tribe and the Euro-Americans began to quiet down (Berthrong 1986).

In 1874, gold was discovered in the Black Hills of western South Dakota and the resulting rush brought a flood of white prospectors into the region. These prospectors, and the settlers following in their wake,

began illegally occupying lands promised to both Cheyenne and Sioux by the 1868 Treaty. The U.S. War Department attempted (either in vain or in a half-hearted way, depending on the historian) to keep white settlers out, but even if they were removed from the reservation, many prospectors would just return. This situation inflamed the tribes in the region, and they began to increase resistance to white incursions across the board. The resulting raids, fights and killing of white settlers over the next year brought the attention of the U.S. Government down on the tribes (Marquis 1978).

In 1875, the Crow, Cheyenne and Sioux struck a peace agreement amongst themselves which resulted in the Crow ceding some of their lands east of the Big Horn River to the displaced Cheyenne and Oglala Sioux from the Black Hills. This arrangement also allowed the Cheyenne and Sioux to have access to buffalo hunting grounds in eastern Wyoming and Montana. By late 1875, the hostilities with the Cheyenne and Sioux resulted in another ultimatum from the U.S. Government. In a move similar to earlier declarations in Colorado and Kansas, the government declared that any bands that did not report to their reservation would be declared hostile and a military expedition would be mounted to either destroy them or force them onto the reservation (Marquis 1978).

Some Cheyenne and Sioux bands remained dead set against moving to a reservation, however. As a result, a three-pronged summer campaign was planned for 1876. On June 25, on the Little Bighorn River in Montana, the 7th Calvary attacked an Indian camp comprised of Northern Cheyenne and Sioux Indians. The ensuing battle resulted in the death of Colonel George Armstrong Custer and many of the soldiers under his command. Only soldiers and civilians from detachments led by Custer's Lieutenants Reno and Benteen were left alive after the fighting ceased (Marquis 1978).

One of the battles to reign in the Northern Plains tribes occurred at War Bonnet Creek, Nebraska on July 17, 1876. The 5th Cavalry encountered a war party of Cheyenne along this stream as they attempted to move northwest to join the tribes in Montana. While this battle was not large in terms of casualties, one incident in the fight was embellished and celebrated extensively in the press of the day. Scout William "Buffalo Bill" Cody, who was to become a renowned entertainer, fought Cheyenne warrior Yellow Hair in one on one combat during this clash. Cody's victory was celebrated as the first act to avenge the death of Custer (Greene 1993).

While this battle was a victory for the Cheyenne and Sioux, it was the final straw for the military. The U.S. Government waged a full-scale campaign to suppress the will of the Plains Indians. With goals to "civilize" the Indians and assimilate them into white culture, the government sought to force the Cheyenne into sedentary, agricultural communities on formal reservations (Marquis 1978).

Reservation Period

In April 1877, after constant pressure from the U.S. Army kept them on the move and destroyed much of their supplies, the Northern Cheyenne surrendered at Red Cloud Agency in Nebraska. Standing Elk was chosen as the tribe's voice during the resulting negotiations. He, along with chiefs Morning Star, Little Wolf and Dirty Moccasins held talks with Generals Cook and Mackenzie to determine what was to be done with the tribe. Against the will of most tribe members, who wanted to stay in the north, Standing Elk announced that the Cheyenne would be willing to relocate to Indian Territory in Oklahoma. In the ensuing confusion he was not contradicted by any other tribal elder and the tribe's fate was sealed (Marquis 1978).

In August, a reported 933 Cheyenne arrived at their reservation in Oklahoma. After their arrival, the tribe suffered from warm weather diseases such as malaria and measles, and like many other tribes were given insufficient rations. Many deaths occurred during the winter of 1877-78. Late the following fall, fearing the conditions and diseases that the coming winter would bring, a band of around 350 Cheyenne (with 60 0r 70 warriors) led by Dull Knife (a.k.a. Morning Star) and Little Wolf leave the reservation in Oklahoma to attempt return to homeland in Wyoming. Little Wolf and part of the group split off after reaching North Platte River. Dull Knife and his group of about 150 were captured in western Nebraska and taken to Ft. Robinson (Field 2005, Debo 1984, Marquis 1978).

By January, the army had decided to send the Cheyenne back to Oklahoma. Dull Knife and his band refuse to go and demand to be sent to live with the Sioux at the Pine Ridge Agency. The commander of Ft. Robinson puts the band under guard and cuts off their food, water, and fuel for heat. This was done to force the tribe to give in and return to their reservation. On Jan. 9, 1879, Dull Knife and his band attack their guards using guns and other weapons they had smuggled into the barracks where they were kept. A running firefight resulted as the band ran for hills to the north. Fifty-two Cheyenne were recaptured and 37 killed during the initial breakout, while the remainder of the band escaped into the hills (Field 2005, Debo 1984).

On January 21, the majority of remaining Cheyenne escapees were found near Hat Creek. Twenty –two were found to have died from their wounds or the harsh weather conditions and another nine were found critically wounded. The remaining three warriors of this group attacked the at least 300 soldiers that had surrounded them and were killed. Dull Knife and a small number of this band, believed to be mostly his family members, were not among those captured or killed during the initial breakout or at Hat Creek. They struggled through the cold weather and terrain and surrendered at the Pine Ridge Agency on January 30 (Field 2005).

Surviving individuals who were recaptured during the breakout or at Hat Creek were taken back to Fort Robinson and asked if they would return to the reservation in Oklahoma. Again, they refused. After a few days, the imprisoned Cheyenne were taken to the Pine Ridge Reservation where they lived among the Oglala Sioux for twelve years (Marquis 1978).

The Cheyenne who had been living on the Pine Ridge Reservation were given permission by the government in 1881 to move to hunting grounds near the Tongue River. In 1883, they were joined by Cheyenne who had been living with the Northern Arapaho on the Wind River Reservation. In November 1884, President Chester A. Arthur established the Tongue River Reservation by Executive Order. More Cheyenne joined them from Wind River in 1891, and later by others from Oklahoma and other locations scattered across the west. Some 300, however, most of whom had intermarried with Southern Cheyenne, remained permanently in Oklahoma (Marquis 1978).

Once on the reservations, attempts by the government to assimilate the Cheyenne into white culture and suppress the traditional way of life included the introduction of farming, boarding schools, and cattle ranching. However, the land on the reservation was much too arid to support any sort of sustainable crop or cattle herds and the numbers of Cheyenne attempting to survive there. As a result, farming was abandoned, and the government began to systematically slaughter Indian ponies in 1919. One hundred horses per month were slaughtered, and the owners were compensated $6.55 per hide. This not only freed up grazing land for the government-controlled herd but also acted as a method of suppression by breaking the will of the people. By 1929, a quota of only 3,000 Indian ponies was allowed on the

reservation and most of the surplus animals were being taken by the government without compensation (Marquis 1978).

The Indian Bureau, in 1914, required that the tribe turn over their individually owned cattle, as part of a plan to form a herd owned by the entire tribe. When the tribal herd was dissolved in 1930, everyone received approximately 10 to 25 percent of their herd back (Marquis 1978).

With their farm efforts mainly abandoned by 1918, their horse herd greatly reduced by 1929 and their cattle under government control until 1930, the Cheyenne were left with nothing but dry, infertile land and extreme debt. Employment programs created under the new Deal policies of the 1930s helped the tribe's financial situation substantially. After court cases over government violations of both the 1851 Treaty and the 1868 Treaty, a compensation of 4,200,000 dollars was awarded to the tribe in 1963 (Marquis 1978).

Ioway, Oto, and Missouria

The Oto, Ioway, and Missouria are members of a Siouan-speaking linguistic group known as Chiwere (M. Wedel 2001). Like the Omaha, Ponca, and several other tribes, the Chiwerean speakers' pre-European-contact history lies within the Oneota tradition.

The oral history of the migration patterns for the Oto, Ioway, and Missouria are somewhat vague (Dorsey 1886; Henning 1998). It is believed that these groups split from the Winnebago in Green Bay, Wisconsin area and migrated to southwestern Wisconsin and northeastern Iowa. From there, the Missouria moved south and established villages along the Grand and Missouri rivers in northwestern Missouri. They are identified at that location in the 1600s. The Oto also left in the 1600s and settled in northwestern Iowa and southwestern Minnesota. They were followed at some later date (but also in the 17th century) by the Ioway. In the late 1680s, the Oto established villages along Spirit Lake and by the very late 1600s may have been living with the Omaha at the Blood Run site (M. Wedel 2001).

Accounts from the time suggest the Ioway moved south along the Missouri River earlier than the 1740s. Etienne Bourgmont in 1714 (Norall 1988) and the 1718 Delisle map record the Ioway living somewhere on the east side of the Missouri River, perhaps in the Vermillion, South Dakota area or even in northeastern Nebraska along Aowa Creek, in Dixon County. Francis LaFlesche, a Native American ethnologist travelling in the area with Alice Fletcher, anthropologist referred to Dixon County described Dixon County as a place the Iowas farmed (Fletcher and LaFlesche 1911). The Reverend James Owen Dorsey, another ethnologist, shared the same opinion of Dixon County (Dorsey 1886).

The lack of reference to the Omaha by Bourgmont and the association of the Ioway and the Oto in these accounts suggest that by this time both tribes were living downstream from northeastern Nebraska or northwestern Iowa. The situation is confused, however, by the 1739 Mallet account, which notes that the Oto were living 300 miles above the Kansa (consistent with the general Omaha, Nebraska area) but, oddly, fails to mention the Ioway. The first firm evidence of the Ioway village north of Council Bluffs, Iowa on the east side of the Missouri River is provided by Governor Kerlérec in 1758, who states that the Oto were living 240 miles above the Kansa and the Ioways 30 miles farther (Nasatir 1990). Later 18th century and early 19th century accounts often refer to this Ioway village after it was abandoned. For example, Lewis and Clark visited both the abandoned Ioway and Oto villages in 1804. The old Oto

village was located in the vicinity of present downtown Omaha, Nebraska and the old Ioway village about five miles farther north on the east side of the river (Thwaites 1904).

The War of 1812 split the tribe. Chief Hard Heart of the Ioways and his followers sided with the Americans, as did the Oto. The allegiance of other Ioways lay with the British. Chief Hard Heart moved back to the Missouri River during the War of 1812 and established a defensive outpost along the west side of the river, probably on or near the site of the abandoned Oto village in downtown Omaha. Hard Heart and some Ioway followers remained in the area (on both sides of the river) for a number of years. Hard Heart was killed there in 1823. Meanwhile, most of the tribe had settled in northwestern Missouri and by the 1830s almost all of the tribal land had been ceded to the U.S. government. In 1837, the Ioway relocated to a reservation in southeastern Nebraska and northeastern Kansas, along the Nemaha River.

Like the Ioway, the Oto moved south along the Missouri River in the early 1700s, by which time the Missouria were already well established far to the south, near the confluence of the Grand and Missouri rivers, in northwestern Missouri. The Utz and Gumbo Point archeological sites are widely believed to represent late 17th and early 18th century Missouria villages (Henning 1998). While the Omaha-Ponca and the Ioway were living in northeastern Nebraska and the Missouria were living in northwestern Missouri, the Oto evidently moved to the Platte River in east-central Nebraska. The first solid account of the Oto in Nebraska is from Bourgmont who journeyed up the Missouri river in 1714, at least as far as the mouth of the Platte River. Bourgmont describes the Oto as friends of the French living on the banks of the little river from which they make salt a few miles up the Platte River (Norall 1988; Schweitzer 2001).

The reference to a stream with salted water almost certainly refers to Salt Creek, which empties into the Platte River near the present community of Ashland – a distance from the mouth of the Platte entirely consistent with Bourgmont's description. The Ashland archeological site complex overlooks the mouth of Salt Creek and possesses Archaic through post-contact manifestations. The Ashland site has been known, since the 1930s, to contain an Oneota occupation suspected to relate to the early 18th century Oto village. Pawnee pottery and trade goods are also present at the site. A radiocarbon determination dating to the 1300s was obtained on material associated with Oneota pottery, proving that, at least in part, the Oneota component at Ashland does *not* relate to the protohistoric Oto village.

Either the portion of the Ashland site complex producing Pawnee-like pottery and sparse trade goods is, in fact, the Oto village with inhabitants adopting Pawnee ceramic technology, or the actual Oto village has not been firmly located. The Ashland site complex did, however, produce post-contact era burials that are likely related to the Oto residency there. Based on the facts surrounding the 1720 Villasur massacre, it is apparent that the Pawnee and Oto were in contact and allied with one another and loyal to the French. The main body of the Oto probably journeyed from the Ashland site to engage the Villasur party, so it would not be unexpected that Oto archeological remains at the site would include Pawnee pottery.

By 1739, the Oto had abandoned the Salt Creek village and moved to the Missouri River at a location believed to be in what is now the heart of downtown Omaha, Nebraska (Old Market Village, 25DO167). This village is well documented and precisely located. Another site related to the Oto and Ioway, the Eagle Ridge site, is located along the lower Papillion Creek drainage near Bellevue, Nebraska.

Preliminary work at the site suggests it is Oto or Ioway and likely a small seasonal village dating to the 1730s.

Possibly due to increasing pressure by the Dakota tribes along the Missouri River, the Oto moved back to the Platte River in about 1765. They relocated to the Yutan site (25SD1), in the 1770s on the west side of the Platte River. The Oto occupied the Yutan site until 1837. In 1794, they were joined there by the Missouria, who had moved from their villages in northern Missouri following population losses from smallpox and warfare with the Sauk and Fox (Schweitzer 2001).

As mentioned above, the Oto and Missouria remained at the Yutan site probably until the 1830s, although some may have moved down nearer the mouth of the Platte River even earlier and some apparently lived with the Pawnee at the Linwood site in the 1820s. An attack on Yutan by the Sauk in 1820 and internal political quarrels contributed to these movements. The final abandonment of Yutan was probably in about 1835 and partly at the encouragement of Moses Merrill, who established a mission and school for them along Zwiebel Creek in western Sarpy County. The Oto and Missouria lived at a variety of locations along the lower Platte and near its mouth during this period, until a move was made to their last major village in Nebraska (25GA4), located along the Blue River near Barneston, in southern Gage County (1854-1882).

Kansa

The Kansa (or Kaw) also emerged out of the Oneota tradition but are Dhegiha-speakers along with the Omaha, Ponca, Osage, and Quapaw (Bailey and Young 2001; Marshall 2006). Kansa migration tales are similar to other Dhegihans, referring to origins in the Ohio River valley in the 1300s with gradual westward migration. The Kansa eventually settled near the mouth of the Kansas River by 1700 or earlier (Bailey and Young 2001).

The Kansa were first noted living north of the Missouria Tribe, along the Missouri River on what is now the Nebraska-Iowa border. Father Jacques Marquette and Louis Jolliet recorded their presence here in 1670s. Contact was not made until French traders breached the area a decade later and the relationship between the French and the Kansa for some time (Bailey and Young 2001). In 1739, the French constructed Fort Cavagnail next to a Kansa village somewhere near the mouth of Salt Creek although these locations have not been firmly established. The Lewis and Clark journals noted the ruins of the Doniphan village and Fort Cavagnail and indicated that the Kansa had moved away from the Missouri River and were living on the Kansas River drainage. Kansa movement to the west may be a result of attacks by the Oto (Marshall 2006).

Most 18th and early 19th century Kansa villages are located in northwestern Missouri and northeastern Kansas, including a cluster of sites situated along the mouth of the Blue River near Manhattan. However, it is certain that their hunting territory extended up the Blue River drainage well into southern Nebraska and westward along various Kansas drainages to Colorado.

Lakota

So often called the Sioux Nation, a tripartite set of tribes including the Dakota (East), Nakota (Middle) and the Lakota (West) were living in the woodlands of southern-central Minnesota.

The term "Sioux" derives from the Algonquin word *Naduesiu*, which is a derogatory word meaning snakes, or enemies. This name was applied to them by their enemies, the Chippewa. It eventually was Anglicized to become the collective name the Europeans used to designate all the Sioux bands spanning from Mississippi to the Powder River. However, as contact and cultural exchanges increased, Euro-American connotations of the Sioux began to reflect reality. By the 19th century the three divisions were rightly recognized based on their commonalities and differences in regards to geography, linguistics, and subsistence strategies. The three names Lakota, Nakota, and Dakota all have similar meaning of "an alliance of friends" (Meyer 1967, DeMallie 2001a, Marshall 2001).

The Lakota themselves are broken down into seven sub-tribes. These are the Brule, Oglala, Blackfoot, Minneconjou, Sans Arc, Two Kettle, and Hunkpapa (Gibbon 2003). The Brule were located at the headwaters of the White and Niobrara rivers. The Oglala roamed from Fort Laramie to the Black Hills and the sources of the Teton River, and to the fork of the Cheyenne River. The Minneconjou band could be found from Cherry Creek to Slender Butte on the Grand River. Two Kettle peoples could be located near the Cheyenne and Moreau Rivers. The Hunkpapa, Blackfoot, and Sans Arc shared the area along the Moreau cannonball and Heart Rivers (Ewers 1938). However, even with these amorphous boundaries stated, the Teton bands could hunt and roam where they pleased and would often unite to carry out larger hunting expeditions, having personal contact quite often (DeMallie 2001a, Goldfrank 1943).

The collective Sioux maintained control of Minnesota territory for the majority of the 17th century, however, as settlers encroached on the area the Lakota began to migrate onto the High Plans east of the Missouri displacing dozens of other tribes (Howell 2006; Gibbon 2003; Ewers 1938). The Lakota had trouble acclimating, it was the introduction of the horse that allowed them to adapt to the area and a subsistence strategy that centered on hunting buffalo rather than gathering, fishing and hunting in the Minnesota forest regions (Goldfrank 1943).

The shift to a nomadic buffalo-hunting lifestyle was soon firmly in place. The Lakota Sioux lived in a way that would become the stereotypical image of an Indian to the western mindset which persists even today (Gibbon 2003). However, the surreal times of prosperity and tradition did not last long. Because of their push west, the Dakota had to consistently fight for or defend their favorite hunting grounds. In the late 1700s, the northern sedentary agricultural tribes, the Mandan, Arikara and Hidatsa, suffered a massive smallpox epidemic debilitating their power within the northern Dakotas and Upper Missouri. As the Missouri River was attracting much trade and western interest, the Lakota saw an opportunity to expand further westward while continuing to be influential in the trade market. The Sioux began raiding these sedentary tribes.

Beginning in 1811, the Sioux became well equipped with Western weaponry and began to war with the Crow over the control of the Powder River basin in Wyoming (Gibbon 2003). They were soon also at war with the Kiowa, Crow, Shoshone, Assiniboine, and Skidi Pawnees for increased hunting areas. The Lakota and allies, Cheyenne, and Arapaho, controlled the majority of the region between the Platte and the Yellowstone by 1850 (Ostler1999). Trade relations were increased, and traders would live in the camps, earn the trust of the Lakota, and even be adopted into a family. This semi-symbiotic relationship would continue in to the 1840s (Gibbon 2003; Ewers 1938).

Meanwhile the US army built Fort Leavenworth, Fort Atkinson, and many others along the Missouri and Platte Rivers (Gibbon 2003). The Platte was a popular fur trade route for traders moving goods between

the Rocky Mountains and St. Louis. The most profitable being Fort Pierre occupied from 1831 to 1855. Located three miles north of Bad River, it was where Lewis and Clark first met the Brule Teton (Gibbon 2003; Ewers 1938; Anderson 2005).

The Euro-Americans did not only bring goods to trade however but engendered multiple smallpox outbreaks throughout the plains. One in 1837 killed 2,000 Lakota Sioux (Marshall 2001). The number of dead from this outbreak pales in comparison when compared with the sedentary tribe's losses. The nomadic movements of the Lakota necessitated smaller bands of people making it harder for the disease to spread.

Tensions began to rise in 1812 as immigrants began to trickle westward through Sioux territory on the Oregon Trail (Ewers 1938). As the Pacific coast became more desirable and numbers of wagon trains increased, so did the anger of the Lakota Sioux. The travelers were beginning to alter the usually consistent migrations of the buffalo, putting the Natives in a position of uncertainty (Gibbon 2003). 157,717 people migrated to the west coast from 1841 to 1852 (Ewers 1938). Discovery of gold in California in 1849 only furthered the migrations (Goldfrank 1943). The Oglala regarded the diminishing buffalo as a mysterious or incomprehensible event. To them the disappearance was *wakan*, or part of the inexplicable supernatural elements that sometimes reify themselves on earth (Ostler 1999). They were convinced that the buffalo feared the smell of white people, as they cooked their coffee and bacon—regarded as foreign smells (Ostler 1999). As the Civil War ended in 1865, homesteading became an increasingly threatening problem as buffalo were being killed in record numbers (Gibbon 2003). By 1859, more than a million buffalo were killed a year (Goldfrank 1943).

1851 Fort Laramie Treaty

In 1851, members of the Dakota, Assiniboine, Arikara, Gros Ventre, Crow, Cheyenne, and Arapaho signed the Treaty of Fort Laramie (Goldfrank 1943). This treaty was comparatively mild and fair when viewed side by side to later agreements. The treaty states that:

> Article 2. The aforesaid nations do hereby recognize the right of the United States Government to establish roads, military, and other posts, within their respective territories.
>
> Article 4. The aforesaid Indian nations do hereby agree and bind themselves to make restitution or satisfaction for any wrongs committed, after the ratification of this treaty, by any band or individual of their people, on the people of the United States, whilst lawfully residing in or passing through their respective territories.
>
> Article 6. The parties to the second part of this treaty having selected principals or head-chiefs for their respective nations, through whom all national business will hereafter be conducted, do hereby bind themselves to sustain said chiefs and their successors during good behavior.
>
> Article 7. […] the United States bind themselves to deliver to the said Indian nations the sum of fifty thousand dollars per annum for the term of ten years […]in provision merchandise, domestic animals, and agricultural implements […] (The Indian Question CD-ROM).

These articles from the treaty of 1851 all became extremely relevant as an impetus for war in the latter half of the 19th century and continue to pose a problem.

By 1854, the United States government had constructed fifty-two forts in the western portion of the country (Gibbon 2003). The discovery of gold in Montana's Rocky Mountains in 1862 increased the flow of white settlers moving into the region—on top of an already burgeoning Oregon Trail. The Oregon Trail only skirted along Lakota territory (Herndon 1991). However, the only access to where gold was believed to be was through the heart of Lakota territory. The Bozeman trail would soon become the main thoroughfare.

Although the building of roads, military posts and other infrastructure was "legal" under Article 2 of the 1851 treaty, the Lakota were unwilling to be swindled out of their land for nothing. The encroachment sparked a period from 1850 to 1890, commonly known as the Sioux Wars (Gibbon 2003). However, the first Teton-White conflict came in 1854, and likely began as a misunderstanding or an act of frustration. The Grattan Massacre occurred just east of Fort Laramie, in eastern Wyoming (see map).

The Grattan incident occurred when a group of 4,000 Sioux were waiting to be paid their treaty annuities. After camping for an unknown amount of time, one starving Minneconjou man shot a lame cow that belonged to a wagon train which was passing through (DeMallie 2001, Clow 1985). A small detachment of soldiers was sent to arrest the man and 29 of those soldiers were killed after the soldiers shot Chief Conquering Bear and killed him. The Grattan encounter was labeled a massacre in the white world, inevitably causing anti-Indian sentiments throughout the frontier as well as within the bureaucratic system. It was suggested by some that genocide was the only way to deal with the Indian problem. However, this was a minority viewpoint. Further, the United States government decided to hold whole tribes responsible for the behavior of a few, causing tensions between the tribes and the government to grow even higher (Gibbon 2003).

In response to the Grattan incident, these anti-Indian sentiments were taken to the extreme by one man in particular—General William S. Harney. Harney was a very capable military man with 37 years prior experience before he came to the western frontier (Clow 1985). Outraged by the apparent lack of cooperation of the Sioux to follow the 1851 treaty, Harney deployed 600 men to engage the Lakota on the Platte River. Even though the Grattan incident was a result of the actions of a single Minneconjou man, a drunken interpreter, and stubbornness on both sides, Harney attacked the Brulé on September 3rd, 1855, because he considered all of the Sioux to be at war with him (Clow 1985). Harney's men used unconventional tactics to ambush the band of Brulé on Blue Water Creek in western Nebraska, leaving 86 men, women, and children dead (Ewers 1938).

Important episodes in the Sioux Wars to follow the Grattan-Harney battles are the Dakota Conflict (also known as Little Crow's War) spanning from 1862-1864, the War for the Bozeman Trail (Red Cloud's War) which occurred in 1866-1868, and the War for the Black Hills (Sitting Bull's and Crazy Horse's War) which was fought in 1876 to 1877. The fighting ended with the massacre at Wounded Knee in 1890 (Gibbon 2003). The first two battles in the Great Sioux War of 1976 were won by the warriors. However, the next five following Custer's Last Stand all went to the U.S. These last definitive wins put an end to the major Sioux resistance (Gibbon 2003).

Assimilation and Allotment Period

The following period in Sioux history, from 1887 to 1934, is often referred to as the Assimilation and Allotment period (Gibbon 2003). In 1889, the Great Sioux Agreement was put into place, demarcating five Lakota Sioux reservations in the Dakotas. These reservations are Pine Ridge, Rosebud, Cheyenne River, Standing Rock, and Crow Creek. Similar to other early reservation attempts, the life that the U.S. Government provided for the Lakota Sioux was dismal and tough. The plains ecosystem would not support agriculture, while the horse and cattle market could not support the large tribal population. Many warriors had the ability to leave the reservations, joining up with William F. "Buffalo Bill" Cody and his Wild West Show during the years of 1883-1933. Even Sitting Bull joined the traveling performers in 1885 (Gibbon 2003).

Throughout this period attempts for cultural assimilation and the destruction of the traditional culture involved the banning of feasts, dances and other traditional lifeways and traditions (Utley 1963). While despair in the tribes was overwhelming, hope was beginning to be kindled within the minds of a group of Northern Paiute, located in Nevada. The Ghost Dance Movement was founded by Wovoka (meaning "woodcutter" in Paiute), otherwise known as Jack Wilson. Wovoka's father died when he was only a young teen. As an orphan, Wovoka was taken in by a white rancher named David Wilson. David Wilson was a devout Christian, who relayed his beliefs and knowledge onto his adopted son (Ostler 1999).

Wovoka's upbringing gave him the opportunity, esoteric knowledge, and faith to lead a messianic movement to its fruition. At an early age, Wovoka became known as a very capable shaman performing tricks like being shot with a shotgun, or levitating. On January 1st, 1889 (Utley 1963) Wovoka had a revelation. Mooney (1991) describes the vision:

> On this occasion the sun died (was eclipsed) and he fell asleep in the daytime and was taken up to the other world. Here he saw God, with all the people who had died long ago engaged in the old-time sports and occupations, all happy and forever young. It was a pleasant land and full of game. After showing him all, God told him he must go back and tell his people they must be good and love one another, have no quarreling, and live in peace with the whites; that they must work and not lie or steal; that they must put away all the old practices that savored of war; that if they faithfully obeyed his instructions they would at last be reunited with their friends in this other world, where there would be no more death or sickness or old age (Mooney 1991: 771-772).

Wovoka's prophecy and the Ghost Dance movement came with many complications. Tribal delegations would come and misinterpret or simply not understand the message. Some thought it would lead to the destruction of all non-Native Americans. The conditions and decimation of the Native Americans left them incredibly susceptible to these ideas. The Sioux learned of the movement in 1889 when three delegates—Kicking Bear, Short Bull and Low Dog—brought it back after visiting Wovoka (Mooney 1991). description of Wovoka's prophetic event along with the eschatology that follows was often

The Lakota call it *Wana'ghi wa'chipi* (Mooney 1991). Deriving out of the Sioux's new-found hope was the advent of the "Ghost Shirt" which had no place within the original Paiute movement (Mooney 1991). The Ghost Shirt was a sack-like shirt made of cloth or muslin that was ornamented with painted circles, crescents, and crosses, and with designs symbolizing the eagle, magpie, crow, sage hen, and

other birds and animals all with special significance in Sioux mythology. It was believed that the fringed and feathered garment was bullet proof (Utley 1963).

The Ghost Dance movement is often cited as a direct cause of the Wounded Knee incident that occurred on December 29th, 1890 (Sievers 1975). Some believe that the Sioux, confronted by the army to stop dancing were hostile to the troops, while others believe that the Sioux were composed and did not antagonize the U.S. Army force. Others, including many of the Sioux, believe the Seventh Cavalry was seeking revenge for Custer's defeat eleven years earlier (Sievers 1975). Professional historians and non-contemporaries have long been proponents of the non-hostile reaction of the Sioux, while amateur historians hold that even women and children participated in the fight when so many "innocents" being killed (Sievers 1975).

Reservation Life

Since the turn of the 20th century, it is difficult to gauge if life on the Sioux reservations have improved. Before the modern era, the Oglala were the richest of the Sioux tribes, however currently, their reservation life has been extremely difficult (Goldfrank 1943). Numerous policies have been enacted since the 1930s such as:

> the 1975 Indian Self-Determination and Education Assistance Act, which transferred greater government and administrative powers to federally recognized tribes; the 1978 Indian Child Welfare Act, which gave Indian people the right to retain custody of their children; the 1978 American Indian Freedom of Religion Act, which stated that it was federal policy to protect and preserve the right of Indian peoples to practice religious traditions of their choice; the 1990 Native American Grave protection and Repatriation Act (NAGPRA), to return human remains and funerary and sacred objects, to tribes; and the 1990 Act for the Protection of American Indian Arts and Crafts which made it a criminal offense to falsely identify oneself as an Indian in order to sell artwork (Gibbon 2003).

Despite the governmental policies passed to improve standards of living, employment rates are still extremely high on the reservation. The reservations are often far from main cities, while the reservations themselves have little industry to keep people employed. It is believed that on the Pine Ridge reservation, the unemployment rate is approximately 85% (Schwartz 2006). Moreover, almost 97% live below the poverty level, with 33% of households living without electricity (Schwartz 2006). Due to these extreme living conditions, the 35% who are under the age of 18 often look to leave the reservation. But finding urban employment is difficult still as the high school dropout rate is nearly 70% (Schwartz 2006).

However, there have been a few large strides to increase the potential of the reservation population. The 1988 U.S. Indian Gaming Regulatory Act has provided employment at casinos such as at Fort Randall, which created jobs for all the reservation inhabitants. Moreover, the educational opportunities for the younger Sioux have increased markedly. Larger communities now have their own primary and secondary schools, which also offer classes on Lakota language and customs. Other reservations even have accredited colleges (Gibbon 2003).

Today, a cultural revival is occurring emphasizing arts and crafts, language, and heritage through schools and traditional powwows. Domestic life is improving thanks to organizations such as FEMA and Habitat for Humanity who have built and donated houses that are up to code (Schwartz 2006; Gibbon 2003). In general reservation life is beginning to look up which is encouraging for a people who have such a rich tradition and an emotionally moving history.

Northern Arapaho

The Arapaho are a Native American tribe of North America that was part of the Plains cultural tradition group on the Central Plains. There are many names for the Arapaho, but they call themselves the *Iñunaina* or *Inuna-Ina* which means "our people." The word "Arapaho" is thought to come from the Pawnee word for "trader." Historically they lived in Wyoming, Colorado, Kansas, Nebraska, Oklahoma, and South Dakota's Black Hills area. The Arapaho currently have one reservation located in central Wyoming called the Wind River Reservation which is shared with the Shoshone (Fowler 2001).

Historically, the Arapaho were associated with the Cheyenne and other tribes, and they tended to limit their contact with Euro-American settlers and explorers. As a result, there is a very limited written record of their history. Instead, much of it has been acquired and preserved through the tribal oral history.

Arapaho oral tradition tells of them originating from what is believed to be the Great Lakes region in or near the Red River Valley in modern day Minnesota. Between 1700 and 1800, the Arapaho moved southwest into South Dakota, likely displacing resident mobile populations such as the Kiowa and Kiowa-Apache, occupying northwest South Dakota by 1775. In 1820, the Arapahoe formed an alliance with the Cheyenne to fight back against Sioux encroachment, and the two tribes remained closely associated from then on. As the Sioux continued to push southwest into their territory, the Arapahoe moved further west and south, so that by the mid-1800's they occupied the area between the North Platte and Arkansas Rivers in Wyoming, Nebraska, Colorado, and Kansas, in turn driving the Kiowa and Comanche further south (Fowler 2001; Salzmann 1988).

Sometime in the early 18th century the Arapaho obtained horses which increased their individual carrying capacity greatly. In 1795, Jean-Baptiste Truteau, referring to the Arapaho as the "Caminanbiches", indicated they had already acquired a wealth of horses, through trade with other tribes and with Spaniards as far south as New Mexico (Fowler 2001). By that time, the Arapaho occupied southeast Montana, eastern Wyoming, the Black Hills area of South Dakota, and western Nebraska. They utilized this strategic location to trade goods between tribes to the south and villages on the Missouri River to the east (Fowler 2001, Shumway 1921).

In the early 1800s the Arapaho lived in northern and central Wyoming, southern Montana, the Black Hills, and the surrounding areas including Nebraska. In 1820 the Arapaho began an alliance with the Cheyenne to fight the encroaching Sioux, Kiowa, and Comanche. The two tribes remained closely associated from then on. The Arapaho & Cheyenne pushed the Kiowa & Comanche south. They made peace with the Comanche, Sioux, and Kiowa by the early 1840s. They also moved farther to the west and south, so that by the mid-1800s they, along with the Cheyenne, occupied the area between the North Platte and Arkansas Rivers in Wyoming, Nebraska, Colorado, and Kansas. During this same period, the Arapaho also sought peace with the European traders and settlers that were starting to move into and through their area. However, in this period, they were at war with the Ute, Shoshoni, and Pawnee, and

would remain so until the reservation period (Fowler 2001, Swanton 1984, Carlson 1998, Ostler1999).

By the 1850s, the establishment of several trails by white settlers and traders, including the Oregon, Smoky Hill, and Santa Fe, led to increased encounters with the Arapaho and Cheyenne. It also started the depletion of the buffalo herds that the Tribes depended on and changed the herd's migration patterns. White emigrants would hunt bison to resupply their wagon trains and would also allow their livestock to graze in wide areas around the trails, often depleting the grass and causing the buffalo to look elsewhere for food. In 1849, travel along the emigrant trails rose drastically as people rushed to California after gold was found there. The increased population on the trails led to trading posts along their routes as white settlers sought to make money from the emigrants. Some of these trading posts became settlements and resulted in both more hunting of the bison herds, as well as areas where it was dangerous for Native Americans to go. Leaders of the Arapaho bands used a strategy of "distance," or "low-profile invisibility, as defensive strategy" (Fowler 1989, Salzmann 1988, Fowler 2001).

1851 Fort Laramie Treaty

On September 17, 1851, they signed the Fort Laramie Treaty with the United States. In addition to provisions regarding conflicts with whites and establishment of forts and roads on within Indian territories, the treaty also assigned boundaries for the Arapaho and the other tribes that signed it. The Arapaho were assigned the territory between the North Platte and the Arkansas Rivers, to be shared with the Cheyenne. The Arapaho generally stayed in the western limits of this territory. As part of this treaty, they also selected Little Owl of the Northern Arapaho, and Cut Nose and Big Man of the Southern Arapahoe to be their intermediary chiefs, to serve as their representatives to the United States (Fowler 1989).

Soon after the treaty of 1851, gold was discovered in the Colorado territory and soon settlers and prospectors had begun to take over the Pikes Peak area and established the town of Denver. This area at the time was one of the Arapaho camp areas and best hunting grounds. The influx of people in the plains region meant that the availability of food sources was extremely scarce. This put a tremendous strain on the Arapaho's subsistence and way of life.

When the 1851 Treaty was broken, only a few years after it was signed, the increasing pressure of settlers, other pioneers into Arapaho territory, and the development of towns precipitated the separation of the Northern and Southern Arapaho. The Northern Arapaho retreated to Wyoming and Montana, largely staying north of the Platte River, while the Southern Arapahoe kept south of Denver towards the Arkansas River, trying to accommodate settlers in order to avoid conflict (Fowler 1989).

1861 Treaty of Fort Wise

On February 18, 1861, four Chiefs of the Arapaho and six chiefs of the Southern Cheyenne signed the Treaty of Fort Wise with the United States, at Bent's New Fort near what is now Lamar, Colorado. In the Treaty the Arapahoe ceded to the United States most of the lands designated to them by the Fort Laramie treaty. The new reserve, less than one-thirteenth the size of the 1851 reserve, was located in eastern Colorado along the Arkansas River, between the northern boundary of New Mexico and Sand Creek. The Arapahoe were to occupy the west and the Cheyenne to occupy the eastern portion of this area. The Northern Arapaho refused to consent to the cession (Fowler 1989).

In the mid-1860s, the Arapaho, Cheyenne, and Sioux banded together and attacked travelers along the Platte River Trail and the Platte River Bridge. In addition, the Arapahoe were involved in an unknown number of skirmishes in southwestern Nebraska with troops and local settlers, especially along the Oregon-California and Denver trails, including a raid on the Little Blue River in Nebraska (Becher 1999).

Reservation Period

The result would be that the Northern Arapaho would join with the Lakota and the Cheyenne in the events of the Sand Creek Massacre and Red Cloud's War described above under the Cheyenne section if this ethnography. The result was the abandonment of the forts along the Bozeman trail and the removal of the military presence that had followed the raids on the trail (Berthrong 1986, Fowler 2001, Utley 1973).

The negotiations begun at Ft. Zarah between the U.S. Government, Southern Arapaho, and Cheyenne in 1865 and 1866 continued into 1867. Southern Arapaho Chiefs, including Little Raven, tried to talk U.S. Government negotiators into giving the Arapaho a separate reservation in their favorite area in Colorado (Berthrong 1986, Fowler 1989, Utley 1973).

Continued raids and attacks in western Kansas, western Nebraska, and eastern Colorado during these negotiations and in periods between talks, however, resulted in an 1867 military expedition in western Kansas in order to drive hostile forces out of the area. General Winfield Scott Hancock, a hero of the Civil War, was ordered to lead a military "show of force" along the Santa Fe Trail and meet with the local tribes. If the negotiations that would result from the meetings did not result in favorable terms for the U.S., Hancock was ordered to drive hostile tribes out of western Kansas. A meeting was planned with local bands of the Southern Arapaho, Cheyenne, and Sioux at Ft. Larned on April 11, 1867 (Berthrong 1986, Fowler 2001, Utley 1973).

The show of force, as well as other hostilities in Kansas, Nebraska and Colorado convinced Little Raven and others that a Colorado reservation would not be safe. They returned to Ft. Larned and agreed to a reservation in the Cherokee Outlet area in Indian Territory, now north central Oklahoma. Ft. Larned was also designated as the location where annuity payments from the treaty would be distributed. The Medicine Lodge Treaty was signed on October 28, 1867 (Barnes 2012, Salzmann 1988).

The Northern Arapaho were permitted to send a delegation to Washington D.C. in 1877, even when the Cheyenne were denied the same consideration, after being deemed a peaceful tribe by the US Army. In Washington, the Arapaho delegation convinced President Rutherford B. Hayes to allow the Arapaho to settle with the Shoshone on the Wind River Reservation in Wisconsin (Fowler 2001).

Omaha and Ponca

The Omaha have a close affiliation with the Ponca who settled just north of the Omaha River on the Niobrara River, Nebraska and they share a similar dialect of Siouan with the Ponca, Kansa, Osage and Quapaw (Cash and Wolff 1976). These five groups are believed to have once been a singular group that migrated together from areas further to the south of their locations at the time of contact. It is believed that the groups either were originally from the Ohio Valley or from the Virginia and Carolina areas. It is known that they split from each other sometime around 1500 AD and that the Quapaw followed the

Mississippi down to the Arkansas River while the Omaha, Ponca, Osage, and Kansas went north. Then the Osage split off and went along the Osage River in Missouri and Kansas and moved slightly up the Missouri river. At some unknown point in their migration, the Omaha and Ponca tribes occupied northern parts of Iowa all the way north to Pipestone, Minnesota. The Ponca then went to where the Niobrara river meets the Missouri just south of the present-day border between South Dakota and Nebraska (Cash and Wolff 1976). The Omaha eventually moved further west to the area between present day Omaha and Sioux City along the Missouri River.

The Omaha and Ponca are members of the Dhegiha Siouan language family along with the Quapaw, Osage, and Kansa. Until the early 18th century, the Omaha and Ponca were one tribe, and together they share a prehistoric past in the Oneota tradition. Although the exact date of the Omaha-Ponca split is not known, it probably occurred at about the time they abandoned the White River village, ca. 1715-1720 (Howard and Le Claire 1965; O'Shea and Ludwickson 1992). The Ponca probably existed as a clan within the larger Omaha tribe for some time before the eventual separation (Fletcher and LaFlesche 1911). Although details are still not confirmed, the final split between the two tribes likely had occurred by 1735 (Brown and Irwin 2001).

The Omaha have a rich and colorful cultural tradition that is based upon several subsistence strategies. Omaha life relied heavily upon the vast buffalo herds of the Great Plains. The buffalo provided meat and materials from which tools, clothing, shelter, and various other implements were derived. The Omaha also practiced horticulture and planted maize, melon, beans, and squash. These small seasonal gardens were mainly left alone to mature on their own after the first few months of light cultivating (Fletcher and LaFlesche 1911).

In the early 1700s the Omaha established a village where the Bow Creek empties into the Missouri, near present-day St. James, Nebraska. Named "Bad Village," it was the site of a division within the Omaha, over a civil dispute. The two detached Omaha groups remained separate for two years before reuniting in a village near present day Ponca City, Nebraska (Fletcher and LaFlesche 1911).

The Omaha encountered two very different cultures in their relationship with white men. The French, who had steady trading contacts with the Omaha by 1758, were only interested in trading with the natives in the area (Liberty et al. 2001). They had no intentions of land acquisition. However, the British and later the Americans entered the area with every intention of colonization and claiming all lands as property of either the Queen or, later, the United States government (Fletcher and LaFlesche 1911). Despite the lack of interest in changing the culture exhibited by the French, once the Omaha opened trade relations with the whites, they quickly replaced many of their traditional possessions with their white culture counterparts. Metal utensils replaced bone tools; cloth and canvas replaced animal hides; copper kettles replaced traditional ceramic vessels and eventually, in 1825, guns replaced the bow and arrow (Fletcher and LaFlesche 1911). By 1770 the Omaha had acquired the horse from the southwest and were adept at utilizing them in both transport and as war mounts (Fletcher and LaFlesche 1911).

Not only did the fur industry bring new tools and materials to the Omaha, but it also began to fundamentally change the social structure of the tribe. In pre-contact Omaha tradition, clan chiefs were nominated based on a hereditary system (Fletcher and LaFlesche 1911). However, as the influences of white culture began to permeate the Omaha tribe, chiefs began to emerge from the commoners. Around

1770 Chief Blackbird came to power. While he did not belong to the line from which hereditary chiefs arose, he used his influence with whites to proclaim his power as chief (Fletcher and LaFlesche 1911).

Blackbird was fiercely competitive and recognized the benefit that could be gained from such good relations with white traders in the area. Blackbird is reported to have used arsenic obtained from the French to poison his opposition and rival leaders (Fletcher and LaFlesche 1911; Liberty et al. 2001). Blackbird died, along with nearly 800 other Omaha in a smallpox epidemic which struck their area in 1800. Before the epidemic, the Omaha population was estimated to be near 1100 individuals. After the small-pox epidemic the population dwindled to 300 (Liberty et al. 2001).

Other changes within the culture were brought on by the fur industry. Pre-contact Omaha religious doctrine required rituals associated with the killing and skinning of animals. The fur trade demanded more pelts and therefore more time and eventually the practice became purely secular, leaving behind the old rituals of the past. The hunt was no longer out of necessity but rather, to gain wealth (Fletcher and LaFlesche 1911).

In 1775 the Omaha resettled near where Omaha Creek and the Missouri River intersect. This village, called "Big Village" or "Large Village," was occupied intermittently for seven decades after 1775. During the late 18th and most of the 19th century the Omaha moved their encampments around the northeastern section of present-day Nebraska based upon hostilities from other tribes, mainly the Sauk and Fox, and to continue trade relations with whites entering the area.

The Louisiana Purchase brought Omaha territory into the internationally recognized boundaries of the United States. In 1804 the Lewis and Clark expedition passed through Omaha territory, but the party members did not establish contact with the tribe. However, the Oto led the expedition party to the grave site of famous Chief Blackbird (Liberty et al. 2001). Between 1800 and 1825 a small post was established near Omaha encampments but occupancy at the fort was irregular and the postmaster would ring a bell to inform the tribe that it was open for trade (Fletcher and LaFlesche 1911).

In 1815 the Omaha signed their first treaty with the United States government. The treaty did not facilitate the transfer of any native lands, but rather promised "peace and friendship" (Liberty et al. 2001; Rea 2007). The Omaha's relationship with the white men in their region was indeed peaceful and the Omaha never raised arms against any white influence in the area (Fletcher and LaFlesche 1911). The Omaha peacefully, although not always willingly, negotiated with the United States.

In 1830 the Omaha signed the Treaty of Prairie du Chien along with the Sauk and Fox, Sioux, Iowa, Oto, and Missouria (Fletcher and LaFlesche 1911). When the Omaha signed the document, they relinquished ownership of their lands in Iowa east of the Missouri. However, they retained hunting rights on the surrendered land (Rea 2007). Six years later they signed another treaty that ceded their lands between the Missouri state border and the Missouri River. They also agreed to build a new village near the newly constructed agency at Bellevue (Fletcher and LaFlesche 1911). Between 1836 and 1854 the Omaha made two attempts to return to "Big Village" but in each instance they were driven back south by hostile Sioux bands (Liberty et al. 2001; Fletcher and LaFlesche 1911).

French traders in Omaha territory had little, if any, concern with Indian religion and therefore made no attempts to introduce Christianity. But in 1845 the first permanent Christian, specifically Presbyterian, mission was erected inside Omaha territory. Not only did the mission near Bellevue establish a school

but it also was the first opportunity for the Omaha to see how contemporary farming implements were handled (Fletcher and LaFlesche 1911).

Internal and external conflicts, as well as epidemic disease, eventually led to a diminished position of power for the Omaha. By 1845 they had moved to the lower Platte River valley and built a village named "hill rising in the center of a plain." That site (25SY14), since destroyed, is also known as the "Kurz Site", in reference to Rudolph Friederich Kurz, a Swiss traveler and artist who visited it in 1851 and made a number of sketches of the village and its inhabitants (Kurz 1937).

Upon the death of honored Omaha "Chief Big Elk" sometime in the mid-1800s, Joseph LaFlesche, descended from both settlers and Native Americans, came to lead the tribe. As a child LaFlesche spent time among the Omaha and the Sioux as well as accompanying his white father to trade in St. Louis. He was fluent in Omaha, Sioux, French and English as well as speaking Iowa, Pawnee, and Oto. LaFlesche was a celebrated and respected chief who participated in several treaty negotiations and was a real power against alcoholism (Fletcher and LaFlesche 1911).

In 1854 an Omaha delegation, including Joseph LaFlesche, traveled to Washington where they signed a treaty that surrendered their hunting lands in Nebraska. In return they retained 300,000 acres along the Missouri River just south of "Big Village" to be set up as a reservation. Individuals who wished to establish permanent homesteads were given specific land tracts. A sawmill and gristmill were built, and a blacksmith and farmer were provided according to the provisions set forth by the treaty (Fletcher and LaFlesche 1911). The Presbyterian mission started at Bellevue followed the tribe to their new reservation. For 30 years the missionaries taught the Omaha children to speak, read and write English (Fletcher and LaFlesche 1911).

Once on the reservation, the Omaha divided into three separate groups. The Earthlodge Dwellers settled along Blackbird Creek near present-day Macy, Nebraska. The Make-Believe White Men settled near the relocated mission and the Wood-Eaters settled to the south where they sold wood to steamboats coming up the Missouri River. In 1865 the Omaha sold the northern half of their reservation to the government so that a reservation could be created for the displaced Winnebago from Minnesota (Liberty et al. 2001). The Omaha adjusted well to reservation life and settled existence, although they continued to hold the annual summer buffalo hunt until 1876 (Liberty et al. 2001).

By 1876 the buffalo herds had disappeared from Omaha territory and the tribe was not acclimating to farming. The Omaha never received government rations and were left to fend for themselves. In 1882 the government enacted a piece of legislation that gave each man, woman, and child a section of land that could not be sold, encumbered, or taxed for 25 years (Liberty et al. 2001; Fletcher and LaFlesche 1911). Lands not allotted to Omaha individuals were opened to white settlers and the act also made provisions for a road and railroad to be constructed through the reservation. The act of 1882 also led the ground for the 1887 Severalty Act which declared that all allotted Omaha Indians were citizens of the United States (Fletcher and LaFlesche 1911). These two acts together were predecessors to the Dawes Act of 1887. Both the act of 1882 and the Dawes Act of 1887 led to the rapid detribalization of many groups including the Omaha because it spread the tribe out and decentralized their villages (Rea 2007). In 1899 all the remaining reservation land was distributed to women and children born after the first allotment (Liberty et al. 2001).

While during the 19th century it seemed as though traditional Omaha cultural might disappear, by the turn of the 20th century there was resurgence in the interest of preserving the old ways. Polygamy and tattooing were continued practices in the early 20th century (Liberty et al. 2001). However, the sale of individual allotments and involvement in both World Wars caused many Omaha to leave the reservation permanently (Liberty et al. 2001).

Some of the first archeological evidence of the Ponca comes from *Nánza* near the mouth of Ponca Creek in Knox County. *Nánza* was a fortified archeological site also known as Ponca Fort (25KX1) and occupied from 1790 to about 1800. The Ponca are mentioned in Miró's 1785 description of the Missouri country. Miró describes the Ponca as living on a tributary of the Missouri River even before this in the 1770s (Nasatir 1990) The Ponca continued to occupy the lower Niobrara River region and surrounding areas through the reservation era.

The Ponca are a small tribe that occupied the northeastern corner of what is today Nebraska and adjacent southeastern boundary of modern South Dakota. Having always been a small tribe, the Ponca have been manipulated, relocated, and exploited by the United State government, causing them much suffering and bringing the tribe nearly to the brink of extinction (Brown and Irwin 2001). Perpetually small in numbers, they remained a well-established group in the area, defending their territory from both the neighboring Lakota to the west and the Yankton to the east. The Ponca, because of these small numbers, were rarely an offensive group and often switched alliances between tribes to better protect their interests. Raids were not common and were the sole responsibility of the individual and not a tribal matter (Cash and Wolff 1976).

Due to the smaller size of the Tribe, the Ponca do not enter the historic record until later than larger bands such as the Lakota. The first European record of the Ponca is a map by French cartographer Guillaume De L'Isle who drafted a map of the area in May 1718 (Howard and Le Claire 1965). In 1789, the Spanish trader Jean Baptiste Monier, known as Juan Munie, sought sole rights to trade with the Ponca. He petitioned again in 1793 and he eventually claimed them. He in turn passed his monopoly with the Ponca over to Jacques Clamorgan when he petitioned for the position in 1794 (Cash and Wolff 1976).

The first trading post set up near Ponca territory was erected in 1794-95 by French trader Jean Baptiste Trudeau. Named the "Ponca House," it catered to the Omaha and Dakota as well as the Ponca (Cash and Wolff 1976). The Ponca quickly learned that raiding rafts and parties coming up the Missouri River could be very profitable. These raids, as well as raids by the Dakota and Omaha, impeded the development of the fur trade along the Missouri for a few decades (Howard and Le Claire 1965). Between this time and 1804, when the Lewis and Clark Expedition made its way up the Missouri River to the mouth of the Niobrara River, the Ponca's numbers were decimated by a small-pox epidemic in 1800-1801. Numbering an estimated 800 tribal members before the arrival of white traders, the Ponca only numbered around 200 by the time of Lewis and Clark's arrival (Cash and Wolff 1976). During Lewis and Clarks' visit, the Ponca chief at the time, Smoke, and his sub-chief, Pure, informed the party that they believed their tribe would soon be extinct because of pressures from the Dakotas, white men and the disappearing buffalo herds (Cash and Wolff 1976). The last great and successful buffalo hunt of the Ponca people indeed came to pass only 50 years later in 1855 (Howard and Le Claire 1965).

In 1817 the United States Government had implemented a program that attempted to secure the loyalties of various native groups in the northern Great Plains and Upper Missouri region. At this time, the Ponca

signed a treaty with Commissioners William Clark and August Choteau promising peace and friendship between the government and the tribe. Again, in 1825, the Ponca signed another treaty, recognizing the United States as their governing body in return for protection (Cash and Wolff 1976).

During this stage in Ponca history the tribe was transformed in many ways. The influx of white traders and other native groups encroaching on the Missouri River region to trade led to an increase in intermarriage. The increase in metal weapons, especially guns, and the arrival of the horse in the area led the Ponca to rely more heavily on buffalo for sustenance (Cash and Wolff 1976).

Increased pressure from Plains groups, including the Sioux and Pawnee, resulted in more frequent warfare and although the Ponca's numbers had again increased since the smallpox epidemic, the Ponca were forced into periods of starvation as they could not leave the confines of their fortified villages for fear of rival warriors in the area (Cash and Wolff 1976). The United States was not protecting them as promised by the 1825 treaty and the Ponca soon became restless. When their circumstances became dire in 1858, some tribe members destroyed the local Niobrara Sawmill and stole goods. Until this time the Ponca had been nothing but compliant and peaceable with the white man and in return, they saw the government try to buy the compliance of actively aggressive tribes, such as the Sioux, with lavish gifts, guns, and goods (Cash and Wolff 1976).

In 1858, Ponca chiefs were forced, because of the dire situation of their people, to sign a treaty which ceded their lands to the United States government. The treaty named an area to be determined as the official Ponca reservation. The reservation stretched from, " a point on the Niobrara River and running north so as to intersect the Ponca River twenty-five miles from its mouth; thence from the said point of intersection up said river twenty miles; then due south the Niobrara River; thence down said river to the place of the beginning" (Cash and Wolff 1976). With this treaty, the government again promised to protect the Ponca from their hostile neighbors.

However, in 1865, the government returned to renegotiate the terms of the 1858 treaty. In this second treaty, the US government agreed to return sacred burial grounds and corn fields along the Niobrara River and Ponca Creek to the Ponca in exchange for 30,000 acres of their delineated reservation. However, after the treaty was signed the government refused to pay or remove white squatters who had settled on the land and the Ponca were forced to use tribal funds to do so. The Ponca Reservation was reduced to 96,000 acres, only a fraction of their pre-contact hunting territory (Cash and Wolff 1976). The government also did little to protect the Ponca from continuing Sioux raids.

In 1868, the United States government signed what may be the most famous treaty with native groups. The Fort Laramie Treaty gave the entirety of South Dakota west of the Missouri River to the Sioux Nation. Unfortunately, the Ponca Reservation was overlooked or ignored by officials and their lands were also ceded to the Sioux as a part of this treaty. The Ponca were now occupying what was legally Sioux land, giving the Sioux the right to harass and remove the Ponca from the lands they had inhabited for centuries (Cash and Wolff 1976). For eight years the Ponca struggled to survive amongst constant hostility from the Sioux and dire conditions on their own "Reservation". In 1876 the government arranged $25,000 for the removal of the Ponca to Indian Territory in Oklahoma and, while some officials may have had the Ponca's best interests at heart, the Ponca had no desire to leave their ancestral lands (Cash and Wolff 1976).

Although the Ponca did not physically fight against the removal, they also did not comply with it immediately. The tribe, along with white friend Rev. J. O. Dorsey, appealed to the Secretary of the Interior and to the Commissioner of Indian Affairs to not enforce the removal action but their pleas fell upon deaf ears. In 1877, E.A Howard arrived in Columbus, Nebraska to escort the Tribe to their new reservation in Indian Territory but was surprised to find only 170 Ponca ready to depart; the rest peacefully resisted the move by simply not coming to the rendezvous point (Howard and Le Claire 1965). Howard was sent back up to the reservation and through gentle coaxing and assuring the Ponca that the government would do nothing to protect them from the Sioux if they remained; he was able to persuade the remaining Ponca to join the rest of the group in Oklahoma (Howard and Le Claire 1965). The entire trip was plagued with bad weather and many Ponca died of exposure and illness. In total, 681 Ponca made it to their new reservation, with some left along the way, stranded and confused, while others chose to stay with their Omaha relatives (Howard and Le Claire 1965).

The Ponca were dissatisfied with the land provided to them and appealed to the Commissioner to let them inspect other lands in Indian Territory. They were allowed to do so, and they chose an area on the west bank of the Arkansas River totaling 101,894 acres (Howard and Le Claire 1965). However, at this location the Ponca also suffered as they were plagued with failing crops and a high mortality rate from Malaria. When Chief Standing Bear's son died during the winter, the Chief and 66 tribe members set off to travel north by foot and bury the young man's body with his ancestors (Howard and Le Claire 1965) Chief Standing Bear and his followers were soon arrested enroute and were detained by the government for leaving their territory without permission. When the arrested Ponca complained about their treatment, they were found not to be under the protection of the Constitution because the natives were not "[people] within the meaning of the law" (Howard and Le Claire 1965). Journalist Thomas Henry Tibbles and General Cook brought the Ponca's case to the public, accusing the government of violating *habeas corpus*. Tibbles and Cook hired lawyers to prevent the Ponca from being forced to return to the reservation in Oklahoma (Mathes 1987). In front of Judge Dundy of the Omaha Court Standing Bear pleaded his case saying:

> "There is one God and he hath made Indian and white man. We are all made of the same dust of the earth. He made me red and you white, and although we are of different colors our hearts are all the same, I have committed no crime except that I am an Indian" (Cash and Wolff 1976).

Judge Dundy found that, "an Indian is a person the same as a White man and similarly entitled to the protection of the Constitution" (Howard and Le Claire 1965) and the Chief and his followers were released to return to their original location. The now homeless Ponca found a small island in the middle of the Niobrara River which had been overlooked in the 1868 land cession to the Sioux and chose to settle there (Mathes 1987). Tibbles continued his charitable relationship with the Ponca and, with help from the Omaha Committee; the Ponca survived their first winter on the island despite having settled too late in the growing season to have a successful crop. In hopes of finding additional funds for the homeless band of Ponca, the Omaha Committee convinced Tibbles to expand a small tour that he had established to publicize the plight of the Ponca (Mathes 1987).

In April of 1880, Standing Bear sued both Chief Red Cloud and the Sioux nation as a whole, in an attempt to regain their original land in Nebraska as promised to them by the 1858 treaty. In 1881, the Sioux agreed to surrender a small portion of the original Ponca Reservation (Cash and Wolff 1976). A commission was called by President Hayes to investigate the legality of the Ponca's relocation to Indian

Territory and to determine the tribe's current state. Generals George Crook and Nelson Miles as well as William Stickney of Washington and Walter Allen of Boston traveled to hear narratives by both the Ponca in Indian Territory and the Ponca living near the Niobrara River (Howard and Le Claire 1965). They concluded that the removal of the Ponca had in fact been unlawful and clearly against their will and the tribe was appropriated $165,000 to reestablish their homes and to make restitution for their removal (Howard and Le Claire 1965).

After this committee made their ruling, the tribes were officially recognized as the Southern Ponca and Northern Ponca. Today, the Northern band of Ponca is not a tribe officially recognized by the United States government; they have no official reservation or formal government (Cash and Wolff 1976). While their lack of ties with the government does not allow the tribe to seek government funds, it also allowed them to evade the assimilation project of 1950 which called for Indians living on reservations to move to the cities in order to become completely assimilated into white culture (Cash and Wolff 1976).

The Southern Band of Ponca, choosing to remain on the Indian Territory reservation, has suffered much hardship since the departure of Standing Bear and his followers. They continued to have small crop yields and high death rates due to Malaria and other hot weather diseases. Much of their reservation was sold to a single family, the Millers, who established the Miller Brothers 101 Ranch in Oklahoma (Cash and Wolff 1976).

Under the Indian Reorganization Act, the Southern Ponca, who did not hold enough land to even be considered an open reservation in Oklahoma, reestablished a tribal government with an elected Chief replacing the hereditary line which ended with Horse Chief Eagle's death in 1940 (Cash and Wolff 1976). A small group of Ponca remain in Oklahoma territory today, but their cultural affiliation is weak, and the old ways are quickly being forgotten.

Pawnee and Arikara

Evidence for Pawnee and Arikara presence in Nebraska can be traced back farther than that for any other Native American tribe. Although not proven definitively, it is widely accepted that the Central Plains tradition (A.D. 1000-1400) represents, in some form, the Caddoan-speaking ancestors of the Pawnee, Arikara, and possibly the Wichita.

The Arikara are widely believed to have emerged from the Coalescent tradition in southern and central South Dakota after 1300 but are first referred to historically by Etienne Bourgmont in 1714 who placed three Arikara villages on the Missouri above the Niobrara River and at least 40 villages farther upriver (Parks 2001a). By the late 18th century and early 19th century the Arikara were regularly mentioned by Euro-American traders from St. Louis and the tribe had emerged as one of the most prominent "middlemen" trading groups in the Missouri River region.

In the 1830s, the tribe moved south and lived among the Pawnee along the lower Loup River in east-central Nebraska. Arikara presence among the Pawnee did not last long as friction between the Arikara and the Skidi Pawnee resulted in the Arikara departure around 1835. The Arikara spent several years as nomadic hunters traveling through western Nebraska and South Dakota before returning to the Missouri River near Fort Clark, North Dakota where they established earthlodge villages from 1837 until 1861. In 1866 the Arikara formally became politically united with the Mandan and Hidatsa at the Fort

Berthold Reservation and collectively known as the "Three Affiliated Tribes." The tribes continue to live at Fort Berthold.

Beginning around 1600, or perhaps earlier, the Pawnee established a series of large earthlodge villages in the lower reaches of the Loup River valley and nearby portions of the Platte River valley (Johnson 1998; O'Shea 1989; Parks 2001b). The Pawnee, who hunted over vast territories of central and southern Nebraska, are made up of four bands: Skidi, Chawi, Kitkahaki, and Pitahawirata. The Skidi band of the Pawnee is also known as the Loup or Wolf Pawnee.

The first possible historical mention of the Pawnee relates to the 1541 Coronado expedition that reached the Wichita towns of central Kansas. The Wichita told members of the expedition that beyond, to the north of where they lived, lay "Harahey" – a term believed to be the Wichita word for the Pawnee. This reference remains a source of confusion and some scholars believe Harahey may refer to a northern band of the Wichita.

Maps produced subsequent to French exploration in the Midwest in the 17th century by figures such as Louis Joliet, Jacques Marquette, and René-Robert Cavelier Sieur de La Salle suggest the French were certainly aware of the Pawnee living in what is now eastern and central Nebraska along the Loup and Platte rivers. The Skidi are typically referred to as *Panimaha* and the other (south) bands referred to as *Pani* on French maps and in documents. Although 17th century documents and maps do not firmly establish that the French had direct contact with the Pawnee, archeological excavations at 17th century sites do produce sparse European trade goods. These may have arrived at the Pawnee towns via inter-tribal trade or a few French trappers and explorers may have met with the Pawnee during the late 1600s.

Archeologically, there are only two or three pre-1700 Pawnee villages identified along the lower Platte River (i.e., south of Fremont). The Ashland site (25CC1) evidently possesses an early Pawnee component dating before 1700, based on the very low frequency of trade goods and the ceramic styles present. Archeological investigations by the Nebraska State Historical Society at the Woodcliff site (25SD31- Woodcliff I) revealed a similar component, also believed to date before 1700.

Competition between France and Spain over control of the Indian trade led the Spanish government in New Mexico to dispatch a military expedition in 1720, under the direction of Pedro de Villasur. The Spanish soldiers, accompanied by Apache and Pueblo Indian guides, were attacked and many of them killed by a war party of Pawnees, allegedly supported by Indian allies and French civilians or soldiers (Chavez 1994). The attack likely took place near the mouth of the Loup River near present-day Columbus, Nebraska. At the time, the Pawnee were probably living at villages in modern day Butler County.

French contact with the Pawnee intensified after the Villasur massacre and several important expeditions to the Central Plains took place. The Mallet brothers visited the Pawnee in 1739 near the mouth of the Loup River and 1750s expeditions report the Pawnee living on the Platte River about 65 miles from its mouth. The Skidi apparently remained at villages farther to the west. Despite the Villasur massacre and other conflicts, the Pawnee did have lucrative trade relations with the Spanish, who were supplying the Plains Indians with horses and other goods. Spanish traders visited the Pawnee villages on the Loup River in the 1750s. In 1758, French Governor Kerlérec listed the Pawnees as a numerous tribe regularly trading with the French and living on the Platte River about 65 miles from its mouth – again likely referring to one or more of the Butler County villages (Nasatir 1990).

Spanish Governor Esteban Miró's 1785 report on the Missouri country places the *Pani* (South Bands of the Pawnee) on the Platte River and the *Pani Maha* (Skidi) about 80 miles up the Loup River from its mouth. Pawnee are also recorded by Miró on the Kansas River (actually its major tributary, the Republican River) (Nasatir 1990). The Pawnee locations given in this report are consistent with archeologically known Pawnee villages in Butler, Howard, and Webster counties. After 1800, many of these long-occupied 18th century villages were abandoned, and new ones constructed in Nance and Polk counties. The Pawnee did, however, occupy the lower Platte River valley in the 1850s, near Leshara and Fremont, prior to the establishment of their last village in Nebraska, near the present town of Genoa. The Pawnee moved to Oklahoma in the 1870s.

In 1825 the Pawnee signed a treaty with the US government at Fort Atkinson, a few miles north of Omaha on the west bank of the Missouri. This treaty sought to end Pawnee attacks on American citizens traveling to and from Santa Fe through Pawnee territory. However, the treaty meant very little to the Pawnee and the attacks continued (Hyde 1974). The removal of eastern tribes to the west meant an influx of foreign tribes into Pawnee territory. Both strained resources and close proximities led to increased warfare between the Pawnee and other tribes, both new and old, in the area. A pan tribal war involving the Pawnee, Oto, Osage, Delaware, Shawnee, Kansa, Iowa, Kickapoo, Sauk and Fox was imminent in 1830 and in response a new treaty was drafted by the government in an attempt to dissolve tensions. Peace councils were held at Fort Leavenworth and Fort Gibson. At these councils, the Pawnee and other native Plains groups were persuaded to terminate their exclusive hunting rights to their lands in western Kansas and to make them available to immigrant tribes (Hyde 1974).

In 1832 a smallpox epidemic struck the Pawnee community, killing 3000 or more people. This epidemic took the lives of many influential tribal leaders, possibly including Knife Chief and Pitalesharo of the Skidis and Iskatappe of the Grand Pawnee (Hyde 1974). Few, if any, of the leaders who had signed the 1825 treaty were still alive. In 1833 the four groups of the Pawnee gathered at the Clark village site and signed a treaty which relinquished all of their lands south of the Platte River and for the first time the Pawnee were legally restricted to certain areas. In return the tribe received a nominal $4600 annually for 12 years and was promised farming implements, a school, blacksmith, mill and lessons in agriculture as well as military protection (Parks 2001b).

Again, in 1849, the Pawnee were struck by an epidemic, however this time the culprit was cholera. Half of the population fell victim and the tribe was left terrified and greatly weakened. In 1857, plagued by disease and warfare, the destabilized Pawnee tribe signed the Table Creek Treaty which relocated them to a reservation along the Loup River near Genoa, Nebraska (Lacey 1996; Parks 2001b).

The Pawnee found little relief on the reservation as they were hounded constantly by the Sioux. In 1873 a hunting party of Pawnees was massacred by the Sioux near present day Trenton, Nebraska (Lacey 1996.). The Pawnee sought revenge for the actions of the hostile Sioux by becoming US army scouts during the American Civil War period. Because most US troops were off fighting in the war, the Sioux took advantage of lowered armed forces in their area and wreaked havoc on both white and native settlements in their near vicinity. Pawnee scouts, hired by US Army Major Frank North in 1865, located their traditional enemies' camps. In 1868-69, the scouts protected workers constructing the first railroad to intersect the plains, the Union Pacific Line (Gibson 2004). Despite their involvement in helping the government, the Pawnee saw little return for their investment. No special treatment was allotted to the

Pawnee and they were treated with the same disdain by whites and the government alike as were other native groups.

In addition to hostilities from the north, the Pawnee, after 1800, were also facing dire nutritional circumstances. Several years of drought killed the grasses that the buffalo herds relied upon and in turn drove them to find new grazing lands far from the Pawnee reservation. A grasshopper plague devastated the Pawnee's crops and, by 1876, the remaining 2000 Pawnee were forced to cede their reservation and hunting lands in Nebraska and to relocate to Indian Territory (Gibson 2004). The tribe arrived in Oklahoma in June, too late to plant crops, and many did not survive their first year on the new reservation.

In 1887 the government passed the Dawes Act which sought to aid Native American tribes in their assimilation to white culture. The act allotted individual land assignments to tribal members on the reservation and gave tribe members US citizenship. Individual land allotments were intended to set up individual farm plots, while assigning citizenship meant that the landowners could be taxed (Lacey 1996). However, the Pawnee had little interest in white farming methods and the Dawes Act ended, as with many tribes, in the decentralization of the tribe. Individuals sold or leased their land to white settlers for well below value. The reservation shrank away one land allotment at a time. With members divided and spread out, the sense of tribal community and interdependence waned, and the Pawnee tribe began to dissolve.

The Curtis Act of 1898 was another blow to the Pawnee tribal community. The act abolished tribal governments and took away the tribe's right to educate, discipline and effectively govern their own people. The tribe was now fully under the rule of the United States government. Their children were removed from their homes and placed in white boarding schools where they were forced to speak English, were punished for practicing traditional customs and were completely removed from anything considered to be reminiscent of the "old ways" (Lacey 1996).

Despite centuries of hardship at the hands of whites and fellow native groups, the Pawnee today are a recognized and thriving Native American group. They maintain a 650-acre reservation in Oklahoma and their population was estimated to be 2500 members in 1994. Many of the tribal customs that were lost during years of suppression have found new ground and are once again part of the Pawnee tribal tradition (Lacey 1996).

Winnebago

The French first learned of the Winnebago or Ho-Chunk in 1620 through dealing with the Huron and Ottawa. Samuel de Champlain sent Jean Nicollet to visit the warlike Winnebago in an effort to administrate New France in 1634. The account of this expedition was written by Jesuit Barthélemy Vimont ten years later on basis of conversations with Nicollet. The Winnebago were more thoroughly documented by the French after 1665 with the involvement of Nicolas Perrot, interpreter/agent in Great Lakes (Lurie 1978).

At the time the Nicollet landing, a number of Native American tribes were located in the Great Legion adjacent to Winnebago territory. The Winnebago were located on the southern shore of Green Bay. The opposite shore of Green Bay was occupied by the Menominee. The Sauk and Fox were located to the southwest. The Potawatomi were found to the northeast, in the Door Peninsula. Lastly, the Miami

were located to the south. The Winnebago consider the Red Banks, near Green Bay, Wisconsin as their legendary place of origin (Radin 1990).

The period following the 1634 Nicollet expedition saw many changes in the Winnebago territory and even social organization. An account written by Bacqueville de la Potherie's Histoire de l' Amerique Septentrionale with information derived from Nicholas Perrot, an envoy of New France, served to describe the relations of the Winnebago with tribal neighbors. In the years between 1640 and 1660, a Winnebago war party was sent against the Fox, located across the lake from their village. The entire war party perished due to a storm. The presumed location of the village is Doty Island. A subsequent defeat by the Illinois and effects of disease affected the trajectory of the Winnebago in the region (Radin 1990). The diminished population and changing political scene resulted in a less warlike disposition of the Winnebago and increased intermarriage with neighboring tribes including the Ojibwe, Potawatomi, Menominee, Sauk, and others (Lurie 1978).

Within fifty years of Nicollet's landing, Winnebago villages extended all along the Fox River and Lake Winnebago. The Sauk, Fox, and Kickapoo moved farther south. Potawatomi territory included both the northern and southern shores of Green Bay, as well as the western shore of Lake Michigan (Radin 1990). Over the course of the following decades, the territory expanded from the Fox River and Lake Winnebago to include the Wisconsin River, continuing west to the Mississippi River. The southern extent increased beyond Lake Winnebago to include the region of Four Lakes, Lake Koshkonong, down the Rock River into Illinois (Radin 1990).

American settlement of Wisconsin started in 1825 causing the Winnebago to rapidly lose land. By 1840 the Winnebago had ceded most of their territory in Wisconsin and agreed to move to northeast Iowa. Many Winnebago refused to move and stayed in Wisconsin despite authorities' attempts to remove them. The Winnebago were forcibly moved to Minnesota from 1847-1862. In 1862 they were again forced to relocate to South Dakota with the Nakota after the 1862 Dakota Conflict which the Winnebago had remained neutral (Graves and Ebbott 2006). Many of the Winnebago started to rebel and left the reservation to proceed back to Iowa, Wisconsin, and Minnesota. While others fled to down the Missouri River to the Omaha Reservation in Nebraska.

South Dakota was too different from the lifeways the Winnebago were used to. They had run from the relocation and sought refuge in Nebraska as they felt more comfortable with the Omaha and in the environment Nebraska offered. The government allowed them to stay there after the Omaha agreed to sell parts of their reservation. The Winnebago reservation was established by an Act of Congress in 1863 and reaffirmed by a treaty in 1865 (Sultzman 2007). Many people still fled back to their home in Wisconsin. When the general Homestead Act of 1862 was amended in 1875 (and further amended in 1881) special provisions were included for Native Americans, they could now secure their residence in Wisconsin as Homesteaders (Lurie 2002). In 1847 a federal act purchased land for the Winnebago from the Omaha reservation. As a result, there are two separate tribes today; the Wisconsin and the Nebraska Winnebago.

History of Cass County

Cass County was one of the first counties settled in the state of Nebraska. The county was created on March 7, 1855 and was named after General Lewis Cass of Michigan, who was an active participant in

the fight over the Nebraska-Kansas bill as well as the 1848 Democratic nominee for president (Cass County, Nebraska 2001).

Prior to the treaty in 1854 which removed the various Native American tribes from eastern Nebraska, special permits were issued to a few individuals who wished to reside west of the Missouri River. Samuel Martin was the first to obtain a permit in present-day Cass County, effectively making him the county's first settler. He established a trading post in 1853 in present-day Plattsmouth. This two-story structure, referred to as a barracks, was created from logs taken from a house in Iowa and brought over the Missouri in early 1853 while the river was frozen (Child 1887). Less than two years after settling in Cass County, Martin passed away on December 15, 1854, making his funeral the first funeral in the county (Andreas 1882).

For a few years, beginning in 1854, when settlers were allowed to cross the Missouri River and make claims in Nebraska, claim jumping was common and club law was dominate. Settlers arrived from neighboring Iowa and placed stakes on the land they were claiming. These stakes had information written on them, such as the name of the person claiming the land and at times a description of the lands claimed. Claim jumpers were individuals who illegally removed the stakes and placed their own stakes on that same land. Since no territorial government was properly organized at the time, groups of settlers formed what became known as club law. These settlers, or club, heard from the parties involved in cases of suspected claim jumping. If one were proven to be a claim jumper, he would be removed from Nebraska. It is unclear how often this punishment was dueled out (Andreas 1882; Child 1887).

One well-known claim jumping incident occurred in April 1857 near Fremont's Point. The Johnson Gang – consisting of Charles Kelly, Thomas Massey, John Johnson, and Lewis Johnson – was charged with claim jumping. About 17 people, including the members of the Johnson Gang, were accused of claim jumping and were scheduled to be tried by the club. After the cases were heard, it was late, and the club disbanded for the evening and planned to reconvene the following morning. The alleged claim jumpers were separated into smaller groups for the evening. All four members of the Johnson Gang vanished overnight. No search for the missing men occurred and the other thirteen on trial were banished from Nebraska. After this trial, no further trials by club law occurred in Cass County (Andreas 1882; Child 1887).

Transportation was incredibly important in Cass County. Initially, ferries were the primary means of transportation across the Missouri and Platte rivers; however, just over a decade after the county was founded, railroads enabled cities to grow within the county. In 1869, the Burlington and Missouri River Railroad was routed into Cass County. With the help of Captain John T.A. Hoover, the railroad was routed through the town he settled in, Louisville. Louisville was resurveyed in 1872 and Captain Hoover and his wife were publicly honored as the founders of the town. A railroad crossing was established over the Platte River near Louisville in 1881 by the Missouri Pacific Railroad (Mueller 2005).

This segment of the Missouri Pacific Railroad was a north-south line from Omaha, Nebraska to Atchison, Kansas which went through the Cass County cities of Avoca, Weeping Water, Manley, and Louisville. Manly was established in 1880 primarily as a result of the railroad. However, Manley was not officially organized until 1945 and in 1954 it was finally incorporated. As rail transportation decreased, the town suffered considering its location away from major cities (Hill 2005).

In 1931, an annual festival, known as the Kass Kounty King Korn Karnival, began. The festival, held in Plattsmouth, is now referred to as the Plattsmouth Harvest Festival. When it was first established, the festival was intended to encourage the depression-era residents of the area to be happy and served as a way for those affected to forget their troubles momentarily. This festival is still a big event for residents of Plattsmouth and neighboring communities (Visit Cass County 2015).

History of Sarpy County

Named for Colonel Peter Sarpy, who was a fur trader, Sarpy County is home to Nebraska's oldest Euro-American settlement – the present-day city of Bellevue. Sarpy County, which in 2010 boasted a population of 158,840, was established on February 1, 1857. Prior to this date, the county was part of Douglas County. In 1854, the second Nebraska Territorial Governor, Thomas B. Cuming, decided to move the territorial capital from Bellevue to Omaha. This act upset the people of Bellevue causing them to demand a county line to separate Omaha and Bellevue. Sarpy County was created as a result of the discontent of the people of Bellevue with the Nebraska territorial government (Moulton 1997; Olson and Naugle 1997).

The first fur trading post was established in 1795 by James Mackay and a group of Spaniards. This initiated the beginning of settlement in Nebraska near Bellevue. One year later, the fort was abandoned and in 1797, the Spanish reestablished a presence in Nebraska by constructing another fort near Bellevue. The second fort was constructed about eight miles north of the previous one. Manuel Lisa, one of the earliest settlers in Sarpy County, first arrived in present-day Sarpy County in 1805 when his party visited the location of Bellevue. It is said that upon arriving at that location, Lisa exclaimed, "Belle vue," meaning beautiful view (Bangs 1887; Fitzpatrick 1960; Moulton 1997).

In 1812-1813, Lisa opened a trading post near Bellevue which was operational until 1823. Missouri Fur Company, Lisa's employer, established another trading post, also near Bellevue, around 1822-1823. Joshua Pilcher, largely considered the founder of the city of Bellevue, was the first Indian trader of this post (Perkey 2003). Lucien Fontenelle operated this post from 1824 to 1832 when he sold the fort to the Office of Indian Affairs. Fontenelle's Post then became a center for the Pawnee, Omaha, Oto, and Missouria tribes. About one mile downriver, Fontenelle established a new fort, which Sarpy took over. Sarpy also developed a ferry at this location which he operated until 1862. The first Mormon emigrants used Sarpy's ferry in 1846 enroute to Utah. Many emigrants and gold seekers utilized Sarpy's ferry, and the two other ferries operating in Bellevue at the time, to travel to Oregon and California (Moulton 1997).

In the 1850s, eastern Nebraska was opened for settlement and Bellevue, as well as other Sarpy County cities, saw an increase in building construction. During the second half of the 19th century, Sarpy County was declining while Omaha was expanding. It was not until the 1890s when Bellevue and Sarpy County recovered (City of Bellevue 2009).

In 1881, Congress decided to replace Fort Omaha and, by 1888, the government purchased over 500 acres in Sarpy County. The first arrivals to the new fort, Fort Crook, arrived in 1896. After only two years, the 22nd Infantry Regiment departed for Cuba during the Spanish-American War. The regiment was moved again in 1899; this time to the Philippines. After this, Fort Crook was used as a training and recovery center. The 61st Balloon Company, the forts first air unit, arrived in 1918. During World War I, the fort became a key post for training and aerial reconnaissance preparation. The facilities at the fort

were renamed on May 10, 1924 to Offutt Field in honor of Omaha's first casualty of World War I. When the fort was transferred to the Air Force in 1948, it was renamed Offutt Air Force Base (Moulton 1997).

Offutt Air Force Base gained recognition during World War II. A full-scale B-29 production plant, the Martin bomber plant, was located at the base during World War II. Two of the most famous B-29s were constructed at this base. The *Enola Gay* and *Bock's Car*, the planes which carried the atomic bombs dropped on Hiroshima and Nagasaki, were assembled at this plant. This military post was also used as a prisoner-of-war camp for Italian prisoners in 1945. That same year, on September 8, production of B-29s and other bombers ceased (Moulton 1997; Offutt Air Force Base 2005).

Due to the proximity of the county to Omaha, Sarpy County is within the Omaha-Council Bluffs metropolitan area. Cities such as Bellevue, Papillion, and La Vista have thrived as suburban areas. Bellevue, located between Omaha and Offutt Air Force Base, has expanded and now boasts a population of around 50,000 people, making it one of the largest cities in the state (Farley 2005). The county seat, Papillion – named for the French word *papillon,* meaning butterfly – has a population of about 20,000 (Iske 2005). While these cities have existed for more than a century, a newer city, also with a population of about 20,000, has been a successful Omaha suburb. La Vista, created in 1959-1960, began as a simple village of about 335 homes. By 1962, the city had a population of around 2,600. The population continued to increase making it one of the fastest growing cities in Nebraska (Crowell 2005).

Cultural Resource Records Review

A records search of the project areas and one mile around them was conducted on August 18, 2020 to determine what previously recorded cultural resources are in or nearby the project area. The National Register of Historic Places (NRHP) and the National Historic Landmark online databases were also checked. Results of the records searches are in the tables below.

Table 2. Cultural resources within one mile of the project area.

Site Number	Site Type	NRHP Status	Relation to Project
CC95	Lithic scatter	***Not Eligible***	**Out of APE** 0.76 mi. south-southeast
SY00-043	Farmstead	***Unevaluated***	**Out of APE** 0.97 mi. west
SY00-044	Farmstead	***Unevaluated***	**Out of APE** 0.58 mi. west-northwest
SY00-045	House	***Unevaluated***	**Out of APE** 0.41 mi. west-northwest
SY00-046	Farmstead	***Not Eligible***	**Non-extant**
SY92	Lithic scatter	***Unevaluated***	**Out of APE** 0.65 mi. north
SY188	Farmstead, lithic/ceramic scatter	***Unevaluated***	**Out of APE** 0.96 mi. northeast
SY189	Lithic/ceramic scatter	***Unevaluated***	**Out of APE** 0.89 mi. northeast

Site Number	Site Type	NRHP Status	Relation to Project
SY190	Road cut/trail	***Unevaluated***	**Out of APE** 1.00 mi. east-northeast
SY191	Road cut/trail	***Unevaluated***	**Out of APE** 0.87 mi. east-northeast
SY192	Lithic scatter, historic debris	***Unevaluated***	**Out of APE** 0.76 mi. northeast
SY193	Lithic scatter, historic debris	***Unevaluated***	**Out of APE** 0.57 mi. east-northeast
SY194	Dump, depression	***Unevaluated***	**Out of APE** 0.81 mi. east
SY195	Cisterns, lithic scatter	***Unevaluated***	**Out of APE** 0.85 mi. east
SY196	Farmstead	***Unevaluated***	**Out of APE** 0.75 mi. east
SY217	Farmstead	***Unevaluated***	**Out of APE** 0.94 mi. west
SY218	Lithic scatter, historic debris	***Unevaluated***	**Out of APE** 1.07 mi. west
SY222	Lithic scatter	***Unevaluated***	**Out of APE** 1.09 mi. west
SY230	Outbuildings, cistern, root cellar	***Unevaluated***	**Out of APE** 0.88 mi. east
SY231	Lithic scatter	***Unevaluated***	**Out of APE** 0.91 mi. east
SY232	Log house	***Unevaluated***	**Out of APE** 0.81 mi. east
SY233	Road, quarry	***Unevaluated***	**Out of APE** 0.96 mi. east
SY234	Trail/road	***Unevaluated***	**Out of APE** 0.99 mi. east
SY275	Lithic scatter	***Unevaluated***	**Out of APE** 0.79 mi. northwest
SY276	Isolated flake	***Unevaluated***	**Out of APE** 0.87 mi. northwest
SY277	Lithic scatter, historic debris	***Unevaluated***	**Out of APE** 0.75 mi. northwest
SY278	Isolated flake	***Unevaluated***	**Out of APE** 0.81 mi. north-northwest
SY279	Isolated flake	***Unevaluated***	**Out of APE** 0.89 mi. north-northwest

Table 3. Previous inventories within one mile of project area.

SARC #	Author	Year	Title
04-0175	Pepperl	2004	Archeological Investigations at the Northern and Southern Margins of the Greater Omaha Metropolitan Area: Douglas, Sarpy, and Washington Counties, Nebraska
90-0044	Pepperl	1990	Cultural Resources Assessment of Native American Site 25CC95 for the Bill Starkjohn Conservation Plan, Section 4, T12N, R13E, in Northern Cass County, Nebraska
90-0123	Sellars	1990	An Archeological Sample Survey of Selected Lands in Douglas and Sarpy Counties Nebraska
91-0212	Bozell	1991	Plattsmouth NW Cultural Resources Survey: Sections 34 and 35, T13N, R13E & Sections 2 and 3, T12N, R13E

Research Design

This research design was developed to determine if any previously recorded cultural resources were located within or adjacent to the proposed project area. A record search was conducted to identify previously recorded cultural resources within one mile of the proposed project. This was done to provide knowledge of what sites may be encountered in the project area, including the character of those sites, and give an indication of the likelihood that other sites are in the area.

The methodology of the cultural resource inventory was as follows:

- Conduct record search of the project area with the State Historic Preservation Office and the National Register of Historic Places and National Historic Landmark databases.
- Conduct pedestrian inventory of proposed water supply line route.
- As warranted, revisit previously recorded sites within or near the proposed project area to determine if protection or mitigation measures should be implemented.
- Record new cultural resources located during inventory.
- Conduct National Register of Historic Places evaluations of cultural resources, if needed.
- Determine potential project effects.

Survey Methods

On September 4, 2020, ***QSI*** archeologist Stephen Connolly conducted an intensive cultural resources inventory of approximately 12 acres. Inventory was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. Ground surface visibility ranged from 0 to 40 percent within the inventory area. The proposed waterline route crosses a mix of agricultural lands, deciduous wooded tracts, riparian areas, and a portion of a manicured golf course. The Platte River accounts for approximately 1400 ft. of the overall project length. Ground cover within the project area was a mix of corn, short and tall grasses, vines, brush, and thorn bushes.

No cultural resources were observed during pedestrian inventory. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route.

Testing was completed to a depth of 70 cm. and showed grayish-brown silty loams. The test was screened and backfilled. No cultural resources were located. No further subsurface testing was conducted due to the high level of surface disturbance associated with agricultural use, river floodplain cycles, access road construction, presence of buried utilities and transmission lines, and construction from buildings and the golf course.

Table 4. Subsurface Test #1

Location: 41.061236N, 95.972674W Size & Depth: 30 cm x 30 cm x 70 cm	
Stratigraphy: 0-10 cm: 10YR5/2 grayish brown loam with grass root zone 10-65 cm: 10YR4/2 dark grayish brown silty loam 65-70 cm :10YR8/2 very pale brown hard packed very fine sand	
Contents: No cultural materials	
Screen Size: 1/4”	**Backfilled:** Yes

Management Recommendations & Conclusions

No previously recorded cultural resources were identified during records search within the proposed project area. ***QSI*** conducted an intensive cultural resources inventory and subsurface testing of the project area on September 4, 2020. Pedestrian inventory and subsurface testing were negative. A determination of **no effect** to historic properties is recommended for the project.

If any cultural resources are located during project implementation work should cease in the vicinity of the find and the Nebraska State Historic Preservation Office and ***Quality Services, Inc.*** should be notified immediately.

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APPENDIX F
Agency Coordination and Public Involvement

Exhibit F1

US Fish and Wildlife Service Coordination

U.S. Department of Homeland Security Federal Emergency Management Agency FEMA Region VII
DR-4420 NE Joint Field Office 4600 Innovation Drive
Lincoln, NE 68521

The U.S. Fish and Wildlife Service concurs with your determinations that the described project will not adversely affect listed species or critical habitat. Contact this office if changes are made or new information becomes available.

NATHAN DARNALL Digitally signed by NATHAN DARNALL Date: 2021.02.26 12:03:01 -07'00'

Acting Field Supervisor, Nebraska Field Office

December 22, 2020

U.S. Fish and Wildlife Service
Nebraska Ecological Services Field Office
Scott Larson, Nebraska Field Supervisor
9325 South Alda Road
Wood River, NE 68883

Re: DR-4420-NE PW #01683, GM #88690 – City of Plattsmouth, Cass County, NE.

Dear Mr. Larson,

The Federal Emergency Management Agency (FEMA), in response to the Presidentially declared Major Disaster Declaration, FEMA-DR-4420-NE, dated March 21st, 2019, will be providing federal funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, to eligible Public Assistance applicants. Severe winter storms and high velocity winds caused widespread flooding throughout Cass County, Nebraska.

This letter serves as a request for informal consultation with USFWS for two proposed alternatives evaluated in an Environmental Assessment (in preparation) for the project. Your review and concurrence in the effect determinations for each of the alternatives is requested.

Damages Incurred. The existing City of Plattsmouth Water Supply System (WSS) was inundated with contaminants and debris caused by major flooding of the Platte and Missouri Rivers in the Spring of 2019 (Flood Event 4420DR). During this flood event, waters overtopped the Water Treatment Plant (WTP) access road and entered the WTP causing severe damage to main treatment and process equipment, as well as other structures on the site. In addition, the high flood waters and ice caused major damage to all five of the City's water supply wells and wellhouses. The WTP and wells were non-operational as a result of the flood event for a period of five months. In addition, access to the WTP and wellfield was restricted for several months with more than four feet of water covering the access road. The WSS is currently operating at a diminished capacity and the costs of repairs far exceed the long-term costs and benefits of relocating the WSS outside of the floodplain.

The existing WTP was constructed in 1972, above the 100-year floodplain of that time, without any means for flood protection. The location of the existing WTP is (41.025736, -95.882761). Over the past 48 years, the flood levels experienced at the site have significantly increased. Forty-three of the top forty-four historic crests on the Missouri River at Plattsmouth have occurred since the facility went into operation; and twenty-three of those river crests have exceeded the Missouri River Flood Stage (source NWS Advanced hydrologic Prediction Services, Missouri River at Plattsmouth).

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Exhibit F- 1a

The U.S. Department of Homeland Security (DHS) has identified that safe drinking water is a prerequisite for protecting health and all human activity; and that properly treated water is vital for preventing disease and protecting the environment. Ensuring a consistent and continuous public drinking water supply is essential to modern life and the Nation's economy. Disruption of a drinking water supply service can cause loss of life, economic impacts, and severe public health issues, as well as environmental impacts. The DHS considers public water supply systems a Critical Infrastructure which are an integral part of daily life.

The purpose of the proposed action is to relocate or modify the existing WSS serving the City of Plattsmouth to eliminate the environmental and public health risks caused by floodwaters which render the existing water treatment plant incapable of operating properly and contaminating the five public water supply wells. The Federal Emergency Management Agency (FEMA), operates under the DHS, and considers the relocation of this WSS a critical action, as does the Environmental Protection Agency (EPA), the Nebraska Department of Environment and Energy (NDEE), and Nebraska Department of Health and Human Services (NDHHS).

Proposed Action. Three alternatives are presented and evaluated in the EA. Alternative 1 is the No Action Alternative. Alternative 2 is the preferred alternative, however, Alternative 3 is being evaluated for environmental impact comparison purposes for FEMA NEPA evaluation.

Alternative 1: No Action Alternative. Not considered for ESA concurrence.

Alternative 2: This alternative involves the construction of a new water main to carry potable water from an existing water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth.

The work associated with this project involves the construction of approximately 7.5 miles of 20- inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road in, Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter water main begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the water main would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2000 feet by jack and bore technologies. The water main construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches

Buccaneer Boulevard to the south. The watermain will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The watermain will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the water main would involve a 70-foot wide work right of way (ROW) throughout the route, in addition to staging areas. Most of the waterline ROW will be located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for most of the work, however, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction. A few trees may need to be removed along the ROW for construction.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River (41.025031, -95.816630) will remain in place and wellhead protection measures will be constructed to limit the risks of flood damages.

The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and NDHHS, as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter watermain along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.
The new water conveyance system would be constructed along existing road ROW beginning at the

intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant is would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

The City's five existing wells will continue to be utilized as the source of raw water for alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the isolate the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to with five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

Action Area.
Alternative 2: The mapped action area for this alternative, the preferred alternative for the project, is presented as Figure 1 (Attachment A).

Alternative 3: The mapped action area for this alternative, the preferred alternative for the project, is presented as Figure 2 (Attachment A).

See attached KMZ files (Attachment D)

Justification. The purpose of the proposed action is to relocate or modify the existing WSS serving the City of Plattsmouth to eliminate the environmental and public health risks caused by floodwaters which render the existing water treatment plant incapable of operating properly and contaminating the five public water supply wells. FEMA considers the relocation of this WSS a critical action, as does the EPA, the NDEE, and NDHHS. The WSS is located in the floodplain of the Missouri River south of the point where the Platte River enters the Missouri River. The WSS has been subject to repetitive damages from flooding and is at risk from future natural disasters and flooding. The most recent damages occurred from flood waters in March 2019 when the Missouri River overtopped all five municipal wellhouses and inundated the existing WTP rendering the WSS inoperable for several

months. Disruption of a WSS can cause loss of life, as well as economic and environmental impacts, and can have severe public health consequences.

Threatened and Endangered Species. The following threatened and endangered species are identified as potentially occurring within Cass and Sarpy Counties, Nebraska: Northern long-eared bat (*Myotis septentrionalis*), Western prairie fringed orchid (*Platanthera praeclara*), pallid sturgeon (*Scaphirhynchus albus*), least tern (*Sterna antillarum*), and piping plover (*Charadrius melodus*). No critical habitats are identified within the project area for any of the five species. See Attachment B for additional information on species habitat requirements.

Effect Determinations. Based on the parameters specified in the May 14th, 2019, Consultation Analysis, FEMA determines there will be ***No Effect*** to the following species listed as occurring within or near the project site: Western prairie fringed orchid.

The remaining four species: Northern long-eared bat [NLEB], least tern, piping plover, and pallid sturgeon have potential to be directly or indirectly affected by the project actions. FEMA determines that the proposed actions ***May affect*** these four species.

Piping Plover and Least Tern. There is a possibility of piping plovers and least terns occurring along the Platte and Missouri Rivers near the project alternatives.

Alternative 2: This alternative involves directional bore technologies that would be utilized to cross the Platte River and its riparian areas and therefore does include construction activities within 0.25 miles of the Platte River and potential habitat for piping plover and least tern. Staging of the equipment associated with this directional boring work would be located in uplands areas that have been previously disturbed from the installation and maintenance of the MUD wellfields. All drilling fluids will be contained so that they do not impact wildlife or waterways. FEMA determines that Alternative 2 ***May affect, but is not likely to adversely affect*** the piping plover and least tern.

FEMA will condition grant approval to avoid construction activities during a specific time period to minimize potential impacts to the least tern and piping plover. The nesting season is from April 15 through August 15. Least terns feed on small fish in the river and piping plovers forage for invertebrates on exposed beach substrates. Ill-timed human activities near breeding habitats can disturb these two species. Motorized vehicles operating within nesting habitats have the potential to crush eggs and/or chicks. To avoid potential adverse impacts to these two shorebirds, FEMA will apply the following **two conditions** for the proposed project action:

(1) Construction activities, including placement of materials and equipment associated with the embankment repairs **will not occur during the subject shorebirds' nesting season (April 15 through August 15).**

(2) If construction activities are proposed during the nesting season, **surveys for breeding and nesting behavior will be conducted prior to any construction staging or activities in accordance with USFWS methodology.**

If the surveys identify the presence of the interior least tern and/or piping plover, the Applicant will

contact the FWS for further Section 7 consultation.

Alternative 3: This alternative involves the construction of a new WTP on approximately three acres of land that is currently in agricultural production. The watermain connection and conveyance lines for this alternative are proposed within existing road ROWs within the City of Plattsmouth. These locations do not have potential habitat for piping plover and least tern. The work associated with the wellhead protection work is located in the floodplain of the Missouri River adjacent to five existing municipal wells. These areas are heavily managed, regularly maintained and are unlikely to provide nesting habitat and due to routine ambient disturbances are unlikely to be chosen nesting sites. FEMA determines that Alternative 3 to have ***No Effect*** on the piping plover and least tern.

Pallid Sturgeon. Pallid sturgeons are known to be present in the Platte and Missouri Rivers near the project alternatives.

Alternative 2: This alternative involves directional bore technologies that would be utilized to cross the Platte River. The directional boring activities are expected to be of short duration (estimated at less than 2 weeks) and the portion of directional boring directly under the Platte River of even shorter duration. Pallid sturgeon could exhibit avoidance of the immediate area in response to vibrations. FEMA determines that Alternative 2 ***May affect, but is not likely to adversely affect*** the pallid sturgeon.

Ill-timed human activities in the river have the potential to affect sturgeon spawning activity, eggs, and/or larvae. To avoid impacts to this species, FEMA will include the following condition for the FEMA grant associated with the proposed project action: Construction activities (e.g., preparation of structures for repair and placement of material into the river) **will not occur between March 1 and June 30**. This condition will state that staging, damage repair activity, use of heavy equipment, stockpiling of rip rap will not occur during the spawning season of the pallid sturgeon (which is within the breeding season of the piping plover and the least tern).

Alternative 3: This alternative does not involve activities within the Platte or Missouri Rivers. FEMA determines that Alternative 3 will have ***No Effect*** the pallid sturgeon.

Northern Long-Eared Bat (NLEB). The NLEB forages for insects in upland and lowland woodlots as well as tree-lined corridors along water features. No critical habitat has been designated for the NLEB. The greatest risk to populations of this species is from White Nose Syndrome (WNS), which poses a severe and immediate threat. Loss and degradation of maternity (summer) and wintering habitats combined with the impact of WNS can cause further declines of the NLEB population. There is potential for summer roosting habitat to be present in the action areas for both alternatives.

Alternative 2: Alternative 2 may involve some limited tree removal adjacent to existing public ROWs for installation of the conveyance lines.

The NLEB is listed as threatened with a 4(d) rule that exempts the take prohibitions associated with this project but does not exempt FEMAs responsibility as a federal action agency to consult

under Section 7(a)(2) of the Endangered Species Act. Based on the parameters of the January 5, 2016, USFWS Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions and use of the associated IPaC Effect Determination Key, FEMA has determined the project to be eligible to utilize this programmatic consultation to fulfill its obligation to consult. The verification letters for consultation on this alternative are provided in Appendix C.

FEMA understands that the following conservation recommendation is discretionary for this project and it will be applied as possible, dependent on the project construction schedule: Tree removal **will not occur during the NLEB maternity roost season from June 1 through July 31** in order to avoid impacts to the species during its reproduction season.

Alternative 3: Alternative 3 will involve the same potential for some limited tree removal adjacent to existing public ROWs for installation of the conveyance lines as identified for Alternative 2.

The NLEB is listed as threatened with a 4(d) rule that exempts the take prohibitions associated with this project but does not exempt FEMAs responsibility as a federal action agency to consult under Section 7(a)(2) of the Endangered Species Act. Based on the parameters of the January 5, 2016, USFWS Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions and use of the associated IPaC Effect Determination Key, FEMA has determined the project to be eligible to utilize this programmatic consultation to fulfill its obligation to consult. The verification letters for consultation on this alternative are provided in Appendix C.

FEMA understands that the following conservation recommendation is discretionary for this project and it will be applied as possible, dependent on the project construction schedule: Tree removal **will not occur during the NLEB maternity roost season from June 1 through July 31** in order to avoid impacts to the species during its reproduction season.

Should additional information be required, please contact Mark Lance, Environmental and Historic Preservation Advisor at (816)783-3351, mark.lance@fema.dhs.gov

Sincerely,

MARK A LANCE Digitally signed by MARK A LANCE
Date: 2020.12.22 13:31:30 -06'00'

Mark Lance
Environmental and Historic Preservation Advisor
FEMA DR-4420-NE
Email: mark.lance@fema.dhs.gov
Mobile: (816)783-3351

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Exhibit F- 1a

Attachments:

Attachment A, Alternative Action Area Maps.

Attachment B, Species information.

Attachment C, NLEB consultation verification letters.

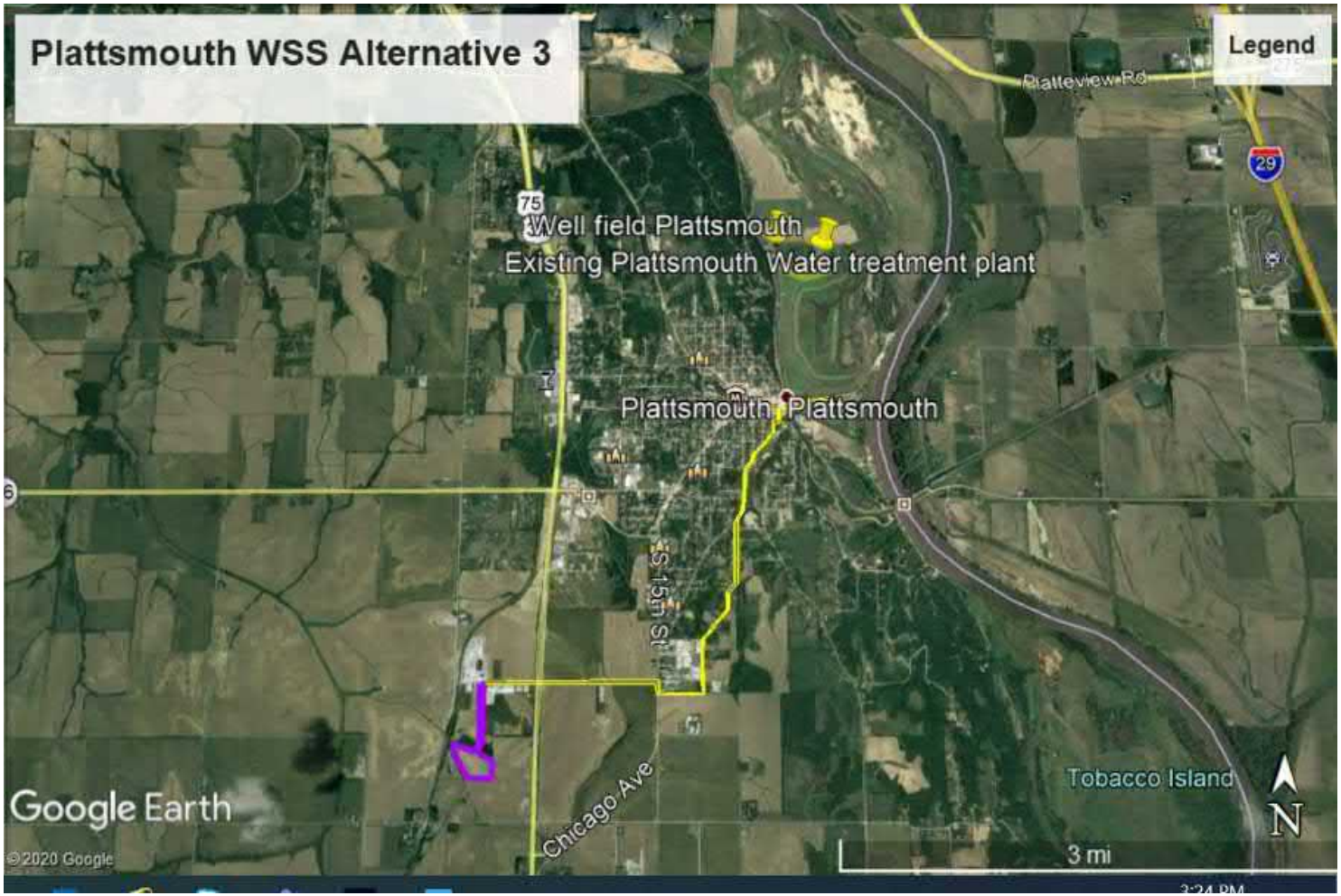
Attachment D, KMZ files

Attachment A

FIGURE 1. Action Area for Alternative 2

USFWS/FEMA Consultation
Exhibit F- 1a

FIGURE 2. Action Area for Alternative 3



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Attachment B

Table 1. Cass County, Nebraska. The proposed actions may affect these species that have the potential to occur within the project action area.

Common Name (status)	Brief Description and Range	Preferred Habitat[1]	Habitat Present or Near Project Site
Least tern (endangered)	Least tern is the smallest member of the gull and tern family; approximately 9" long. Body is predominately gray and white, with black streaking on the head, with forked tail and narrow pointed wings. Found in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems. Breeding range includes the Missouri and Platte Rivers, and several other streams in Nebraska (see consultation analysis, 2019)	Nests are shallow depressions scraped in open sandy areas, gravelly patches, or exposed flats typically on barren to sparsely vegetated sandbars along rivers, sand and gravel pits, lake and reservoir shorelines, and occasionally gravel rooftops. Colonial nester with breeding season: April through August. Anthropogenic activities near nesting site can cause terns to abandon.	Potentially in indirect effect area
Piping plover (threatened)	Piping plover is approximately 7.25" long. Breeding season coloration: Pale brown above, lighter below; one black band across forehead; bill orange with black tip; legs orange; white rump. Male: Complete or incomplete black band encircles the body at the breast. Female: Paler head band; incomplete breast band. Winter coloration: Bill black; all birds lack breast band and head band. Breeding range includes the Missouri and Platte Rivers, and several other streams in Nebraska.	Piping plovers use wide, flat, open, sandy beaches with minimal vegetation. Nesting territories often include small creeks or wetlands. Shallow nest is lined with pebbles or broken shells. Breeding and nesting season: April through August. Presence of humans and disturbance causes plovers to abandon nest and nest damage.	Potentially in indirect effect area
Pallid sturgeon (endangered)	Pallid sturgeon has a flattened head, shovel-shaped snout, tough armored skin, reduced eyes and large outer barbels. It is a long- lived, river fish that can be found in the Elkhorn, Niobrara, Missouri, and lower Platte rivers in Nebraska.	Bottom-dwelling fish of swift turbid waters in large-river ecosystems that provide pallid sturgeon macrohabitat, including, floodplains, backwaters, chutes, sloughs, islands, sandbars, and main channel waters. Spawning occurs between March and July (lower latitude fish spawn earlier than those in the northern portion of the range).	Potentially in indirect effect area
Northern Long-eared bat (threatened with 4(d) rule)	NLEB is a medium-sized bat with a body length of 3 to 3.7 inches; wingspan of 9 to 10 inches. Fur color can be medium to dark brown on the back and tawny to pale-brown underneath. Nebraska is within the known range of the NLEB; and Cass County is within the White-Nose Syndrome buffer zone.	NLEBs typically roost singly or in colonies in cavities, underneath bark, crevices, or the hollows of both live and dead trees and/or snags. This bat seems opportunistic in selecting roosts, using tree species based on the presence of cavities, crevices, and/or peeling bark.	Potentially in the trees at the On the Green Pump Station site or adjacent to the conveyance routes

Source: USFWS, 2019

USFWS/FEMA Consultation
Exhibit F- 1a

Interior Least Tern and Piping Plover Survey Protocol
Nebraska Game and Parks Commission and U.S. Fish and Wildlife Service
February 2017

The Nebraska Game and Parks Commission (NGPC) and the U.S. Fish and Wildlife Service (USFWS) have identified critical life stages for the interior least tern (tern) and piping plover (plover) that may be directly affected by construction activities in close proximity to nesting areas. Nesting terns and plovers can be disturbed by sights (human presence, visible equipment, etc.) and sounds (loud equipment, banging, etc.) that are not normally found in their environment (roadway traffic is considered "normal"). Tern and plover nests can be crushed by construction equipment. Chicks can be harassed or crushed by construction equipment as well. Together, the agencies have developed the following protocol for project proponents so they are able to avoid construction-related impacts to individual terns or plovers and their nests. In addition to construction-related impacts, Federal and State agencies and project proponents should consider non-construction impacts to individual terns or plovers from the proposed project (e.g., chemical spills, alterations to river stream flow, etc.).

Indicators of Nesting Activity:

- Nesting Behavior: Courtship behaviors, copulations, birds returning to the same place, sitting on the sand for a long period of time, or nest exchange (males and females incubate for varying lengths of time).
- Foraging Behavior: Plovers - looking for food along shoreline, probing the sand; Terns - hovering over river channel or lake, diving into water for fish, and bringing fish back to nest.

Survey Dates:

- Nesting period: April 15 – August 15
- If nesting activity is not observed within the July 1 through July 15 time period, then no further surveys are needed.

Frequency and Timing of Survey:

- Survey at least 3 times a week during nesting period (e.g., Monday, Wednesday, Friday)
- Survey in the morning prior to the start of project/construction activities for the day.
- Surveys must be conducted when there is adequate light to detect and identify birds.
- If cloudy, overcast or foggy – take additional time to ensure a good quality survey.

Method of Survey:

- From a good vantage point, survey areas within 0.25 miles of where project/construction activities will occur.
- Use binoculars or spotting scope to survey for a minimum of 20 minutes.
- Look specifically for bird movements along sandbars in the middle of the channel and/or along the shoreline.

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Exhibit F- 1a

Reporting:

- For each survey, record the following and keep both hard and electronic copies of the record/survey report on file:
  - Surveyor identification;
  - Date;
  - Start and stop times for the survey;
  - Survey location and area;
  - General weather conditions (temperature, foggy, rainy, windy, partially sunny, etc.);
  - Survey results (i.e., birds present or absent); and
  - Summary of bird behavior if birds are observed.

If nesting activity is not observed (see Indicators of Nesting Activity above) project/construction activities may commence. If nesting activity is observed, then further investigation may be needed from a different vantage point or using higher-powered optics to verify if a nest, nesting behavior, or chicks are present. Landowner permission must be obtained before entering private property.

If at any time, a nest, nesting behavior, and/or chicks are observed within 0.25 miles of where project/construction activities will occur:

- Do not start or continue work within 0.25 miles of where the nest, nesting behavior, and/or chicks were observed until Federal and State agencies are contacted.
- Immediately contact the NGPC and the USFWS contacts below for further instructions.
  - Joel Jorgensen, NGPC, office: 402-471-5440; cell: 402-533-0924, or
  - Michelle Koch, NGPC, office: 402-471-5438; cell: 380-380-7647
  - Jeff Runge, USFWS, cell: 308-379-8553, or
  - Robert Harms, USFWS, cell: 308-390-0871
- Do not start or resume work until after receiving further instruction from NGPC or USFWS.

Piping Plover (Photo by Joel Trick, USFWS)

Similar species: Killdeer (Photo by Joel Jorgensen, NGPC)

Nesting Least Tern. (Photo by USFWS Arkansas Field Office).

Similar species: Forster's Tern (Photo by Joel Jorgensen, NGPC).

USFWS/FEMA Consultation
Exhibit F- 1a

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nebraska Ecological Services Field Office
9325 B South Alda Rd., Ste B
Wood River, NE 68883-9565
Phone: (308) 382-6468 Fax: (308) 384-8835
http://www.fws.gov//nebraskaes

In Reply Refer To: December 22, 2020
Consultation Code: 06E22000-2021-TA-0135
Event Code: 06E22000-2021-E-00257
Project Name: DR-4420-NE PW #01683, GM #88690 – City of Plattsmouth Water Supply System Alternative 2

Subject: Verification letter for the 'DR-4420-NE PW #01683, GM #88690 – City of Plattsmouth Water Supply System Alternative 2' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Toni Zawisa:

The U.S. Fish and Wildlife Service (Service) received on December 22, 2020 your effects determination for the 'DR-4420-NE PW #01683, GM #88690 – City of Plattsmouth Water Supply System Alternative 2' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not

USFWS/FEMA Consultation
Exhibit F- 1a

completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Least Tern, *Sterna antillarum* (Endangered)
- Pallid Sturgeon, *Scaphirhynchus albus* (Endangered)
- Piping Plover, *Charadrius melodus* (Threatened)
- Western Prairie Fringed Orchid, *Platanthera praeclara* (Threatened)

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

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

1. Name

DR-4420-NE PW #01683, GM #88690 – City of Plattsmouth Water Supply System Alternative 2

2. Description

The following description was provided for the project 'DR-4420-NE PW #01683, GM #88690 – City of Plattsmouth Water Supply System Alternative 2':

> The work associated with this project involves the construction of approximately 7.5 miles of 20- inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road in, Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. Directional boring under the Platte River.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.04287102303371N95.9224567982827W

Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

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Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

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

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

7. Will the action involve Tree Removal?

   Yes

8. Will the action only remove hazardous trees for the protection of human life or property?

   No

9. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

10. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

    No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0.5

2. If known, estimated acres of forest conversion from April 1 to October 31

0.5

3. If known, estimated acres of forest conversion from June 1 to July 31

0.5

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Nebraska Ecological Services Field Office
9325 B South Alda Rd., Ste B
Wood River, NE 68883-9565
Phone: (308) 382-6468 Fax: (308) 384-8835
http://www.fws.gov//nebraskaes

In Reply Refer To: December 22, 2020
Consultation Code: 06E22000-2021-TA-0138
Event Code: 06E22000-2021-E-00264
Project Name: DR-4420-NE PW #01683, GM #88690 – City of Plattsmouth Water Supply System Alternative 3

Subject: Verification letter for the 'DR-4420-NE PW #01683, GM #88690 – City of Plattsmouth Water Supply System Alternative 3' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Toni Zawisa:

The U.S. Fish and Wildlife Service (Service) received on December 22, 2020 your effects determination for the 'DR-4420-NE PW #01683, GM #88690 – City of Plattsmouth Water Supply System Alternative 3' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"[1] prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not

USFWS/FEMA Consultation
Exhibit F- 1a

completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Least Tern, *Sterna antillarum* (Endangered)
- Pallid Sturgeon, *Scaphirhynchus albus* (Endangered)
- Piping Plover, *Charadrius melodus* (Threatened)
- Western Prairie Fringed Orchid, *Platanthera praeclara* (Threatened)

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

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

1. Name

DR-4420-NE PW #01683, GM #88690 – City of Plattsmouth Water Supply System Alternative 3

2. Description

The following description was provided for the project 'DR-4420-NE PW #01683, GM #88690 – City of Plattsmouth Water Supply System Alternative 3':

> This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River (41.025031, -95.816630) will remain in place and wellhead protection measures will be constructed to limit the risks of flood damages. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site. The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant is would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/40.98529858050006N95.90237774306769W

Determination Key Result

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

Determination Key Description: Northern Long-eared Bat 4(d) Rule

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

Qualification Interview

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

   Yes

2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")

   No

3. Will your activity purposefully **Take** northern long-eared bats?

   No

4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

7. Will the action involve Tree Removal?

   Yes

8. Will the action only remove hazardous trees for the protection of human life or property?

   No

9. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

10. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

    No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0.5

2. If known, estimated acres of forest conversion from April 1 to October 31

0.5

3. If known, estimated acres of forest conversion from June 1 to July 31

0.5

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

Copenhaver, Kim A

From: Copenhaver, Kim A
Sent: Wednesday, October 21, 2020 5:06 PM
To: Matt_Rabbe@fws.gov
Cc: Harbeck, Matthew A; Engelbart, Jessica E; Gavin, John (CTR); Steven Perry
Subject: T&E species - Plattsmouth Water Supply System relocation 05207584
Attachments: Plattsmouth WSS Wetland Delineation Report 05207584R01.pdf; Plattsmouth water line (for EDR).kmz; additional site photos for FWS.docx

Dear Matt,

Thank you for your phone call today, and for your previous email regarding our request for an effect determination on the Plattsmouth Water Supply System Relocation under review by FEMA as the NEPA Lead Agency for funding the project. I am leading the preparation of the Environmental Assessment document for FEMA and have been coordinating closely with Matt Harbeck and Jessica Engelbart of our office on the T & E consultation processes. I wanted to respond directly to you.

First, I want to clarify that we are seeking an effect determination relating to the Plattsmouth Water Supply System relocation (WSS) only in this email response. The Plattsmouth Water Treatment Plant relocation is another, separate project. The proposed action under the WSS constructing approximately 7.5 miles of a 20 inch diameter water main from the MUD South Water Treatment Plant located along the Platte River, to the city of Plattsmouth. The work would involve a directional bore under the Platte River and its riparian areas for the watermain construction, including boring under both banks of the Platte and approximately 100 feet or more of riparian area on each side of the river bank. One alternative to the project that is being discussed in the Environmental Assessment (EA) document is involves installing a new water main within the Plattsmouth Wastewater Treatment Plant Relocation utility corridor and building a new plant on the WWTP site, while improving the new wells. It is our understanding that your office has reviewed that alternative work area as part of the WWTP relocation consultation and you are preparing a no effect determination. As stated during our phone conversation no work is proposed in the Platte or Missouri Rivers for the WWTP relocation work or any alternatives proposed. . Jessica Engelbart from our office was coordinating with you on that determination.

In any event, I am here to discuss the concerns you raised regarding the WSS potential impacts to Threatened and Endangered species as discussed below. Please note that we completed an onsite review of the project area this September during the wetland delineation for the project and have been assessing the potential impacts to biological resources and protected species in the Draft EA document. A copy of the wetland delineation report for the WSS proposed action is enclosed, along with a KMZ of the proposed watermain ROW and some additional photos of the Platte River area and general site conditions. We completed detailed site reviews of the alternative action as well.

I've addressed each of your concerns below:

<u>Platte River Flows</u> - Terracon does not anticipate any new depletions to the Platte River from the project. Construction activities will not involve any drawdown, diversion, or use of Platte River waters to accomplish the directional bore under the river for the water supply line. In addition, the MUD South Water treatment Plant has stated that they have adequate capacity in their existing operating permit to accommodate the water supply needs of the City of Plattsmouth for the proposed action. No new drawdowns are expected. The alternative action (Alt 3) involves utilizing the existing municipal wells in Plattsmouth; but relocation of the treatment plant to the outskirts of town. The alternative does not involve work in or near the Platte River therefore, no impact to Platte River Flows are expected from that alternative.

USFWS Coordination
Exhibit F- 1b

Pallid Sturgeon

Based on our conversations today, and your consultation with the USFWS Sturgeon biologist about the project, it appears that the directional drilling under the Platte River to construct the watermain would have no effect on the Pallid Sturgeon and or its habitat. Therefore a no-work-window to protect this species during its spawning period would not be necessary. We agree that the proposed work would have no effect on this species.

Piping Plover and Least Tern protocol

Terracon completed a review of the habitat conditions at the proposed action site and the alternative site during the wetland delineation field work. I have included the report completed for the proposed action area, the waterline that would cross the Platte River, for your convenience. The proposed action ROW includes well-maintained road ROW, maintained lawn associated with a golf course, the MUD Plant, and a small area of naturalized landscape along the banks of the Platte River near the MUD well field to the north. The southern side of the Platte River includes a railroad corridor and a very steep slope of shrubland.

We also reviewed critical habitat maps for these species and aerial photographs to determine if potential habitat may exist for this species. The proposed WSS installment involves directionally boring under the River including under its mature riparian area and under the steep bank to the south until we reach the golf course at the top of the slope. The existing railroad tracks are well-traveled and create a great deal of noise. We do not believe that the directional boring activities under the river would have any effect on these avian species or any potential habitat.

Based on Terracon's review of the site conditions and the habitat requirements for this species, we did not identify any areas of concern and have determined that the project would not affect these species. If there are specific areas of the site that you have concerns about, please advise us so that we can incorporate mitigation measures for potential impacts to these species. It is unlikely that the project will be able to meet the breeding avoidance timelines proposed in your email. Implementing this survey protocol would be a somewhat excessive use of public money given the fact that work along the Platte River is occurring underground and there are no indicators of preferable habitat for this species in any other areas of the ROW.

We would appreciate your guidance as to if you believe that surveying the ROW would be necessary to protect this species and if so, where should surveying occur.

Western Prairie Fringed Orchid

As discussed above, the majority of the proposed construction involves an installation of a water supply line in a previously disturbed landscape and road right-of-way. There are areas where the supply line goes through natural vegetation, however these areas are disturbed as discussed in the text taken from the EA document.

> *Western Prairie Fringe Orchid (Platanthera praeclara)*
> *The Western Prairie Fringed Orchid can be found in the Tallgrass prairie landscape. They occur in wet prairies and meadows. The Western Prairie Fringed Orchid can also be found in the sandy soils of sub-irrigated meadows in the Sandhills (USFWS, 2020d). There are wetlands located within the study areas, but the majority of those are not considered naturalized landscapes or pristine wet prairie or wet meadow habitat. The mature riparian woodlands along the Platte River within the study area are dominated by invasive and opportunistic herbaceous species such as Reed Canary Grass and Japanese Hops. Regular disturbances in this area include regular floods and groundwater withdrawals from a series of large municipal wells located at the site. These disturbances effect the makeup of the herbaceous vegetation in this area as well as the hydrology. Wet meadows or wet prairie habitat is not supported at this location. Therefore, it is unlikely that this species is present at the site.*

Given that the current conditions of the proposed action's work areas are significantly disturbed by mowing, fertilizer and herbicide spraying, road and utility line construction and maintenance, agricultural activities, and major flooding events that have brought in invasive and opportunistic plant species to the floodplains, we do not believe that habitat for Western Prairie

USFWS Coordination
Exhibit F- 1b

Fringed Orchid is located at the site and further surveying for the species may not be necessary. However, your concurrence on this matter or further guidance is appreciated.

Please contact me with any questions or concerns, or if you need additional information. We appreciate your guidance in these important matters and look forward to your response.

Sincerely,

Kim Copenhaver
Senior Environmental Scientist
Natural and Cultural Resources Services

Terracon Consultants, Inc.
15080 A Circle I Omaha, Nebraska 68144-5558
O (402) 384-7009
M (518) 275-7733
F (402) 330-7606
Kim.copenhaver@terracon.com

From: Rabbe, Matt <Matt_Rabbe@fws.gov>
Sent: Wednesday, October 14, 2020 9:39 AM
To: Harbeck, Matthew A <Matthew.Harbeck@terracon.com>
Subject: FW: [EXTERNAL] FW: Plattsmouth WWTP (Terracon Project: 05207234)

Matt- Wanted to reach out and clarify a couple things for the project. Can you confirm that no new net depletions to the Platte River will occur for either of the alternatives? Also, could you confirm that if work occurs during the tern and plover season, the survey protocol would be followed? Similarly, I assume WPFO would be surveyed according to the protocol if potential habitat exists. As for pallid sturgeon, I think work at the Platte crossing would need to be avoided during the spawning period as directional boring could cause vibrations in the channel which affect spawning. See attached.

Thanks,

Matt Rabbe
Wildlife Biologist
U.S. Fish and Wildlife Service
Office (308) 382-6468 x205
Cell (308) 379-5562

From: Harbeck, Matthew A <Matthew.Harbeck@terracon.com>
Sent: Monday, October 12, 2020 6:41 PM
To: Nebraskaes, FW6 <Nebraskaes@fws.gov>
Subject: [EXTERNAL] FW: Plattsmouth WWTP (Terracon Project: 05207234)

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

USFWS Coordination
Exhibit F- 1b

Terracon

This Constitutes a report of the Department of the Interior prepared in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq). We have reviewed and have NO OBJECTION to this proposed project.

SCOTT LARSON Digitally signed by SCOTT LARSON Date: 2020.11.23 17:17:35 -06'00'

Field Supervisor

August 26, 2020

US Fish and Wildlife Services
9325 South Alda Road
Wood River, NE 68883

Re: City of Plattsmouth Water Supply System Relocation Project
Applicant Name: City of Plattsmouth

Start Point: South 36th Street and LaPlatte Road, Sarpy County, Nebraska
Section 29, Township 13N, Range 13E (41.071339N, -95.972795W)

End: Avenue B & 16th Street, Plattsmouth, Cass County, Nebraska
Section 13, Township 12N, Range 13E (41.013498N, -95.897873W)
Terracon Project Number: 05207584

To Whom It May Concern:

On behalf the City of Plattsmouth and Floodplain Emergency Management Agency (FEMA), an agency of the Department of Homeland Security, Terracon is submitting the above project for review by the US Fish and Wildlife Service (USFWS) for review of potential impacts to listed and proposed threatened and endangered (T&E) species and critical habitats resulting from construction approximately 7.5 miles of 20-inch diameter water main at the above referenced location. The proposed project involves the transmission of a new water supply source from the Metropolitan Utilities District (MUD) Platte South Water Treatment Plant to the existing city of Plattsmouth water supply distribution system. The City's water treatment plant and wells were significantly damaged in the flood of 2019 and have a history of flooding. Exhibits describing the project are attached to for your review.

The City has applied for grant assistance from FEMA's Public Assistance Program and Nebraska Department of Environment and Energy (NDEE) State Revolving Fund to relocate the water supply system (WSS) out of the floodplain of the Missouri River during flood events. An Environmental Assessment (EA) document is being prepared as part of the National Environmental Policy Act (NEPA) documentation for funding the project. Three alternatives are being considered in this EA: a "no action" alternative, the proposed action discussed below, and a third alternative to construct a new water treatment plant at the Fourmile Industrial Park site and install the water main along a route through the City of Plattsmouth. Both the water treatment plant site and the watermain right of way for this alternative were recently reviewed by your office for the Plattsmouth Wastewater Treatment Plant relocation project. See attached correspondence and exhibits.

USFWS Coordination
Exhibit F- 1c

The proposed action / preferred alternative involves the construction of approximately 40,650 feet of a new 20-inch diameter water transmission main from the City's distribution system located in Webster Avenue to the existing MUD Platte South Water Treatment Plant located along the north side of the Platte River near South 36th Street and LaPlatte Road. Water use by the City is expected to be approximately 3 Million Gallons Per day (MGD) at peak use. The MUD has stated that they have adequate capacity within their current approvals. Therefore, no impact to the flows of the Platte River are expected to occur from this project.

The proposed watermain alignment will primarily be installed along existing road and utility right of ways (ROWs). The new transmission water main would also involve a crossing of the Platte River by means of directional bore. This methodology will be used where ever feasible to avoid impacts to aquatic resources. A wetland delineation and general wildlife habitat assessment is being completed for the project.

Terracon conducted a preliminary review using USFWS Division of Endangered Species website and the NGPC website to identify listed and proposed T&E species, as well as critical habitats that may be located on or near the proposed tower site. Based on a review of the websites the Pallid Sturgeon (*Scaphirhynchus albus*) and the Least Tern (*Sterna antillarum*) are listed as state and/or federally endangered species potentially occurring in Cass and Sarpy Counties. The American Ginseng (*Panax quinquefolium*); the Lake Sturgeon (*Acipenser fulvescens);* the Piping Plover (*Charadrius melodus*); the River Otter (*Lontra canadensis*), Western Prairie Fringed Orchid (*Platanthera praeclara*), Northern Long Eared Bat (M*yotis septenrionalis*), and the Southern Flying Squirrel (*Glaucomys volans*) are listed as threatened species or species of concern potentially occurring in Cass and Sarpy Counties.

Based on our desktop review of the project site, it is unlikely that these species and/or their suitable habitat in any measurable amount would be located at the site. The majority of the site consists of previously disturbed conditions due to a combination of mowing, agriculture, and roadside maintenance. Existing utility lines including an overhead power line were also noted within a portion of the proposed watermain ROW. The Platte River and its riparian area is in a relatively natural state within the proposed ROW crossing. However, impacts to the Platte River and its riparian areas will be avoided due to directional boring.

The project will avoid tree removal from April 1st through July 15th to avoid impacts to nesting migratory birds and to the Northern Long-Eared Bat. It is not expected that protected plant species will be impacted by the project due to disturbed conditions of the ROW and directional bore techniques near the Platte River corridor. However, a general assessment of natural vegetative conditions and other wildlife habitat will be conducted during the wetland delineation to assess the potential for the other species to be present during at the site.

Terracon

Conditions expressed in the attached CERT letter relating to the Platte River crossing will be implemented as necessary. However, the directional bore under the river and its riparian area will likely avoid any impacts to protected species and their habitats. Your confirmation of all of the above, however, would be greatly appreciated.

Thank you for your response on this matter. If you have any questions concerning this letter, please do not hesitate to call me at (402) 384-7087. If you wish to respond by email, I may be reached at matthew.harbeck@terracon.com.

Sincerely,

Terracon Consultants, Inc.

Matthew Harbeck
Staff Scientist

For Kim Copenhaver
Senior Scientist

Distribution: Addressee (1)

Attachments: CERT Report
USFWS Species List
Previous Corresponded for Alternative 3 site
Vicinity Map
Project Maps
Alternate 3 Plant Site Concept Plan

USFWS Coordination
Exhibit F- 1c

Copenhaver, Kim A

From: Harbeck, Matthew A
Sent: Wednesday, December 9, 2020 2:32 PM
To: Copenhaver, Kim A
Subject: FW: Bald eagle nest map

Hey Kim,

Shannon is the environmental analyst supervisor for the Nebraska Game and Parks Commission and he's been my point of contact for all things NE GPC. It sounds like bald eagle monitoring is situational, but there are no known nests within the range of our work.

Matthew Harbeck
Staff Scientist I Environmental Group

Terracon
15080 A Circle I Omaha, Nebraska 68144
P (402) 384 7087 I M (712) 389 4872 I
mailto:matthew.harbeck@terracon.comI terracon.com

From: Sjolie, Shannon <Shannon.sjolie@nebraska.gov>
Sent: Wednesday, December 9, 2020 2:10 PM
To: Harbeck, Matthew A <Matthew.Harbeck@terracon.com>
Subject: RE: Bald eagle nest map

Good afternoon Matt,

NGPC holds all known occurrence/active sites of our protected species at a confidential level outside of the agency. I can tell you that it does not appear that your area in question have any known nests. The Missouri River corridor, as you know, offers preferred habitat for them, so there is always the chance of a nest popping up. Just something to consider. Below I have listed recommended raptor buffers per Nebraska Guidelines. Please let me know if you need anything else. Thanks.

Shannon

Species	Spatial Buffer (miles)	Seasonal Buffer
Bald eagle	1.0	1/1-8/31
Golden eagle	0.5	1/1-8/31
Northern Goshawk2	0.5	3/1-8/15
Northern Harrier	0.5	4/1-8/15
Red-shouldered hawk	0.5	3/15-8/31
Cooper's hawk	0.5	3/15-8/31
Ferruginous hawk	0.5	3/1-8/1
Red-tailed hawk	0.5	3/15-8/15
Sharp-shinned hawk	0.5	3/15-8/31
Swainson's hawk	0.5	3/1-8/31
Turkey vulture	0.5	5/1-8/15
Peregrine falcon	1.0	2/1-8/31

NGPC Coordination 12/8/20
Exhibit F- 1d

Prairie falcon	0.25	4/1-8/31
Merlin	0.5	4/1-8/31
American kestrel	0.125	4/1-8/15
Osprey	0.5	4/1-8/31
Burrowing owl	0.25	3/1-8/31
Great horned owl	0.25	12/1-9/31
Long-eared owl	0.25	2/1-8/15
North saw-whet owl	0.25	3/1-8/31
Short-eared owl	0.25	3/1-8/1
Eastern Screech owl	0.25	3/1-8/15
Common Barn-owl	0.125	2/1-9/15

From: Harbeck, Matthew A <Matthew.Harbeck@terracon.com>
Sent: Wednesday, December 9, 2020 1:10 PM
To: Sjolie, Shannon <Shannon.sjolie@nebraska.gov>
Subject: FW: Bald eagle nest map

Hello Shannon,

Do you happen to have an online resource where it plots known bald eagle nests in Nebraska? This is in relation to the proposed Plattsmouth WTP and Fourmile Creek Plants in Plattsmouth. I went to the feature search in the CERT database and as far as I can tell, there are no known bald eagle nests in the Platte River (or at least not mapped). It does show that the Missouri River is a habitat area for Bald Eagles, but nothing in the Platte.

Thank you for your guidance.

Matthew Harbeck
Staff Scientist I Environmental Group

Terracon
15080 A Circle I Omaha, Nebraska 68144
P (402) 384 7087 I M (712) 389 4872 I
mailto:matthew.harbeck@terracon.com I terracon.com

NGPC Coordination 12/8/20
Exhibit F- 1d

Exhibit F2

State Historic Preservation Office

History NEBRASKA

Preserving the past. Building the future.

1/15/2021

Alma Hubbard
FEMA
VIA EMAIL

RE: HP# 2101-059-01; Plattsmouth Water Supply System, Plattsmouth, Cass County, Nebraska

Ms. Hubbard,

Thank you for submitting the cultural resource inventory report prepared for the above referenced project for Nebraska State Historic Preservation Office (NeSHPO) review and comment. Our comment on this project and its potential to affect historic properties is required by Section 106 of the National Historic Preservation Act of 1966, as amended in 2014, and implementing regulations 36 CFR Part 800.

This report documents the results of a cultural resources investigation prior to the project. Based on the information provided, the proposed undertaking is unlikely to affect any cultural resources listed on the National Register of Historic Places or eligible for such a listing. Therefore, the NeSHPO concurs with the determination that **no historic properties affected** is appropriate for this undertaking and the project should proceed as planned.

Please retain this correspondence and your documented finding in order to show compliance with Section 106 of the National Historic Preservation Act, as amended. If you have any questions, please contact me at john.swigart@nebraska.gov or 402-560-0574.

Sincerely,

John Swigart
Preservation Archeologist

1500 R Street
Lincoln, NE 68508-1651
P: 402.471.3270
P: 800.833.6747
F: 402.471.3100
history.nebraska.gov

NESHPO Response 1/15/21
Exhibit F- 2a

HP# 2101-059-01

received
01/05/2021

FEMA

Federal Emergency Management Agency
FEMA RVII
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 4th, 2021

Jill Dolberg
Deputy SHPO
Nebraska State Historic Preservation Office
1500 R Street
Lincoln, Nebraska 68508-1651

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant - 41.025736, -95.882761
Finding: No Historic Properties Affected

Dear Ms. Dolberg:

The Federal Emergency Management Agency (FEMA) provides funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for the Missouri River Flooding from, FEMA-4420-DR-NE, dated March 2019 and continuing, as amended. FEMA, through its Public Assistance Program, proposes to fund the relocation of the Plattsmouth Water Supply System (WSS) (Undertaking) as requested by the City of Plattsmouth (Sub-Recipient). FEMA is conducting Section 106 review for the above referenced properties in accordance with the "Programmatic Agreement Among the Federal Emergency Management Agency, the Nebraska Historic Preservation Officer, and the Nebraska Emergency Management Agency" as amended on May 11, 2015 and providing your office with the opportunity to consult on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(e).

Undertaking
Work to be Completed
Due to Nebraska Severe Winter Storm, Straight-line Winds, and Flooding, the existing City of Plattsmouth Water Supply System (WSS) was inundated with floodwaters and debris. This caused severe damage to main treatment and process equipment as well as other structures located on site. In addition, the high floodwaters and ice caused major damage to five of the City's water supply wells and warehouses. Two proposed actions are presented and are being evaluated by FEMA within an Environmental Assessment for National Environmental Policy Act (NEPA) purposes. Alternative 2 is the preferred alternative and will be evaluated in this letter. The Alternative 3 Undertaking will be outlined for NEPA purposes, however, it will not be evaluated in this letter, as it is covered by a combination of Programmatic Allowances and overlaps with the previously cleared Plattsmouth Wastewater Treatment Plant undertaking (HP#2011-026-0).

SHPO/ FEMA Consultation 1/15/21
Exhibit F- 2b

Alternative 2 (preferred alternative):
This alternative involves the construction of a new water main to carry potable water from an existing water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth.

The work associated with this project involves the construction of approximately 7.5 miles of 20-inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road in, Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter water main begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the water main would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2000 feet by jack and bore technologies. The water main construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches Buccaneer Boulevard to the south. The water main will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The water main will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the water main would involve a 70-foot wide work right of way (ROW) throughout the route, in addition to staging areas. Most of the waterline ROW will be located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for most of the work, however, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction. A few trees may need to be removed along the ROW for construction.

The Sub-recipient has requested reimbursement for the Plattsmouth Water Supply System's relocation to the MUD facility, with the associated water main construction in Cass and Sarpy

SHPO/ FEMA Consultation 1/15/21
Exhibit F- 2b

Counties. The permanent work for this alternative meets the description of Tier II Allowances, Section D (1 (a)) and Section D (1(b)) as defined in the 2015 Programmatic Agreement. The following activities do not meet Programmatic Allowances:

- Associated trench excavation and boring outside of existing utilities/road/railroad ROWs.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, 95.918781). The City-owned wells located within the floodplain of the Missouri River (41.025031, -95.816630) will remain in place and wellhead protection measures will be constructed to limit the risks of flood damages.

The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and Nebraska Department of Health and Human Services (NDHHS), as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter water main along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly

direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance of approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant is would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

The City's five existing wells will continue to be utilized as the source of raw water for alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States' Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to within five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

The Sub-recipient has requested reimbursement for the relocation of the Plattsmouth Water Supply System in Cass and Sarpy Counties. The permanent work for this alternative meets the description of Tier II Allowances, Section D (1 (a)) as defined in the 2015 Programmatic Agreement. The proposed area for the Alternative 3 WSS facility would be on the same parcel as the Plattsmouth Wastewater Treatment Plant that was previously cleared by the SHPO on November 6th, 2020 (HP#2011-026-01).

Area of Potential Effects (APE)

Alternative 2:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the 8,964 FT of 20 IN diameter water main that will be placed by trenching and boring outside of existing utilities/road/railroad/ ROWs.

Identification and Evaluation

Architecture

Alternati e 2:

A review of the NPS National Register Interactive Map indicates that the APE for the portion of water main outside of existing ROWs is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The proposed undertaking will not have an effect to historic structures.

SHPO/ FEMA Consultation 1/15/21
Exhibit F- 2b

Archaeology

Alternative 2:

On September 22nd, 2020, Quality Services, Inc. conducted an archaeological survey of the APE (see attached report titled 'An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project'). FEMA EHP reviewed the report, which contained the following relevant information: A records search of the project area with an added 1-mile buffer was conducted on August 18th, 2020. There were no previously identified sites within the APE, however, 28 sites were within a 1-mile buffer of the APE. Two of these sites were determined not eligible for the National Register, and the remaining 26 have been unevaluated for eligibility for the National Register of Historic Places. An inventory of approximately 12 acres was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. The Platte River accounts for approximately 1400 FT of the overall project length, with the remaining project area consisting of agricultural lands, wooded areas, riparian areas, and a portion of golf course. No cultural resources were observed during the pedestrian survey. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route. Testing was completed to a depth of 70 cm and was screened and backfilled, no cultural material was identified during the testing. FEMA concurs with the recommended determination of no effect to historic properties.

According to the USDA Soils Map, the APE for the proposed portion of water main that is outside of existing ROWs includes Smithland-Kenridge silty clay loams, occasionally flooded, Monona silt loam, 17 to 30 percent slopes, Cass-Wann fine sandy loams, occasionally flooded, Judson silty clay loam, 2 to 6 percent slopes, Ida silt loam, 17 to 30 percent slopes, Monona silt loam, 11 to 17 percent slopes, eroded, Cass-Novina complex, occasionally flooded, Ingewood-Novina complex, occasionally flooded, and Sarpy-Haynie complex, occasionally flooded. While these soil types typically have a medium to high potential for archaeological resources, most are in areas that are prone to frequent flooding, and some are heavily sloped. Historic topographic maps and aerials on https://www.historicaerials.com/viewer show that the Platte River is subject to channel movement. Due to the historic flooding, sloping of some of the soils in the APE, and the historic movement of the river, the proposed Undertaking would not affect intact archaeological resources.

Determination of Effect/Request for Concurrence

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has determined a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response to this finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa Antonia.zawisa@fema.dhs.gov or Audrey Wolfe, Audrey.wolfe@fema.dhs.gov, 202-808-6582.

Sincerely,

ALMA P HUBBARD

Digitally signed by ALMA P HUBBARD
Date: 2021.01.04 16:09:58 -05'00'

SHPO/ FEMA Consultation
1/15/21
Exhibit F- 2b

Alma Hubbard
Acting Historic Preservation Advisor
DR-4420NE
(202) 709-1956 (FEMA cell)

APH/az, aw

cc: *mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov*

Enclosures:
Figure 1:Aerial Map Showing Alternative 2 Project Sites
Figure 2: Aerial Map Showing Alternative 3 Project Sites
Figure 3: Topographic Map Showing Alternative 2 Project Sites
Figure 4-5: Aerial and Topographic Maps of the APE
Figure 6: Quality Services Inc. Picture of APE
Figures 7-8: USDA Web Soil Map and Legend showing soils in the APE.
Quality Services Inc. An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project

SHPO/ FEMA Consultation 1/15/21
Exhibit F- 2b

Exhibit F3

Tribal Consultation

Federal Emergency Management Agency
Joint Recovery Office
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 7th, 2021

Darren Cisco, Head of Cultural Affairs
Apache Tribe of Oklahoma
511 East Colorado
Anadarko, OK 73005

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant - 41.025736, -95.882761
Finding: No Historic Properties Affected

Dear Mr. Cisco:

The Federal Emergency Management Agency (FEMA) provides funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for the Missouri River Flooding from, FEMA-4420-DR-NE, dated March 2019 and continuing, as amended. FEMA, through its Public Assistance Program, proposes to fund the relocation of the Plattsmouth Water Supply System (WSS) (Undertaking) as requested by the City of Plattsmouth (Sub-Recipient). FEMA is initiating Section 106 review for the above referenced property and providing your office with the opportunity to comment on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(e).

Undertaking
Work to be Completed
Due to Nebraska Severe Winter Storm, Straight-line Winds, and Flooding, the existing City of Plattsmouth Water Supply System (WSS) was inundated with floodwaters and debris. This caused severe damage to main treatment and process equipment as well as other structures located on site. In addition, the high floodwaters and ice caused major damage to five of the City's water supply wells and warehouses. Two proposed actions are presented and are being evaluated by FEMA within an Environmental Assessment for National Environmental Policy Act (NEPA) purpose. Alternative 2 is the preferred alternative, however, Alternative 3 is also being evaluated for NEPA purposes and FEMAs Section 106 National Historic Preservation Act compliance review.

Alternative 2 (preferred alternative):
This alternative involves the construction of a new water main to carry potable water from an existing water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth.

Tribal Consultation
Exhibit F- 3a

The work associated with this project involves the construction of approximately 7.5 miles of 20-inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road, in Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter water main begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the water main would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2000 feet by jack and bore technologies. The water main construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches Buccaneer Boulevard to the south. The water main will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The water main will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the water main would involve a 70-foot wide work right of way (ROW) throughout the route, in addition to staging areas. Most of the waterline ROW will be located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for most of the work, however, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction. A few trees may need to be removed along the ROW for construction.

The Sub-recipient has requested reimbursement for the Plattsmouth Water Supply System's relocation to the MUD facility, with the associated water main construction in Cass and Sarpy Counties.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River

Tribal Consultation
Exhibit F- 3a

(41.025031, -95.816630) will remain in place and wellhead protection measures will be constructed to limit the risks of flood damages.

The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and Nebraska Department of Health and Human Services (NDHHS), as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter water main along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance of approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

The City's five existing wells will continue to be utilized as the source of raw water for Alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States' Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to within five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

The Sub-recipient has requested reimbursement for the relocation of the Plattsmouth Water Supply System in Cass and Sarpy Counties with associated water main construction activities.

Area of Potential Effects (APE)

Alternative 2:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the 8,964 FT of 20 IN diameter water main that will be placed by trenching and boring outside of existing utilities/road/railroad/ rights-of-way, the 30,601 FT of main within existing rights-of-way, and the 30 acres of existing MUD facilities which will facilitate the distribution of water to Plattsmouth.

Alternative 3:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the approximately 25 acres at the proposed new water conveyance sites and the associated 4 miles of new water main being placed along road and railroad rights-of-way.

Identification and Evaluation

Architecture

Alternative 2:

A review of the NPS National Register Interactive Map indicates that the APE for the portion of water main outside of existing ROWs is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The proposed undertaking will not have an effect to historic structures.

Alternative 3:

A review of the NPS National Register Interactive Map indicates that the APE for the new facility is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The beginning of the new water main to be placed by boring is roughly .10 miles away from the Plattsmouth Main Historic District (Property ID 85002585, See Figure 7). The construction activities will be far enough away that vibration damage will not be a concern to the nearby historic district, and therefore, no historic structures will likely be affected by the proposed undertaking.

Archaeology

Alternative 2:

The existing MUD facility can service the City of Plattsmouth, the only additions to the facility would be the addition of a new booster pump, there will be no new ground disturbing activities in regard to the MUD facility. 30,601 FT of watermain will be placed within existing road rights-of-way that have been previously disturbed by the original construction of the roads and the surrounding residential homes, businesses, rail lines, etc. On September 22nd, 2020, Quality Services, Inc. conducted an archaeological survey of the portion of water main outside of existing rights-of-way (see attached report titled 'An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project'). FEMA EHP reviewed the report, which contained the following relevant information: A records search of the project area with an added 1-mile buffer was conducted on August 18th, 2020. There were no previously identified sites within the APE, however, 28 sites were within a 1-mile buffer of the APE. Two of these sites were determined not eligible for the National Register, and the remaining 26 have been unevaluated for eligibility for the National Register of Historic Places. An inventory of approximately 12 acres was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. The Platte River accounts for approximately 1400 FT of the overall project length, with the remaining project area consisting of agricultural lands, wooded areas, riparian areas, and a portion of golf course. No cultural resources were observed during the pedestrian survey. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route. Testing was completed to a depth of 70 cm and was screened and backfilled, no cultural material was identified during the testing. FEMA concurs with the recommended determination of no effect to historic properties.

According to the USDA Soils Map and the Quality Services Inc. Report, the APE for the proposed portion of water main that is outside of existing ROWs includes Smithland-Kenridge silty clay loams, occasionally flooded, Monona silt loam, 17 to 30 percent slopes, Cass-Wann fine sandy loams, occasionally flooded, Judson silty clay loam, 2 to 6 percent slopes, Ida silt loam, 17 to 30 percent slopes, Monona silt loam, 11 to 17 percent slopes, eroded, Cass-Novina complex, occasionally flooded, Ingewood-Novina complex, occasionally flooded, and Sarpy-Haynie complex, occasionally flooded. While these soil types typically have a medium to high potential for archaeological resources, most are in areas that are prone to frequent flooding, and some are heavily sloped. Historic topographic maps and aerials on https://www.historicaerials.com/viewer show that the Platte River is subject to channel movement. Due to the historic flooding, sloping of some of the soils in the area of new water main to be placed outside of existing rights-of-way, and the historic movement of the river, the proposed Undertaking would not affect intact archaeological resources.

Alternative 3:

Research of the NE SHPO database completed as part of the Historic and Cultural Resources Evaluation of the proposed WWTP APE was conducted by Quality Services, Inc. on May 28, 2020 (see enclosed report titled Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA Environmental & Historic Preservation (EHP) reviewed the report, which contained the following relevant information: There were no identified archaeological sites within the proposed APE and no previous archaeological surveys conducted

within the proposed APE. Four archaeological sites have been recorded within a 1-mile search buffer of the APE and five archaeological surveys have been performed within a 0.5-mile search buffer of the APE.

The 4 miles of new 18-inch diameter water main to transport water to the new facility will begin at 40.97877500, -95.91750000 and end at 41.01107778, -95.88111111. The water main will be bored along the existing road and railroad ROW throughout the City. Due to the original construction of the existing road and railroads, the associated 4 miles of the new water main will not affect any unidentified intact archaeological resources.

From June 12 – 13, 2020, Quality Services, Inc. conducted an archaeological survey of the APE (see attached report titled A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA EHP reviewed the report, which contained the following relevant information: Two archeological sites were located and documented during the inventory within the cultivated fields of the APE, sites 25CC471 and 25CC472. Site 25CC471 consisted of surface isolates of a gray chert flake, a piece of glazed stoneware, and a fragment of aqua glass. Site 25CC472 consisted of a surface isolate of a chert flake. Both sites were recommended as not eligible for the NRHP. FEMA has reviewed the report and concurs with the recommendation that the two sites are not eligible for the National Register of Historic Places

According to the USDA Soils Map and the Quality Services Inc. report, the APE for the proposed WWTP and Access Road consists largely of Marshall silty clay loam, 6 to 11 & 2 to 6 percent slopes, eroded, and Judson silt loam, 2 to 6 percent slopes. While Marshall and Judson soils can be higher potential for archaeological resources, historic aerials show the APE has been previously disturbed by agricultural use. The APE for the proposed Alternative Effluence Conveyance line consists largely of Colo-Nodaway complex, frequently flooded, and is within the historic floodplain and lower probability for any unknown intact cultural resources. The intensive survey conducted by Quality Services, Inc. yielded four isolated finds on the surface and subsurface testing was negative for cultural resources, therefore, FEMA has determined that the undertaking will not have an impact to any unidentified intact archaeological sites.

Tribal Involvement
FEMA is required to consult with Federally Recognized Tribes for FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. To our knowledge the APE for this project is not on tribally owned lands but FEMA recognizes that the tribe may have special knowledge of the area with regards to properties of religious or cultural significance and is requesting your comments with regards to the Undertaking.

Determination of Effect/Request for Comment
Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has made a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response with this

finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa antonia.zawisa@fema.dhs.gov or Audrey Wolfe at audrey.wolfe@fema.dhs.gov.

Sincerely,

ALMA P HUBBARD Digitally signed by ALMA P HUBBARD Date: 2021.01.07 14:27:43 -05'00'

Alma P. Hubbard
Acting Historic Preservation Advisor
DR-4420NE
(202) 709-1956 (FEMA cell)

APH/aw, az

cc: mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov

Enclosures:
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Figures 3-4: Alternative 2 & 3 USGS Topographic Maps of the APE
Figures 5-6: Alternative 2 & 3 Quality Services Inc. Pictures showing proposed project sites
Quality Services Inc. An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project
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A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project, June 23, 2020

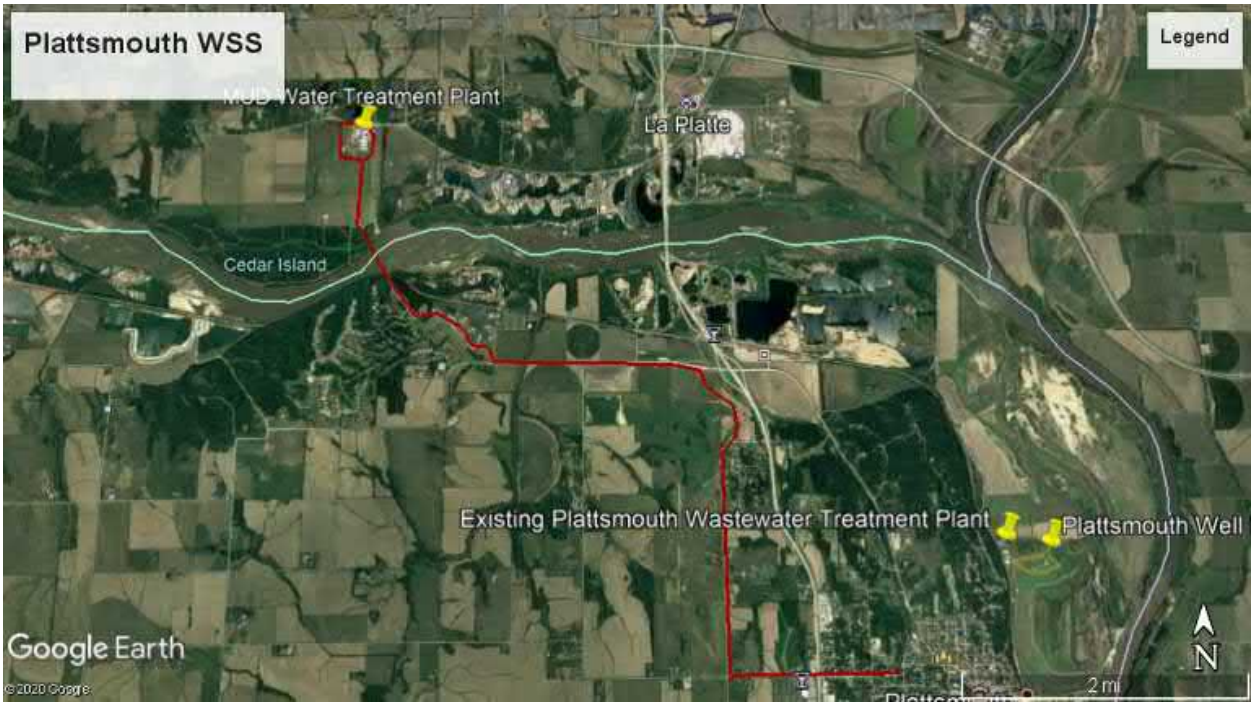

Figure 1: Alternative 2 Google Earth Aerial Image Dated 6/4/2018 showing the APE (in red).

Figure 2: Alternative 3 Google Earth Image Dated 6/4/2018 showing the APE (in red)

Tribal Consultation
Exhibit F- 3a

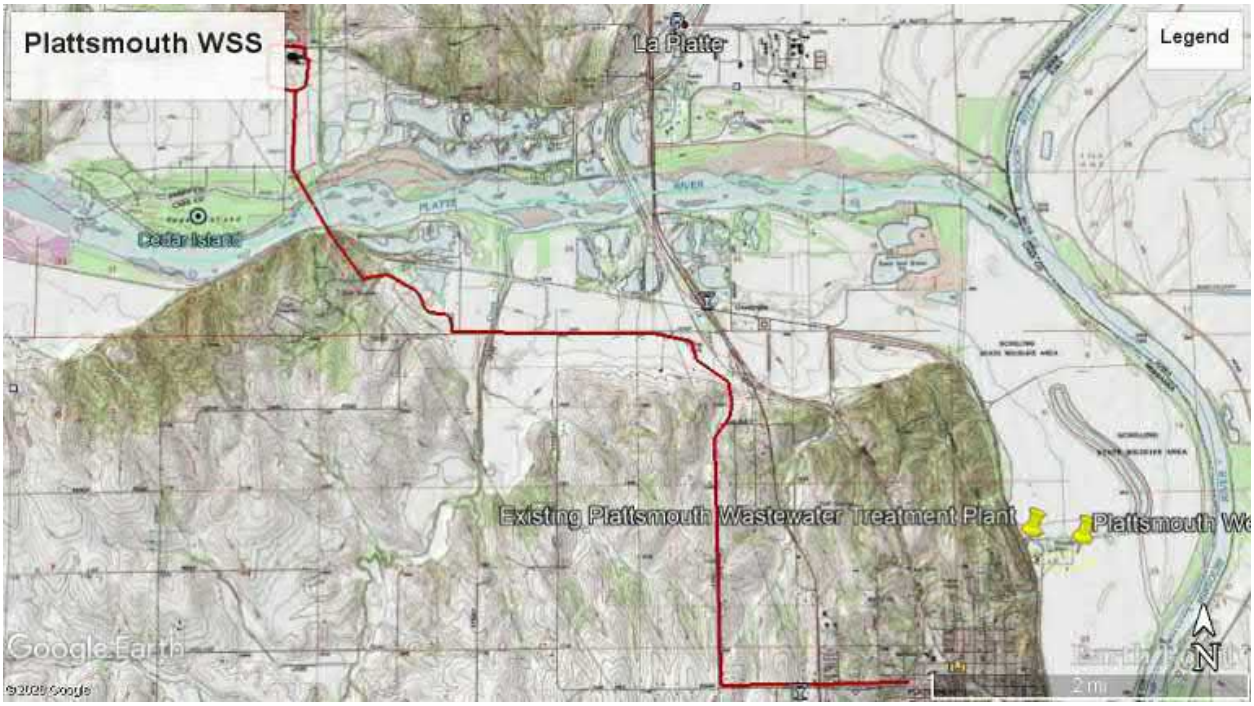

Figure 3: Alternative 2 USGS Topographic Map showing the APE (in red)

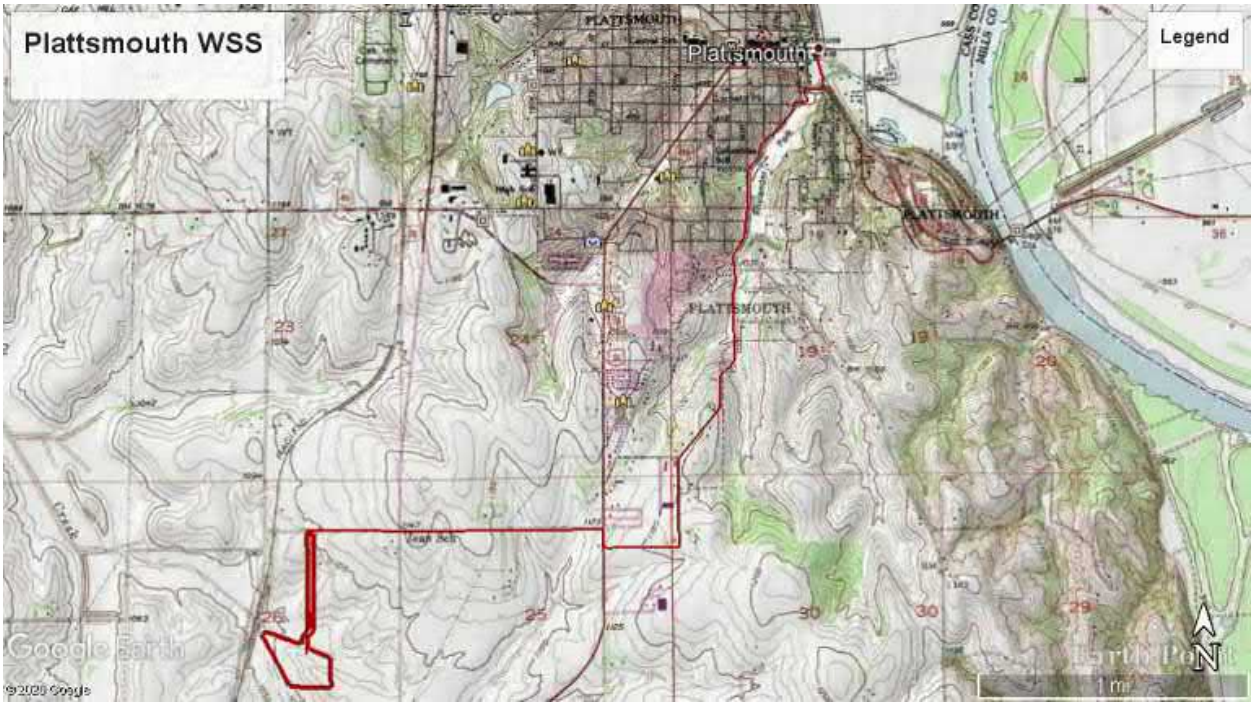

Figure 4: Alternative 3 USGS Topographic showing the APE (in red)

Tribal Consultation
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Figure 5: Alternative 2 photo of the area where new water main will be bored underneath the Platte River. Photo facing North.

Figure 6: Alternative 3 South view of proposed new WSS/WWTP site.

Tribal Consultation
Exhibit F- 3a

Federal Emergency Management Agency
Joint Recovery Office
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 7th, 2021

Max Bear, THPO
Cheyenne and Arapaho Tribes, Oklahoma
P700 Black Kettle Blvd
Concho, OK 73022

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant **-** 41.025736, -95.882761
Finding: No Historic Properties Affected

Dear Mr. Bear:

The Federal Emergency Management Agency (FEMA) provides funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for the Missouri River Flooding from, FEMA-4420-DR-NE, dated March 2019 and continuing, as amended. FEMA, through its Public Assistance Program, proposes to fund the relocation of the Plattsmouth Water Supply System (WSS) (Undertaking) as requested by the City of Plattsmouth (Sub-Recipient). FEMA is initiating Section 106 review for the above referenced property and providing your office with the opportunity to comment on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(e).

Undertaking
Work to be Completed
Due to Nebraska Severe Winter Storm, Straight-line Winds, and Flooding, the existing City of Plattsmouth Water Supply System (WSS) was inundated with floodwaters and debris. This caused severe damage to main treatment and process equipment as well as other structures located on site. In addition, the high floodwaters and ice caused major damage to five of the City's water supply wells and warehouses. Two proposed actions are presented and are being evaluated by FEMA within an Environmental Assessment for National Environmental Policy Act (NEPA) purpose. Alternative 2 is the preferred alternative, however, Alternative 3 is also being evaluated for NEPA purposes and FEMAs Section 106 National Historic Preservation Act compliance review.

Alternative 2 (preferred alternative):
This alternative involves the construction of a new water main to carry potable water from an existing water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth.

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The work associated with this project involves the construction of approximately 7.5 miles of 20-inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road, in Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter water main begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the water main would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2000 feet by jack and bore technologies. The water main construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches Buccaneer Boulevard to the south. The water main will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The water main will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the water main would involve a 70-foot wide work right of way (ROW) throughout the route, in addition to staging areas. Most of the waterline ROW will be located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for most of the work, however, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction. A few trees may need to be removed along the ROW for construction.

The Sub-recipient has requested reimbursement for the Plattsmouth Water Supply System's relocation to the MUD facility, with the associated water main construction in Cass and Sarpy Counties.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River

Tribal Consultation
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(41.025031, -95.816630) will remain in place and wellhead protection measures will be constructed to limit the risks of flood damages.

The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and Nebraska Department of Health and Human Services (NDHHS), as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter water main along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance of approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

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The City's five existing wells will continue to be utilized as the source of raw water for Alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States' Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to within five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

The Sub-recipient has requested reimbursement for the relocation of the Plattsmouth Water Supply System in Cass and Sarpy Counties with associated water main construction activities.

Area of Potential Effects (APE)

Alternative 2:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the 8,964 FT of 20 IN diameter water main that will be placed by trenching and boring outside of existing utilities/road/railroad/ rights-of-way, the 30,601 FT of main within existing rights-of-way, and the 30 acres of existing MUD facilities which will facilitate the distribution of water to Plattsmouth.

Alternative 3:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the approximately 25 acres at the proposed new water conveyance sites and the associated 4 miles of new water main being placed along road and railroad rights-of-way.

Identification and Evaluation

Architecture

Alternative 2:

A review of the NPS National Register Interactive Map indicates that the APE for the portion of water main outside of existing ROWs is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The proposed undertaking will not have an effect to historic structures.

Alternative 3:

A review of the NPS National Register Interactive Map indicates that the APE for the new facility is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The beginning of the new water main to be placed by boring is roughly .10 miles away from the Plattsmouth Main Historic District (Property ID 85002585, See Figure 7). The construction activities will be far enough away that vibration damage will not be a concern to the nearby historic district, and therefore, no historic structures will likely be affected by the proposed undertaking.

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Archaeology

Alternative 2:

The existing MUD facility can service the City of Plattsmouth, the only additions to the facility would be the addition of a new booster pump, there will be no new ground disturbing activities in regard to the MUD facility. 30,601 FT of watermain will be placed within existing road rights-of-way that have been previously disturbed by the original construction of the roads and the surrounding residential homes, businesses, rail lines, etc. On September 22nd, 2020, Quality Services, Inc. conducted an archaeological survey of the portion of water main outside of existing rights-of-way (see attached report titled 'An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project'). FEMA EHP reviewed the report, which contained the following relevant information: A records search of the project area with an added 1-mile buffer was conducted on August 18th, 2020. There were no previously identified sites within the APE, however, 28 sites were within a 1-mile buffer of the APE. Two of these sites were determined not eligible for the National Register, and the remaining 26 have been unevaluated for eligibility for the National Register of Historic Places. An inventory of approximately 12 acres was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. The Platte River accounts for approximately 1400 FT of the overall project length, with the remaining project area consisting of agricultural lands, wooded areas, riparian areas, and a portion of golf course. No cultural resources were observed during the pedestrian survey. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route. Testing was completed to a depth of 70 cm and was screened and backfilled, no cultural material was identified during the testing. FEMA concurs with the recommended determination of no effect to historic properties.

According to the USDA Soils Map and the Quality Services Inc. Report, the APE for the proposed portion of water main that is outside of existing ROWs includes Smithland-Kenridge silty clay loams, occasionally flooded, Monona silt loam, 17 to 30 percent slopes, Cass-Wann fine sandy loams, occasionally flooded, Judson silty clay loam, 2 to 6 percent slopes, Ida silt loam, 17 to 30 percent slopes, Monona silt loam, 11 to 17 percent slopes, eroded, Cass-Novina complex, occasionally flooded, Ingewood-Novina complex, occasionally flooded, and Sarpy-Haynie complex, occasionally flooded. While these soil types typically have a medium to high potential for archaeological resources, most are in areas that are prone to frequent flooding, and some are heavily sloped. Historic topographic maps and aerials on https://www.historicaerials.com/viewer show that the Platte River is subject to channel movement. Due to the historic flooding, sloping of some of the soils in the area of new water main to be placed outside of existing rights-of-way, and the historic movement of the river, the proposed Undertaking would not affect intact archaeological resources.

Alternative 3:

Research of the NE SHPO database completed as part of the Historic and Cultural Resources Evaluation of the proposed WWTP APE was conducted by Quality Services, Inc. on May 28, 2020 (see enclosed report titled Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA Environmental & Historic Preservation (EHP) reviewed the report, which contained the following relevant information: There were no identified archaeological sites within the proposed APE and no previous archaeological surveys conducted

within the proposed APE. Four archaeological sites have been recorded within a 1-mile search buffer of the APE and five archaeological surveys have been performed within a 0.5-mile search buffer of the APE.

The 4 miles of new 18-inch diameter water main to transport water to the new facility will begin at 40.97877500, -95.91750000 and end at 41.01107778, -95.88111111. The water main will be bored along the existing road and railroad ROW throughout the City. Due to the original construction of the existing road and railroads, the associated 4 miles of the new water main will not affect any unidentified intact archaeological resources.

From June 12 – 13, 2020, Quality Services, Inc. conducted an archaeological survey of the APE (see attached report titled A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA EHP reviewed the report, which contained the following relevant information: Two archeological sites were located and documented during the inventory within the cultivated fields of the APE, sites 25CC471 and 25CC472. Site 25CC471 consisted of surface isolates of a gray chert flake, a piece of glazed stoneware, and a fragment of aqua glass. Site 25CC472 consisted of a surface isolate of a chert flake. Both sites were recommended as not eligible for the NRHP. FEMA has reviewed the report and concurs with the recommendation that the two sites are not eligible for the National Register of Historic Places

According to the USDA Soils Map and the Quality Services Inc. report, the APE for the proposed WWTP and Access Road consists largely of Marshall silty clay loam, 6 to 11 & 2 to 6 percent slopes, eroded, and Judson silt loam, 2 to 6 percent slopes. While Marshall and Judson soils can be higher potential for archaeological resources, historic aerials show the APE has been previously disturbed by agricultural use. The APE for the proposed Alternative Effluence Conveyance line consists largely of Colo-Nodaway complex, frequently flooded, and is within the historic floodplain and lower probability for any unknown intact cultural resources. The intensive survey conducted by Quality Services, Inc. yielded four isolated finds on the surface and subsurface testing was negative for cultural resources, therefore, FEMA has determined that the undertaking will not have an impact to any unidentified intact archaeological sites.

Tribal Involvement

FEMA is required to consult with Federally Recognized Tribes for FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. To our knowledge the APE for this project is not on tribally owned lands but FEMA recognizes that the tribe may have special knowledge of the area with regards to properties of religious or cultural significance and is requesting your comments with regards to the Undertaking.

Determination of Effect/Request for Comment

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has made a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response with this

Tribal Consultation
Exhibit F- 3a

finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa antonia.zawisa@fema.dhs.gov or Audrey Wolfe at audrey.wolfe@fema.dhs.gov.

Sincerely,

ALMA P HUBBARD Digitally signed by ALMA P HUBBARD Date: 2021.01.07 14:30:00 -05'00'

Alma P. Hubbard
Acting Historic Preservation Advisor
DR-4420NE
(202) 709-1956 (FEMA cell)

APH/aw, az

cc: mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov

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Tribal Consultation
Exhibit F- 3a

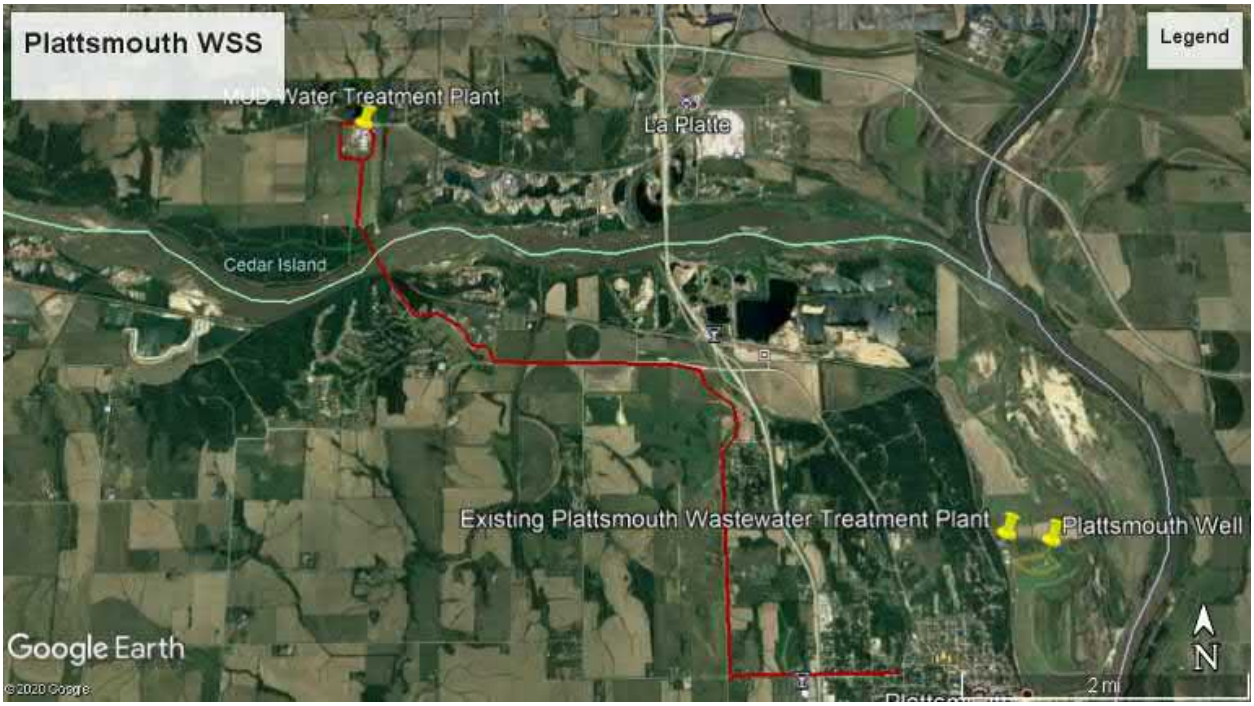

Figure 1: Alternative 2 Google Earth Aerial Image Dated 6/4/2018 showing the APE (in red).

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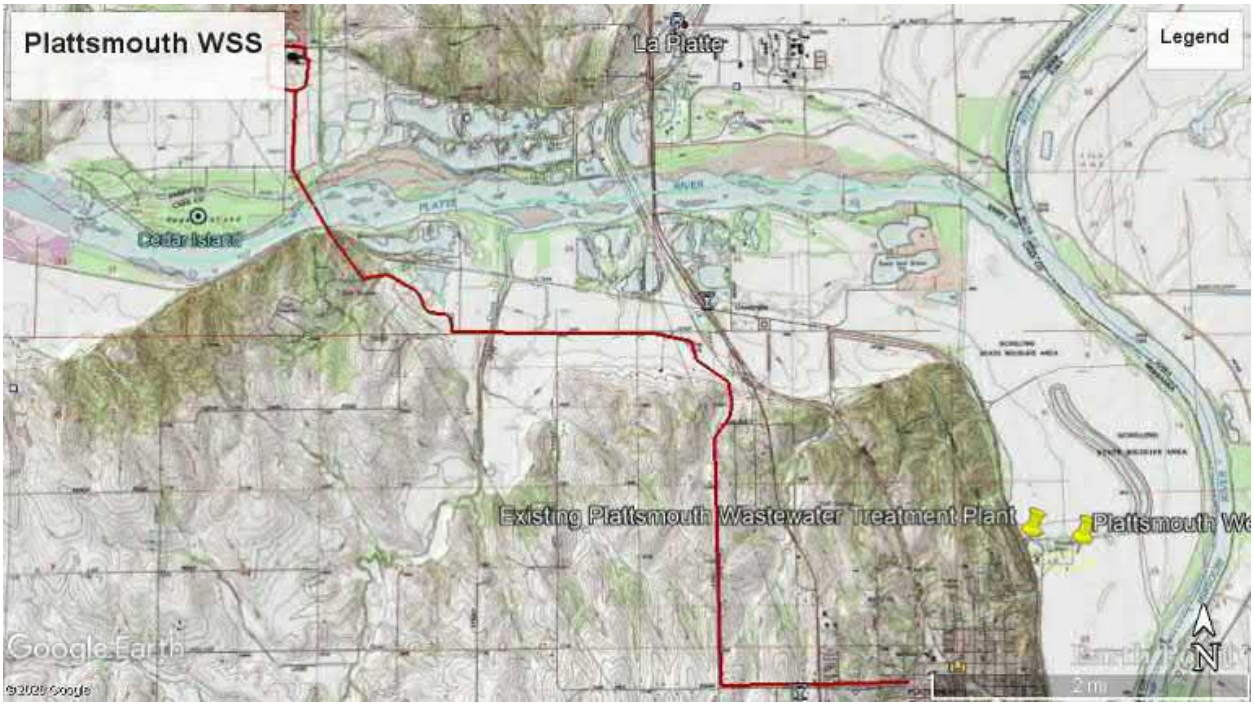
Tribal Consultation
Exhibit F- 3a



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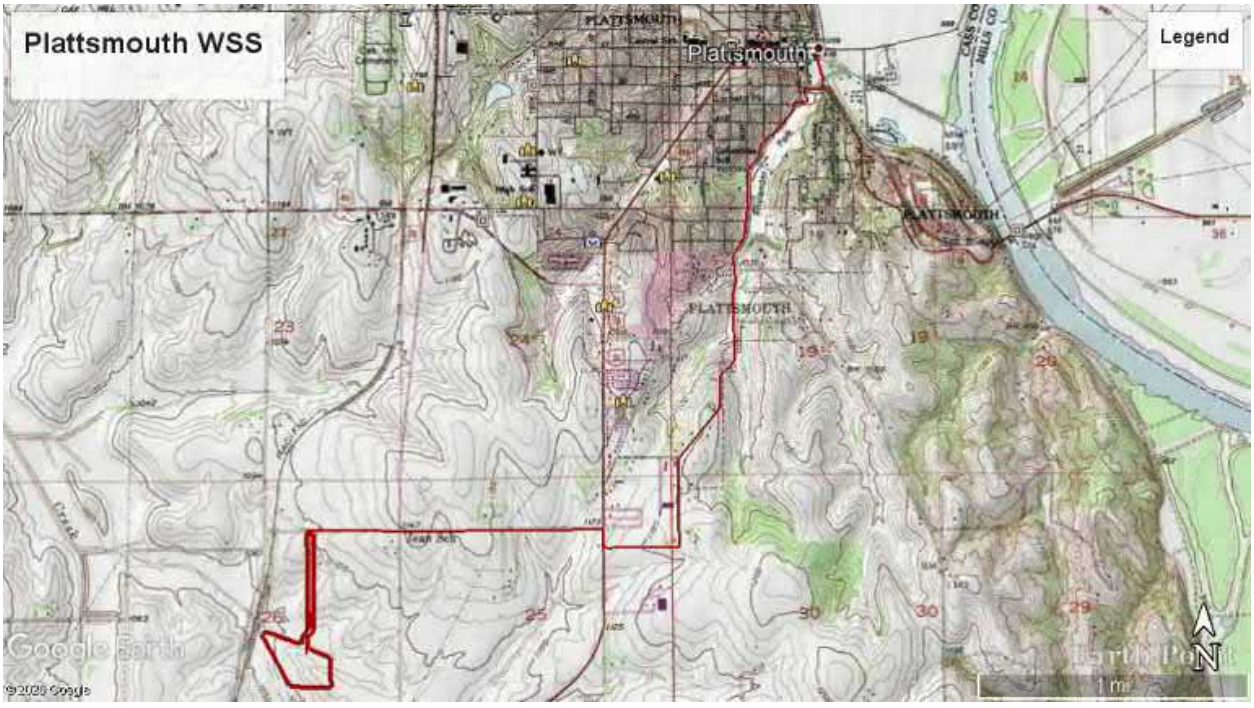

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Tribal Consultation
Exhibit F- 3a

Figure 5: Alternative 2 photo of the area where new water main will be bored underneath the Platte River. Photo facing North.

Figure 6: Alternative 3 South view of proposed new WSS/WWTP site.

Tribal Consultation
Exhibit F- 3a

Federal Emergency Management Agency
Joint Recovery Office
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 7th, 2021

Lance Foster, THPO
3345 B
Thrasher Rd.
White Cloud, KS 66094

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant **-** 41.025736, -95.882761
Finding: No Historic Properties Affected

Dear Lance Foster:

The Federal Emergency Management Agency (FEMA) provides funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for the Missouri River Flooding from, FEMA-4420-DR-NE, dated March 2019 and continuing, as amended. FEMA, through its Public Assistance Program, proposes to fund the relocation of the Plattsmouth Water Supply System (WSS) (Undertaking) as requested by the City of Plattsmouth (Sub-Recipient). FEMA is initiating Section 106 review for the above referenced property and providing your office with the opportunity to comment on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(e).

Undertaking
Work to be Completed
Due to Nebraska Severe Winter Storm, Straight-line Winds, and Flooding, the existing City of Plattsmouth Water Supply System (WSS) was inundated with floodwaters and debris. This caused severe damage to main treatment and process equipment as well as other structures located on site. In addition, the high floodwaters and ice caused major damage to five of the City's water supply wells and warehouses. Two proposed actions are presented and are being evaluated by FEMA within an Environmental Assessment for National Environmental Policy Act (NEPA) purpose. Alternative 2 is the preferred alternative, however, Alternative 3 is also being evaluated for NEPA purposes and FEMAs Section 106 National Historic Preservation Act compliance review.

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Tribal Consultation
Exhibit F- 3a

The work associated with this project involves the construction of approximately 7.5 miles of 20-inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road, in Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter water main begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the water main would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2000 feet by jack and bore technologies. The water main construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches Buccaneer Boulevard to the south. The water main will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The water main will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the water main would involve a 70-foot wide work right of way (ROW) throughout the route, in addition to staging areas. Most of the waterline ROW will be located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for most of the work, however, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction. A few trees may need to be removed along the ROW for construction.

The Sub-recipient has requested reimbursement for the Plattsmouth Water Supply System's relocation to the MUD facility, with the associated water main construction in Cass and Sarpy Counties.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River

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(41.025031, -95.816630) will remain in place and wellhead protection measures will be constructed to limit the risks of flood damages.

The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and Nebraska Department of Health and Human Services (NDHHS), as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter water main along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance of approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

The City's five existing wells will continue to be utilized as the source of raw water for Alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States' Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to within five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

The Sub-recipient has requested reimbursement for the relocation of the Plattsmouth Water Supply System in Cass and Sarpy Counties with associated water main construction activities.

Area of Potential Effects (APE)

Alternative 2:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the 8,964 FT of 20 IN diameter water main that will be placed by trenching and boring outside of existing utilities/road/railroad/ rights-of-way, the 30,601 FT of main within existing rights-of-way, and the 30 acres of existing MUD facilities which will facilitate the distribution of water to Plattsmouth.

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Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the approximately 25 acres at the proposed new water conveyance sites and the associated 4 miles of new water main being placed along road and railroad rights-of-way.

Identification and Evaluation

Architecture

Alternative 2:

A review of the NPS National Register Interactive Map indicates that the APE for the portion of water main outside of existing ROWs is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The proposed undertaking will not have an effect to historic structures.

Alternative 3:

A review of the NPS National Register Interactive Map indicates that the APE for the new facility is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The beginning of the new water main to be placed by boring is roughly .10 miles away from the Plattsmouth Main Historic District (Property ID 85002585, See Figure 7). The construction activities will be far enough away that vibration damage will not be a concern to the nearby historic district, and therefore, no historic structures will likely be affected by the proposed undertaking.

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The existing MUD facility can service the City of Plattsmouth, the only additions to the facility would be the addition of a new booster pump, there will be no new ground disturbing activities in regard to the MUD facility. 30,601 FT of watermain will be placed within existing road rights-of-way that have been previously disturbed by the original construction of the roads and the surrounding residential homes, businesses, rail lines, etc. On September 22nd, 2020, Quality Services, Inc. conducted an archaeological survey of the portion of water main outside of existing rights-of-way (see attached report titled 'An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project'). FEMA EHP reviewed the report, which contained the following relevant information: A records search of the project area with an added 1-mile buffer was conducted on August 18th, 2020. There were no previously identified sites within the APE, however, 28 sites were within a 1-mile buffer of the APE. Two of these sites were determined not eligible for the National Register, and the remaining 26 have been unevaluated for eligibility for the National Register of Historic Places. An inventory of approximately 12 acres was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. The Platte River accounts for approximately 1400 FT of the overall project length, with the remaining project area consisting of agricultural lands, wooded areas, riparian areas, and a portion of golf course. No cultural resources were observed during the pedestrian survey. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route. Testing was completed to a depth of 70 cm and was screened and backfilled, no cultural material was identified during the testing. FEMA concurs with the recommended determination of no effect to historic properties.

According to the USDA Soils Map and the Quality Services Inc. Report, the APE for the proposed portion of water main that is outside of existing ROWs includes Smithland-Kenridge silty clay loams, occasionally flooded, Monona silt loam, 17 to 30 percent slopes, Cass-Wann fine sandy loams, occasionally flooded, Judson silty clay loam, 2 to 6 percent slopes, Ida silt loam, 17 to 30 percent slopes, Monona silt loam, 11 to 17 percent slopes, eroded, Cass-Novina complex, occasionally flooded, Ingewood-Novina complex, occasionally flooded, and Sarpy-Haynie complex, occasionally flooded. While these soil types typically have a medium to high potential for archaeological resources, most are in areas that are prone to frequent flooding, and some are heavily sloped. Historic topographic maps and aerials on https://www.historicaerials.com/viewer show that the Platte River is subject to channel movement. Due to the historic flooding, sloping of some of the soils in the area of new water main to be placed outside of existing rights-of-way, and the historic movement of the river, the proposed Undertaking would not affect intact archaeological resources.

Alternative 3:

Research of the NE SHPO database completed as part of the Historic and Cultural Resources Evaluation of the proposed WWTP APE was conducted by Quality Services, Inc. on May 28, 2020 (see enclosed report titled Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA Environmental & Historic Preservation (EHP) reviewed the report, which contained the following relevant information: There were no identified archaeological sites within the proposed APE and no previous archaeological surveys conducted

within the proposed APE. Four archaeological sites have been recorded within a 1-mile search buffer of the APE and five archaeological surveys have been performed within a 0.5-mile search buffer of the APE.

The 4 miles of new 18-inch diameter water main to transport water to the new facility will begin at 40.97877500, -95.91750000 and end at 41.01107778, -95.88111111. The water main will be bored along the existing road and railroad ROW throughout the City. Due to the original construction of the existing road and railroads, the associated 4 miles of the new water main will not affect any unidentified intact archaeological resources.

From June 12 – 13, 2020, Quality Services, Inc. conducted an archaeological survey of the APE (see attached report titled A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA EHP reviewed the report, which contained the following relevant information: Two archeological sites were located and documented during the inventory within the cultivated fields of the APE, sites 25CC471 and 25CC472. Site 25CC471 consisted of surface isolates of a gray chert flake, a piece of glazed stoneware, and a fragment of aqua glass. Site 25CC472 consisted of a surface isolate of a chert flake. Both sites were recommended as not eligible for the NRHP. FEMA has reviewed the report and concurs with the recommendation that the two sites are not eligible for the National Register of Historic Places

According to the USDA Soils Map and the Quality Services Inc. report, the APE for the proposed WWTP and Access Road consists largely of Marshall silty clay loam, 6 to 11 & 2 to 6 percent slopes, eroded, and Judson silt loam, 2 to 6 percent slopes. While Marshall and Judson soils can be higher potential for archaeological resources, historic aerials show the APE has been previously disturbed by agricultural use. The APE for the proposed Alternative Effluence Conveyance line consists largely of Colo-Nodaway complex, frequently flooded, and is within the historic floodplain and lower probability for any unknown intact cultural resources. The intensive survey conducted by Quality Services, Inc. yielded four isolated finds on the surface and subsurface testing was negative for cultural resources, therefore, FEMA has determined that the undertaking will not have an impact to any unidentified intact archaeological sites.

Tribal Involvement

FEMA is required to consult with Federally Recognized Tribes for FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. To our knowledge the APE for this project is not on tribally owned lands but FEMA recognizes that the tribe may have special knowledge of the area with regards to properties of religious or cultural significance and is requesting your comments with regards to the Undertaking.

Determination of Effect/Request for Comment

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has made a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response with this

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finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa antonia.zawisa@fema.dhs.gov or Audrey Wolfe at audrey.wolfe@fema.dhs.gov.

Sincerely,

ALMA P HUBBARD Digitally signed by ALMA P HUBBARD Date: 2021.01.07 14:52:55 -05'00'

Alma P. Hubbard
Acting Historic Preservation Advisor
DR-4420NE
(202) 709-1956 (FEMA cell)

APH/aw, az

cc: mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov

Enclosures:
Figures 1-2: Alternative 2 & 3 Google Earth Aerial images of the APEs
Figures 3-4: Alternative 2 & 3 USGS Topographic Maps of the APE
Figures 5-6: Alternative 2 & 3 Quality Services Inc. Pictures showing proposed project sites
Quality Services Inc. An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project
Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project, June 8, 2020
A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project, June 23, 2020

Tribal Consultation
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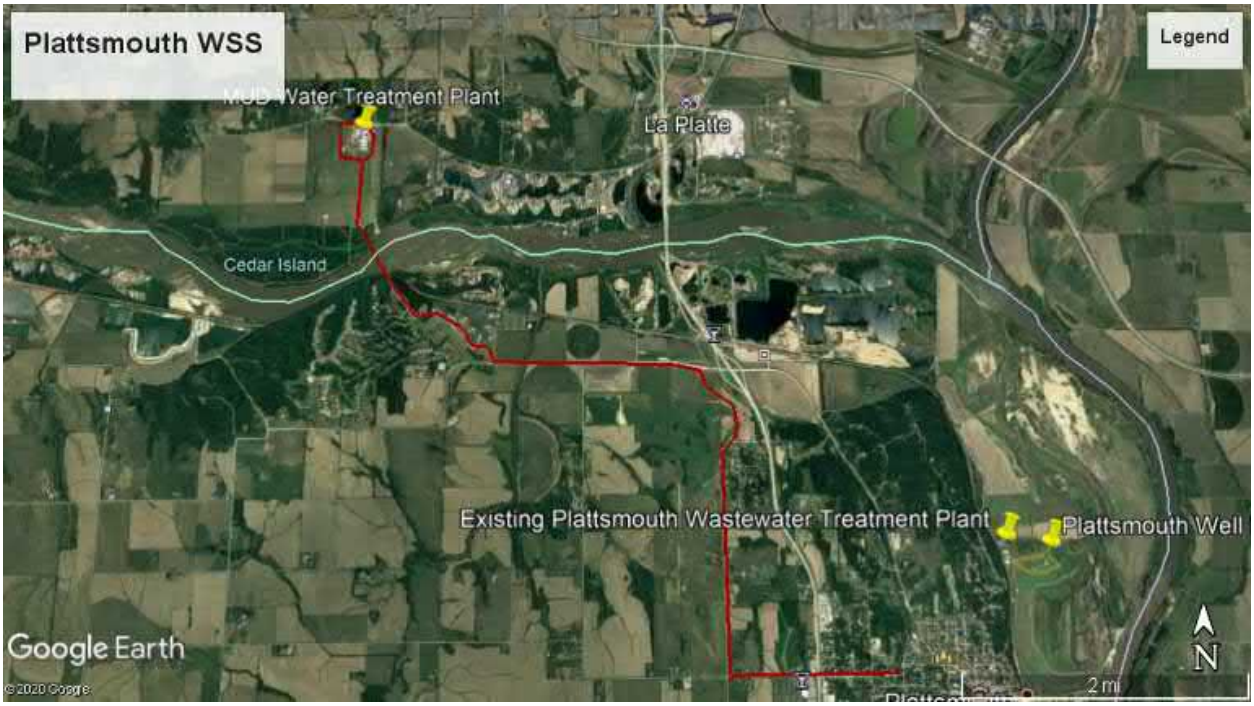

Figure 1: Alternative 2 Google Earth Aerial Image Dated 6/4/2018 showing the APE (in red).

Figure 2: Alternative 3 Google Earth Image Dated 6/4/2018 showing the APE (in red)

Tribal Consultation
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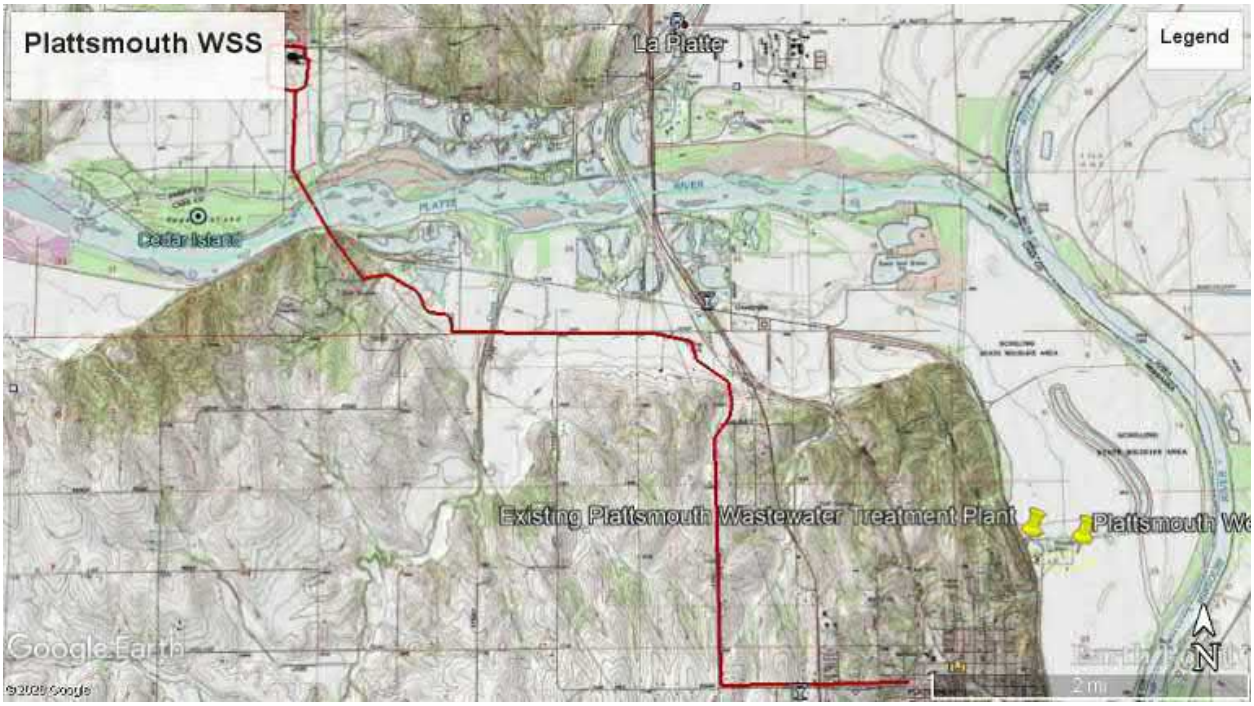

Figure 3: Alternative 2 USGS Topographic Map showing the APE (in red)

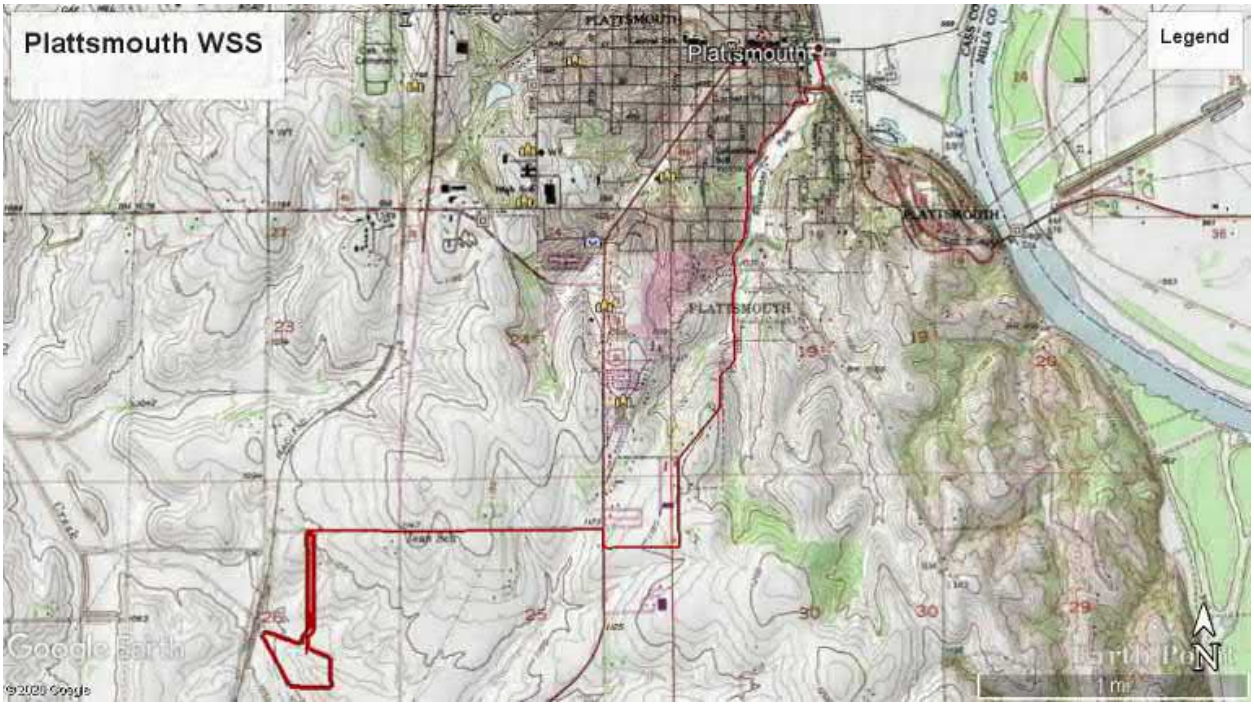

Figure 4: Alternative 3 USGS Topographic showing the APE (in red)

Tribal Consultation
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Figure 5: Alternative 2 photo of the area where new water main will be bored underneath the Platte River. Photo facing North.

Figure 6: Alternative 3 South view of proposed new WSS/WWTP site.

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Federal Emergency Management Agency
Joint Recovery Office
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 7th, 2021

Amy Scott, THPO
335588 E
750 Rd
Perkins, OK 74059

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant **-** 41.025736, -95.882761
Finding: No Historic Properties Affected

Dear Amy Scott:

The Federal Emergency Management Agency (FEMA) provides funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for the Missouri River Flooding from, FEMA-4420-DR-NE, dated March 2019 and continuing, as amended. FEMA, through its Public Assistance Program, proposes to fund the relocation of the Plattsmouth Water Supply System (WSS) (Undertaking) as requested by the City of Plattsmouth (Sub-Recipient). FEMA is initiating Section 106 review for the above referenced property and providing your office with the opportunity to comment on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(e).

Undertaking
Work to be Completed
Due to Nebraska Severe Winter Storm, Straight-line Winds, and Flooding, the existing City of Plattsmouth Water Supply System (WSS) was inundated with floodwaters and debris. This caused severe damage to main treatment and process equipment as well as other structures located on site. In addition, the high floodwaters and ice caused major damage to five of the City's water supply wells and warehouses. Two proposed actions are presented and are being evaluated by FEMA within an Environmental Assessment for National Environmental Policy Act (NEPA) purpose. Alternative 2 is the preferred alternative, however, Alternative 3 is also being evaluated for NEPA purposes and FEMAs Section 106 National Historic Preservation Act compliance review.

Alternative 2 (preferred alternative):
This alternative involves the construction of a new water main to carry potable water from an existing water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth.

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The work associated with this project involves the construction of approximately 7.5 miles of 20-inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road, in Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter water main begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the water main would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2000 feet by jack and bore technologies. The water main construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches Buccaneer Boulevard to the south. The water main will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The water main will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the water main would involve a 70-foot wide work right of way (ROW) throughout the route, in addition to staging areas. Most of the waterline ROW will be located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for most of the work, however, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction. A few trees may need to be removed along the ROW for construction.

The Sub-recipient has requested reimbursement for the Plattsmouth Water Supply System's relocation to the MUD facility, with the associated water main construction in Cass and Sarpy Counties.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River

Tribal Consultation
Exhibit F- 3a

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The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and Nebraska Department of Health and Human Services (NDHHS), as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter water main along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance of approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

The City's five existing wells will continue to be utilized as the source of raw water for Alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States' Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to within five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

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FEMA is required to consult with Federally Recognized Tribes for FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. To our knowledge the APE for this project is not on tribally owned lands but FEMA recognizes that the tribe may have special knowledge of the area with regards to properties of religious or cultural significance and is requesting your comments with regards to the Undertaking.

Determination of Effect/Request for Comment

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has made a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response with this

Tribal Consultation
Exhibit F- 3a

finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa antonia.zawisa@fema.dhs.gov or Audrey Wolfe at audrey.wolfe@fema.dhs.gov.

Sincerely,

ALMA P HUBBARD Digitally signed by ALMA P HUBBARD Date: 2021.01.07 14:54:06 -05'00'

Alma P. Hubbard
Acting Historic Preservation Advisor
DR-4420NE
(202) 709-1956 (FEMA cell)

APH/aw, az

cc: mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov

Enclosures:
Figures 1-2: Alternative 2 & 3 Google Earth Aerial images of the APEs
Figures 3-4: Alternative 2 & 3 USGS Topographic Maps of the APE
Figures 5-6: Alternative 2 & 3 Quality Services Inc. Pictures showing proposed project sites
Quality Services Inc. An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project
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A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project, June 23, 2020

Tribal Consultation
Exhibit F- 3a

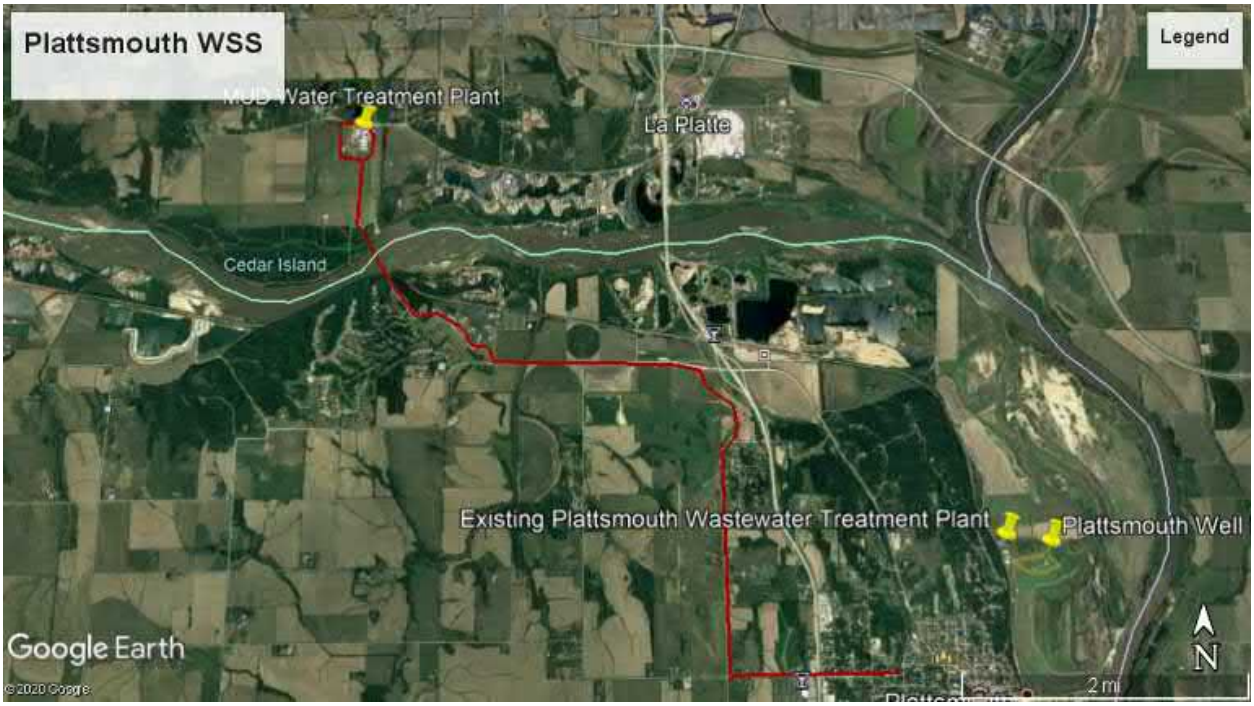

Figure 1: Alternative 2 Google Earth Aerial Image Dated 6/4/2018 showing the APE (in red).

Figure 2: Alternative 3 Google Earth Image Dated 6/4/2018 showing the APE (in red)

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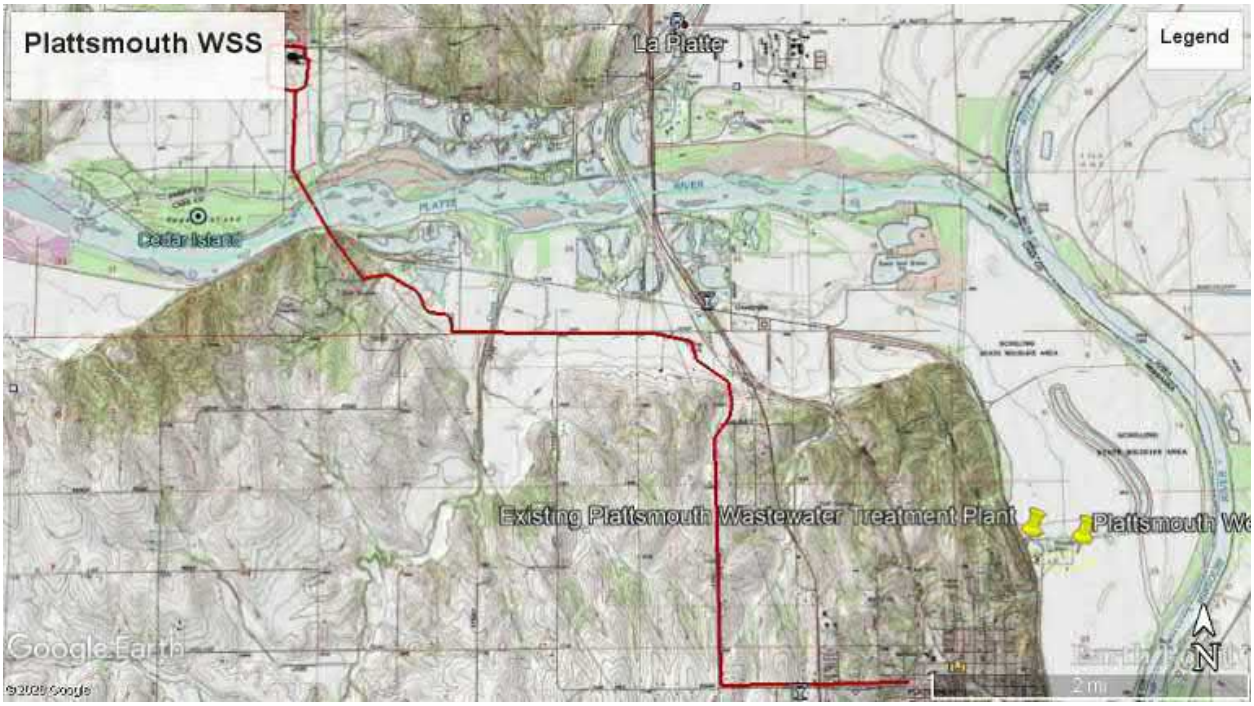

Figure 3: Alternative 2 USGS Topographic Map showing the APE (in red)

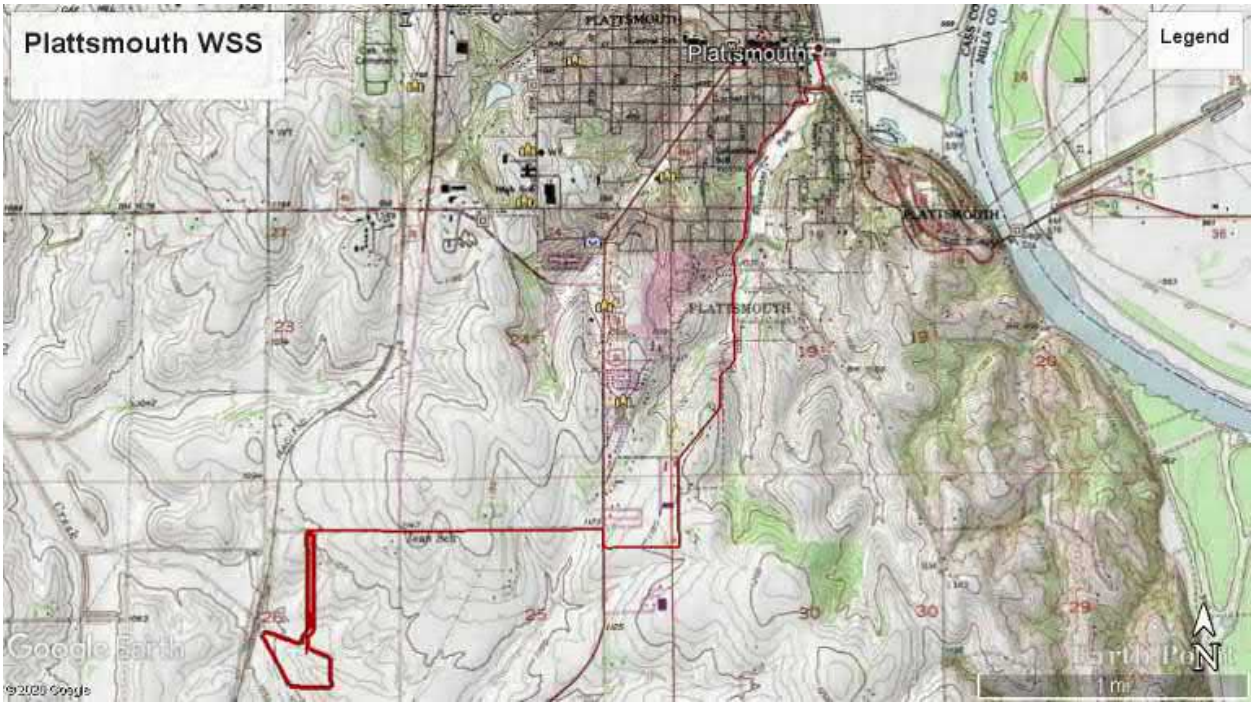

Figure 4: Alternative 3 USGS Topographic showing the APE (in red)

Tribal Consultation
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Figure 5: Alternative 2 photo of the area where new water main will be bored underneath the Platte River. Photo facing North.

Figure 6: Alternative 3 South view of proposed new WSS/WWTP site.

Tribal Consultation
Exhibit F- 3a

Federal Emergency Management Agency
Joint Recovery Office
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 7th, 2021

Thomas Parker, THPO
Omaha Tribe of Nebraska
PO Box 368
Macy, NE 68039

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant - 41.025736, -95.882761
Finding: No Historic Properties Affected

Dear Mr. Parker:

The Federal Emergency Management Agency (FEMA) provides funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for the Missouri River Flooding from, FEMA-4420-DR-NE, dated March 2019 and continuing, as amended. FEMA, through its Public Assistance Program, proposes to fund the relocation of the Plattsmouth Water Supply System (WSS) (Undertaking) as requested by the City of Plattsmouth (Sub-Recipient). FEMA is initiating Section 106 review for the above referenced property and providing your office with the opportunity to comment on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(e).

Undertaking
Work to be Completed
Due to Nebraska Severe Winter Storm, Straight-line Winds, and Flooding, the existing City of Plattsmouth Water Supply System (WSS) was inundated with floodwaters and debris. This caused severe damage to main treatment and process equipment as well as other structures located on site. In addition, the high floodwaters and ice caused major damage to five of the City's water supply wells and warehouses. Two proposed actions are presented and are being evaluated by FEMA within an Environmental Assessment for National Environmental Policy Act (NEPA) purpose. Alternative 2 is the preferred alternative, however, Alternative 3 is also being evaluated for NEPA purposes and FEMAs Section 106 National Historic Preservation Act compliance review.

Alternative 2 (preferred alternative):
This alternative involves the construction of a new water main to carry potable water from an existing water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth.

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The work associated with this project involves the construction of approximately 7.5 miles of 20-inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road, in Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter water main begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the water main would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2000 feet by jack and bore technologies. The water main construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches Buccaneer Boulevard to the south. The water main will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The water main will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the water main would involve a 70-foot wide work right of way (ROW) throughout the route, in addition to staging areas. Most of the waterline ROW will be located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for most of the work, however, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction. A few trees may need to be removed along the ROW for construction.

The Sub-recipient has requested reimbursement for the Plattsmouth Water Supply System's relocation to the MUD facility, with the associated water main construction in Cass and Sarpy Counties.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River

Tribal Consultation
Exhibit F- 3a

(41.025031, -95.816630) will remain in place and wellhead protection measures will be constructed to limit the risks of flood damages.

The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and Nebraska Department of Health and Human Services (NDHHS), as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter water main along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance of approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

The City's five existing wells will continue to be utilized as the source of raw water for Alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States' Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to within five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

The Sub-recipient has requested reimbursement for the relocation of the Plattsmouth Water Supply System in Cass and Sarpy Counties with associated water main construction activities.

Area of Potential Effects (APE)

Alternative 2:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the 8,964 FT of 20 IN diameter water main that will be placed by trenching and boring outside of existing utilities/road/railroad/ rights-of-way, the 30,601 FT of main within existing rights-of-way, and the 30 acres of existing MUD facilities which will facilitate the distribution of water to Plattsmouth.

Alternative 3:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the approximately 25 acres at the proposed new water conveyance sites and the associated 4 miles of new water main being placed along road and railroad rights-of-way.

Identification and Evaluation

Architecture

Alternative 2:

A review of the NPS National Register Interactive Map indicates that the APE for the portion of water main outside of existing ROWs is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The proposed undertaking will not have an effect to historic structures.

Alternative 3:

A review of the NPS National Register Interactive Map indicates that the APE for the new facility is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The beginning of the new water main to be placed by boring is roughly .10 miles away from the Plattsmouth Main Historic District (Property ID 85002585, See Figure 7). The construction activities will be far enough away that vibration damage will not be a concern to the nearby historic district, and therefore, no historic structures will likely be affected by the proposed undertaking.

Archaeology

Alternative 2:

The existing MUD facility can service the City of Plattsmouth, the only additions to the facility would be the addition of a new booster pump, there will be no new ground disturbing activities in regard to the MUD facility. 30,601 FT of watermain will be placed within existing road rights-of-way that have been previously disturbed by the original construction of the roads and the surrounding residential homes, businesses, rail lines, etc. On September 22nd, 2020, Quality Services, Inc. conducted an archaeological survey of the portion of water main outside of existing rights-of-way (see attached report titled 'An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project'). FEMA EHP reviewed the report, which contained the following relevant information: A records search of the project area with an added 1-mile buffer was conducted on August 18th, 2020. There were no previously identified sites within the APE, however, 28 sites were within a 1-mile buffer of the APE. Two of these sites were determined not eligible for the National Register, and the remaining 26 have been unevaluated for eligibility for the National Register of Historic Places. An inventory of approximately 12 acres was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. The Platte River accounts for approximately 1400 FT of the overall project length, with the remaining project area consisting of agricultural lands, wooded areas, riparian areas, and a portion of golf course. No cultural resources were observed during the pedestrian survey. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route. Testing was completed to a depth of 70 cm and was screened and backfilled, no cultural material was identified during the testing. FEMA concurs with the recommended determination of no effect to historic properties.

According to the USDA Soils Map and the Quality Services Inc. Report, the APE for the proposed portion of water main that is outside of existing ROWs includes Smithland-Kenridge silty clay loams, occasionally flooded, Monona silt loam, 17 to 30 percent slopes, Cass-Wann fine sandy loams, occasionally flooded, Judson silty clay loam, 2 to 6 percent slopes, Ida silt loam, 17 to 30 percent slopes, Monona silt loam, 11 to 17 percent slopes, eroded, Cass-Novina complex, occasionally flooded, Ingewood-Novina complex, occasionally flooded, and Sarpy-Haynie complex, occasionally flooded. While these soil types typically have a medium to high potential for archaeological resources, most are in areas that are prone to frequent flooding, and some are heavily sloped. Historic topographic maps and aerials on https://www.historicaerials.com/viewer show that the Platte River is subject to channel movement. Due to the historic flooding, sloping of some of the soils in the area of new water main to be placed outside of existing rights-of-way, and the historic movement of the river, the proposed Undertaking would not affect intact archaeological resources.

Alternative 3:

Research of the NE SHPO database completed as part of the Historic and Cultural Resources Evaluation of the proposed WWTP APE was conducted by Quality Services, Inc. on May 28, 2020 (see enclosed report titled Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA Environmental & Historic Preservation (EHP) reviewed the report, which contained the following relevant information: There were no identified archaeological sites within the proposed APE and no previous archaeological surveys conducted

Tribal Consultation
Exhibit F- 3a

within the proposed APE. Four archaeological sites have been recorded within a 1-mile search buffer of the APE and five archaeological surveys have been performed within a 0.5-mile search buffer of the APE.

The 4 miles of new 18-inch diameter water main to transport water to the new facility will begin at 40.97877500, -95.91750000 and end at 41.01107778, -95.88111111. The water main will be bored along the existing road and railroad ROW throughout the City. Due to the original construction of the existing road and railroads, the associated 4 miles of the new water main will not affect any unidentified intact archaeological resources.

From June 12 – 13, 2020, Quality Services, Inc. conducted an archaeological survey of the APE (see attached report titled A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA EHP reviewed the report, which contained the following relevant information: Two archeological sites were located and documented during the inventory within the cultivated fields of the APE, sites 25CC471 and 25CC472. Site 25CC471 consisted of surface isolates of a gray chert flake, a piece of glazed stoneware, and a fragment of aqua glass. Site 25CC472 consisted of a surface isolate of a chert flake. Both sites were recommended as not eligible for the NRHP. FEMA has reviewed the report and concurs with the recommendation that the two sites are not eligible for the National Register of Historic Places

According to the USDA Soils Map and the Quality Services Inc. report, the APE for the proposed WWTP and Access Road consists largely of Marshall silty clay loam, 6 to 11 & 2 to 6 percent slopes, eroded, and Judson silt loam, 2 to 6 percent slopes. While Marshall and Judson soils can be higher potential for archaeological resources, historic aerials show the APE has been previously disturbed by agricultural use. The APE for the proposed Alternative Effluence Conveyance line consists largely of Colo-Nodaway complex, frequently flooded, and is within the historic floodplain and lower probability for any unknown intact cultural resources. The intensive survey conducted by Quality Services, Inc. yielded four isolated finds on the surface and subsurface testing was negative for cultural resources, therefore, FEMA has determined that the undertaking will not have an impact to any unidentified intact archaeological sites.

Tribal Involvement

FEMA is required to consult with Federally Recognized Tribes for FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. To our knowledge the APE for this project is not on tribally owned lands but FEMA recognizes that the tribe may have special knowledge of the area with regards to properties of religious or cultural significance and is requesting your comments with regards to the Undertaking.

Determination of Effect/Request for Comment

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has made a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response with this

Tribal Consultation
Exhibit F- 3a

finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa antonia.zawisa@fema.dhs.gov or Audrey Wolfe at audrey.wolfe@fema.dhs.gov.

Sincerely,

ALMA P HUBBARD Digitally signed by ALMA P HUBBARD Date: 2021.01.07 14:31:53 -05'00'

Alma P. Hubbard
Acting Historic Preservation Advisor
DR-4420NE
(202) 709-1956 (FEMA cell)

APH/aw, az

cc: mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov

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Tribal Consultation
Exhibit F- 3a

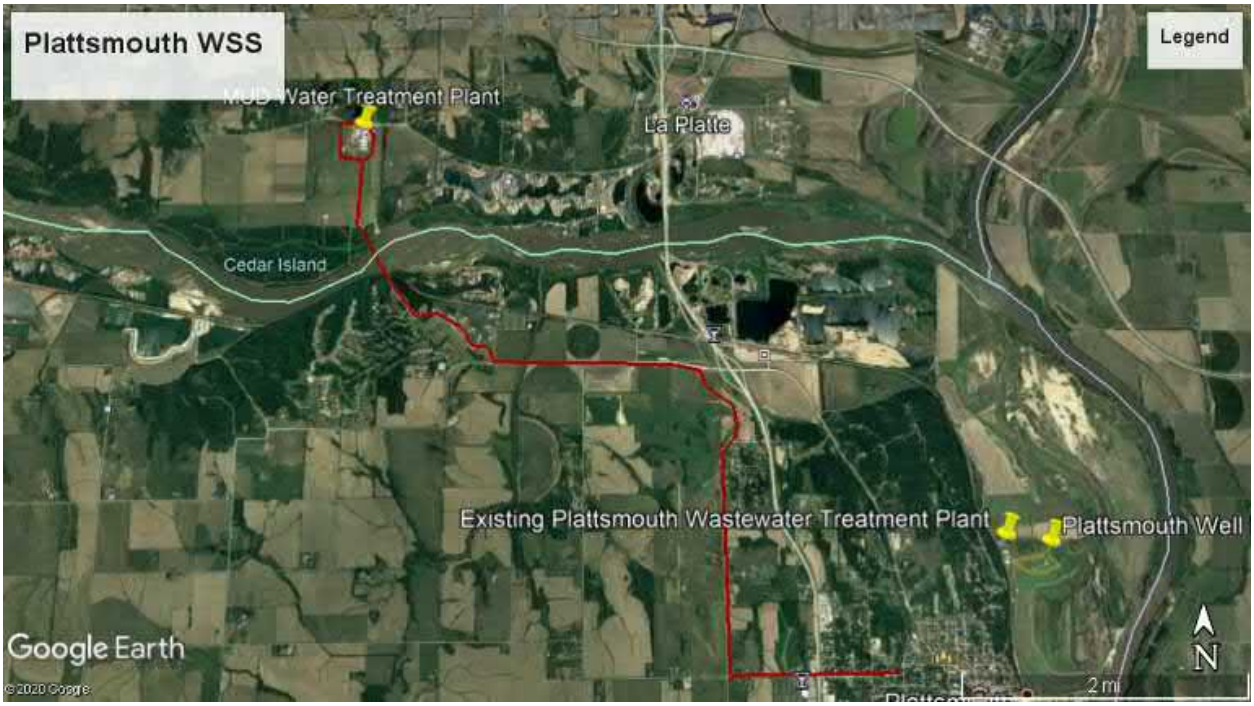
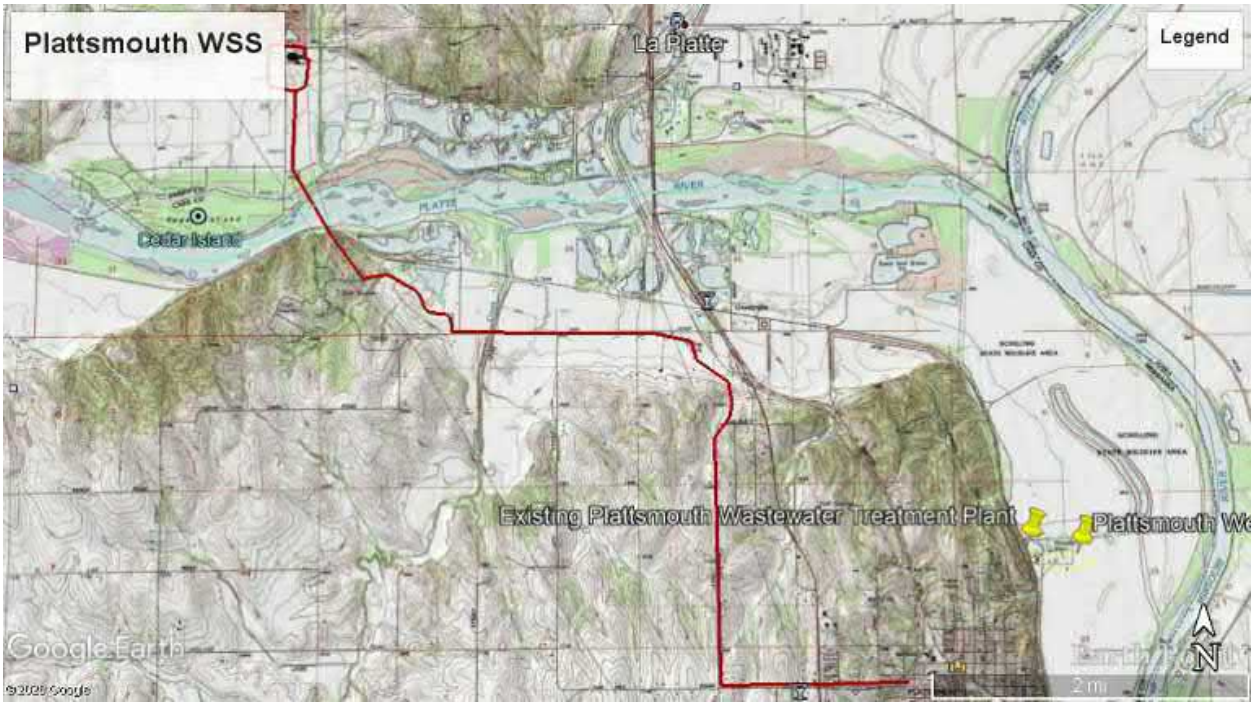


Figure 1: Alternative 2 Google Earth Aerial Image Dated 6/4/2018 showing the APE (in red).

Figure 2: Alternative 3 Google Earth Image Dated 6/4/2018 showing the APE (in red)

Tribal Consultation
Exhibit F- 3a



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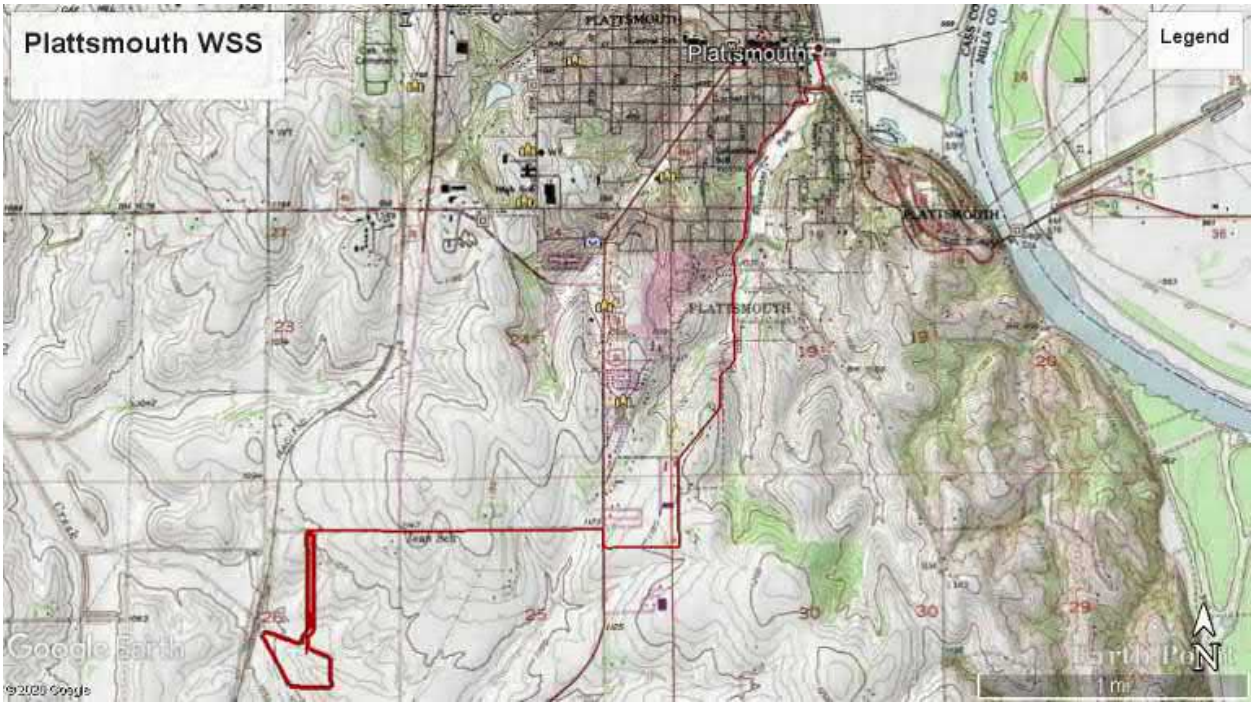

Figure 4: Alternative 3 USGS Topographic showing the APE (in red)

Tribal Consultation
Exhibit F- 3a

Figure 5: Alternative 2 photo of the area where new water main will be bored underneath the Platte River. Photo facing North.

Figure 6: Alternative 3 South view of proposed new WSS/WWTP site.

Tribal Consultation
Exhibit F- 3a

Federal Emergency Management Agency
Joint Recovery Office
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 7th, 2021

Elsie Whitehorn, THPO
Otoe-Missouria Tribe of Indians, Oklahoma
8151 Highway 177
Red Rock, OK

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant **-** 41.025736, -95.882761
Finding: No Historic Properties Affected

Dear Ms. Whitehorn:

The Federal Emergency Management Agency (FEMA) provides funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for the Missouri River Flooding from, FEMA-4420-DR-NE, dated March 2019 and continuing, as amended. FEMA, through its Public Assistance Program, proposes to fund the relocation of the Plattsmouth Water Supply System (WSS) (Undertaking) as requested by the City of Plattsmouth (Sub-Recipient). FEMA is initiating Section 106 review for the above referenced property and providing your office with the opportunity to comment on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(e).

Undertaking
Work to be Completed
Due to Nebraska Severe Winter Storm, Straight-line Winds, and Flooding, the existing City of Plattsmouth Water Supply System (WSS) was inundated with floodwaters and debris. This caused severe damage to main treatment and process equipment as well as other structures located on site. In addition, the high floodwaters and ice caused major damage to five of the City's water supply wells and warehouses. Two proposed actions are presented and are being evaluated by FEMA within an Environmental Assessment for National Environmental Policy Act (NEPA) purpose. Alternative 2 is the preferred alternative, however, Alternative 3 is also being evaluated for NEPA purposes and FEMAs Section 106 National Historic Preservation Act compliance review.

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This alternative involves the construction of a new water main to carry potable water from an existing water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth.

Tribal Consultation
Exhibit F- 3a

The work associated with this project involves the construction of approximately 7.5 miles of 20-inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road, in Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

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The Sub-recipient has requested reimbursement for the Plattsmouth Water Supply System's relocation to the MUD facility, with the associated water main construction in Cass and Sarpy Counties.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River

Tribal Consultation
Exhibit F- 3a

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The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and Nebraska Department of Health and Human Services (NDHHS), as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter water main along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance of approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

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The City's five existing wells will continue to be utilized as the source of raw water for Alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States' Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to within five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

The Sub-recipient has requested reimbursement for the relocation of the Plattsmouth Water Supply System in Cass and Sarpy Counties with associated water main construction activities.

Area of Potential Effects (APE)

Alternative 2:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the 8,964 FT of 20 IN diameter water main that will be placed by trenching and boring outside of existing utilities/road/railroad/ rights-of-way, the 30,601 FT of main within existing rights-of-way, and the 30 acres of existing MUD facilities which will facilitate the distribution of water to Plattsmouth.

Alternative 3:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the approximately 25 acres at the proposed new water conveyance sites and the associated 4 miles of new water main being placed along road and railroad rights-of-way.

Identification and Evaluation

Architecture

Alternative 2:

A review of the NPS National Register Interactive Map indicates that the APE for the portion of water main outside of existing ROWs is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The proposed undertaking will not have an effect to historic structures.

Alternative 3:

A review of the NPS National Register Interactive Map indicates that the APE for the new facility is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The beginning of the new water main to be placed by boring is roughly .10 miles away from the Plattsmouth Main Historic District (Property ID 85002585, See Figure 7). The construction activities will be far enough away that vibration damage will not be a concern to the nearby historic district, and therefore, no historic structures will likely be affected by the proposed undertaking.

Archaeology

Alternative 2:

The existing MUD facility can service the City of Plattsmouth, the only additions to the facility would be the addition of a new booster pump, there will be no new ground disturbing activities in regard to the MUD facility. 30,601 FT of watermain will be placed within existing road rights-of-way that have been previously disturbed by the original construction of the roads and the surrounding residential homes, businesses, rail lines, etc. On September 22nd, 2020, Quality Services, Inc. conducted an archaeological survey of the portion of water main outside of existing rights-of-way (see attached report titled 'An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project'). FEMA EHP reviewed the report, which contained the following relevant information: A records search of the project area with an added 1-mile buffer was conducted on August 18th, 2020. There were no previously identified sites within the APE, however, 28 sites were within a 1-mile buffer of the APE. Two of these sites were determined not eligible for the National Register, and the remaining 26 have been unevaluated for eligibility for the National Register of Historic Places. An inventory of approximately 12 acres was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. The Platte River accounts for approximately 1400 FT of the overall project length, with the remaining project area consisting of agricultural lands, wooded areas, riparian areas, and a portion of golf course. No cultural resources were observed during the pedestrian survey. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route. Testing was completed to a depth of 70 cm and was screened and backfilled, no cultural material was identified during the testing. FEMA concurs with the recommended determination of no effect to historic properties.

According to the USDA Soils Map and the Quality Services Inc. Report, the APE for the proposed portion of water main that is outside of existing ROWs includes Smithland-Kenridge silty clay loams, occasionally flooded, Monona silt loam, 17 to 30 percent slopes, Cass-Wann fine sandy loams, occasionally flooded, Judson silty clay loam, 2 to 6 percent slopes, Ida silt loam, 17 to 30 percent slopes, Monona silt loam, 11 to 17 percent slopes, eroded, Cass-Novina complex, occasionally flooded, Ingewood-Novina complex, occasionally flooded, and Sarpy-Haynie complex, occasionally flooded. While these soil types typically have a medium to high potential for archaeological resources, most are in areas that are prone to frequent flooding, and some are heavily sloped. Historic topographic maps and aerials on https://www.historicaerials.com/viewer show that the Platte River is subject to channel movement. Due to the historic flooding, sloping of some of the soils in the area of new water main to be placed outside of existing rights-of-way, and the historic movement of the river, the proposed Undertaking would not affect intact archaeological resources.

Alternative 3:

Research of the NE SHPO database completed as part of the Historic and Cultural Resources Evaluation of the proposed WWTP APE was conducted by Quality Services, Inc. on May 28, 2020 (see enclosed report titled Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA Environmental & Historic Preservation (EHP) reviewed the report, which contained the following relevant information: There were no identified archaeological sites within the proposed APE and no previous archaeological surveys conducted

within the proposed APE. Four archaeological sites have been recorded within a 1-mile search buffer of the APE and five archaeological surveys have been performed within a 0.5-mile search buffer of the APE.

The 4 miles of new 18-inch diameter water main to transport water to the new facility will begin at 40.97877500, -95.91750000 and end at 41.01107778, -95.88111111. The water main will be bored along the existing road and railroad ROW throughout the City. Due to the original construction of the existing road and railroads, the associated 4 miles of the new water main will not affect any unidentified intact archaeological resources.

From June 12 – 13, 2020, Quality Services, Inc. conducted an archaeological survey of the APE (see attached report titled A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA EHP reviewed the report, which contained the following relevant information: Two archeological sites were located and documented during the inventory within the cultivated fields of the APE, sites 25CC471 and 25CC472. Site 25CC471 consisted of surface isolates of a gray chert flake, a piece of glazed stoneware, and a fragment of aqua glass. Site 25CC472 consisted of a surface isolate of a chert flake. Both sites were recommended as not eligible for the NRHP. FEMA has reviewed the report and concurs with the recommendation that the two sites are not eligible for the National Register of Historic Places

According to the USDA Soils Map and the Quality Services Inc. report, the APE for the proposed WWTP and Access Road consists largely of Marshall silty clay loam, 6 to 11 & 2 to 6 percent slopes, eroded, and Judson silt loam, 2 to 6 percent slopes. While Marshall and Judson soils can be higher potential for archaeological resources, historic aerials show the APE has been previously disturbed by agricultural use. The APE for the proposed Alternative Effluence Conveyance line consists largely of Colo-Nodaway complex, frequently flooded, and is within the historic floodplain and lower probability for any unknown intact cultural resources. The intensive survey conducted by Quality Services, Inc. yielded four isolated finds on the surface and subsurface testing was negative for cultural resources, therefore, FEMA has determined that the undertaking will not have an impact to any unidentified intact archaeological sites.

Tribal Involvement

FEMA is required to consult with Federally Recognized Tribes for FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. To our knowledge the APE for this project is not on tribally owned lands but FEMA recognizes that the tribe may have special knowledge of the area with regards to properties of religious or cultural significance and is requesting your comments with regards to the Undertaking.

Determination of Effect/Request for Comment

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has made a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response with this

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finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa antonia.zawisa@fema.dhs.gov or Audrey Wolfe at audrey.wolfe@fema.dhs.gov.

Sincerely,

ALMA P HUBBARD Digitally signed by ALMA P HUBBARD Date: 2021.01.07 14:33:30 -05'00'

Alma P. Hubbard
Acting Historic Preservation Advisor
DR-4420NE
(202) 709-1956 (FEMA cell)

APH/aw, az

cc: mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov

Enclosures:
Figures 1-2: Alternative 2 & 3 Google Earth Aerial images of the APEs
Figures 3-4: Alternative 2 & 3 USGS Topographic Maps of the APE
Figures 5-6: Alternative 2 & 3 Quality Services Inc. Pictures showing proposed project sites
Quality Services Inc. An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project
Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project, June 8, 2020
A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project, June 23, 2020

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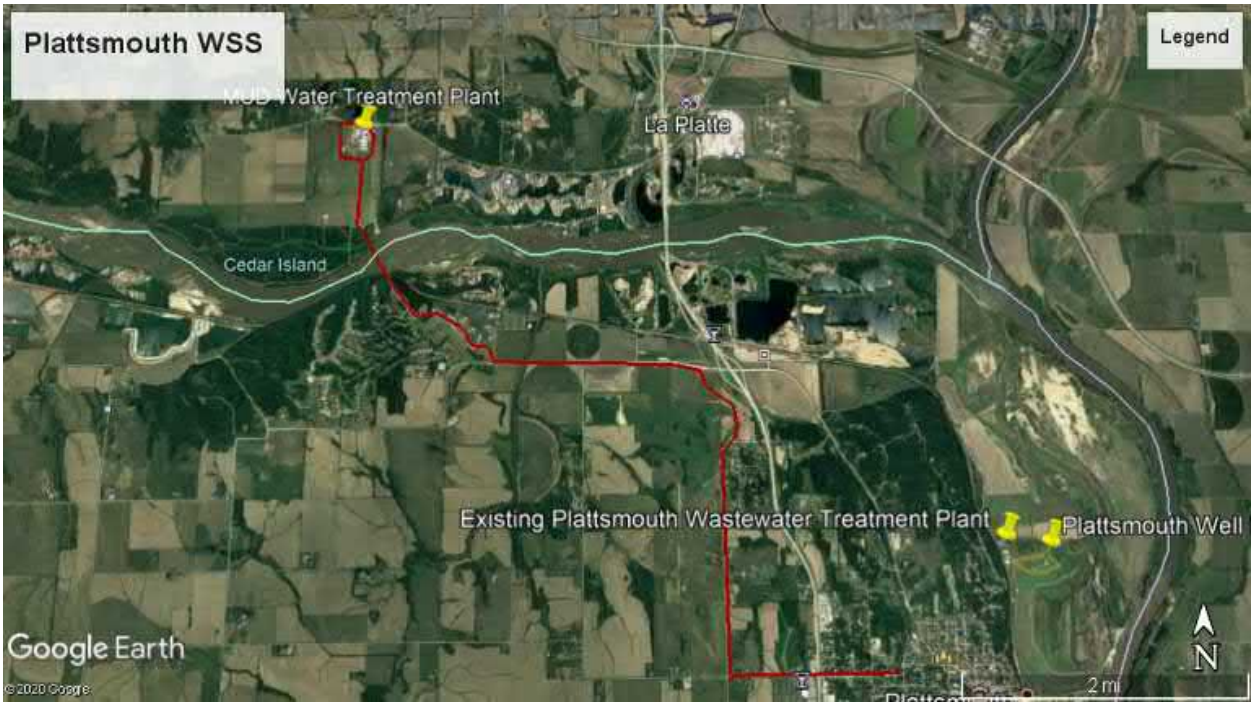

Figure 1: Alternative 2 Google Earth Aerial Image Dated 6/4/2018 showing the APE (in red).

Figure 2: Alternative 3 Google Earth Image Dated 6/4/2018 showing the APE (in red)

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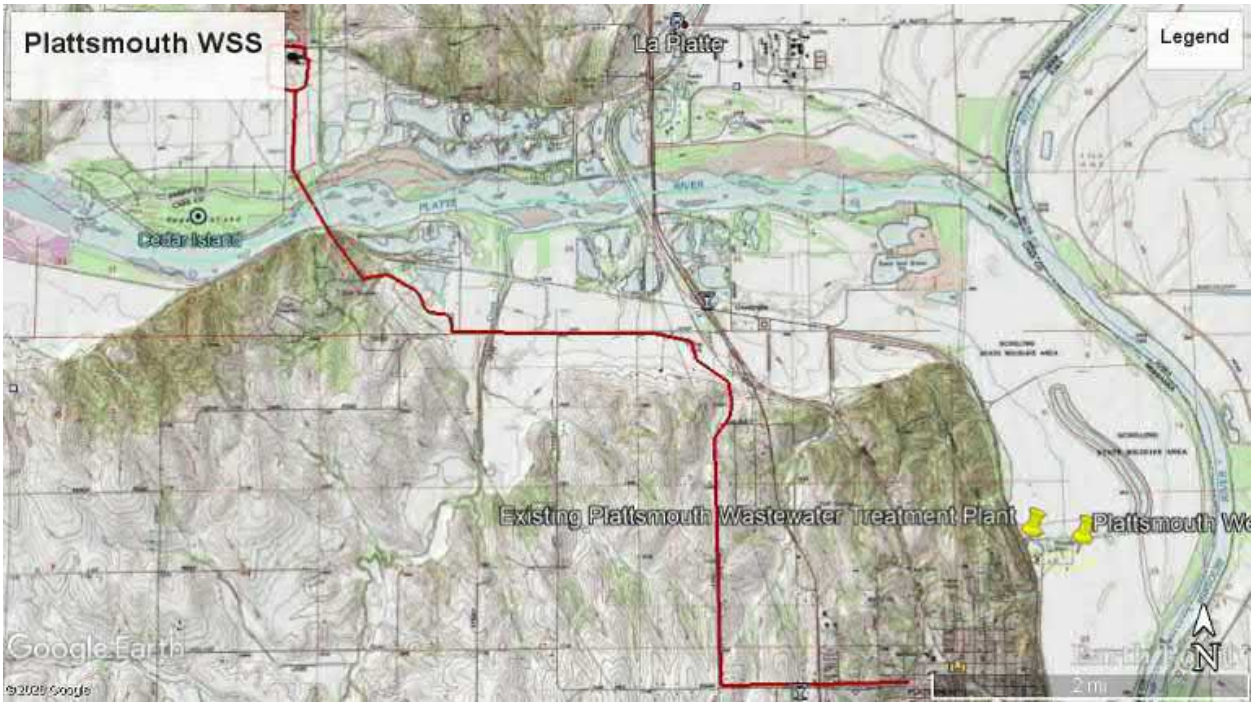

Figure 3: Alternative 2 USGS Topographic Map showing the APE (in red)

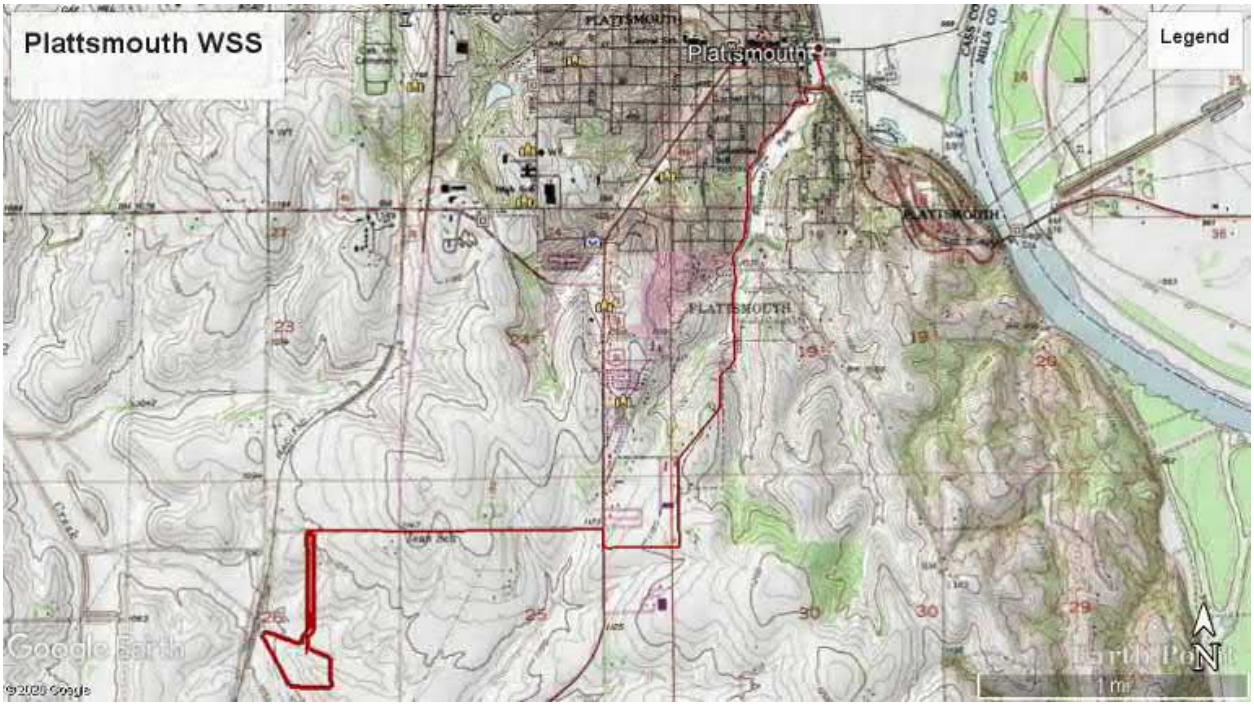

Figure 4: Alternative 3 USGS Topographic showing the APE (in red)

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Figure 5: Alternative 2 photo of the area where new water main will be bored underneath the Platte River. Photo facing North.

Figure 6: Alternative 3 South view of proposed new WSS/WWTP site.

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Federal Emergency Management Agency
Joint Recovery Office
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 7th, 2021

Staci Hesler, THPO
PO Box 288
Niobrara, NE 68760

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant - 41.025736, -95.882761
Finding: No Historic Properties Affected

Dear Staci Hesler:

The Federal Emergency Management Agency (FEMA) provides funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for the Missouri River Flooding from, FEMA-4420-DR-NE, dated March 2019 and continuing, as amended. FEMA, through its Public Assistance Program, proposes to fund the relocation of the Plattsmouth Water Supply System (WSS) (Undertaking) as requested by the City of Plattsmouth (Sub-Recipient). FEMA is initiating Section 106 review for the above referenced property and providing your office with the opportunity to comment on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(e).

Undertaking
Work to be Completed
Due to Nebraska Severe Winter Storm, Straight-line Winds, and Flooding, the existing City of Plattsmouth Water Supply System (WSS) was inundated with floodwaters and debris. This caused severe damage to main treatment and process equipment as well as other structures located on site. In addition, the high floodwaters and ice caused major damage to five of the City's water supply wells and warehouses. Two proposed actions are presented and are being evaluated by FEMA within an Environmental Assessment for National Environmental Policy Act (NEPA) purpose. Alternative 2 is the preferred alternative, however, Alternative 3 is also being evaluated for NEPA purposes and FEMAs Section 106 National Historic Preservation Act compliance review.

Alternative 2 (preferred alternative):
This alternative involves the construction of a new water main to carry potable water from an existing water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth.
The work associated with this project involves the construction of approximately 7.5 miles of 20-

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inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road, in Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter water main begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the water main would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2000 feet by jack and bore technologies. The water main construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches Buccaneer Boulevard to the south. The water main will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The water main will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the water main would involve a 70-foot wide work right of way (ROW) throughout the route, in addition to staging areas. Most of the waterline ROW will be located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for most of the work, however, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction. A few trees may need to be removed along the ROW for construction.

The Sub-recipient has requested reimbursement for the Plattsmouth Water Supply System's relocation to the MUD facility, with the associated water main construction in Cass and Sarpy Counties.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River (41.025031, -95.816630) will remain in place and wellhead protection measures will be

constructed to limit the risks of flood damages.

The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and Nebraska Department of Health and Human Services (NDHHS), as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter water main along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance of approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

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Alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States' Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to within five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

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Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the 8,964 FT of 20 IN diameter water main that will be placed by trenching and boring outside of existing utilities/road/railroad/ rights-of-way, the 30,601 FT of main within existing rights-of-way, and the 30 acres of existing MUD facilities which will facilitate the distribution of water to Plattsmouth.

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Identification and Evaluation

Architecture

Alternative 2:

A review of the NPS National Register Interactive Map indicates that the APE for the portion of water main outside of existing ROWs is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The proposed undertaking will not have an effect to historic structures.

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The existing MUD facility can service the City of Plattsmouth, the only additions to the facility would be the addition of a new booster pump, there will be no new ground disturbing activities in regard to the MUD facility. 30,601 FT of watermain will be placed within existing road rights-of-way that have been previously disturbed by the original construction of the roads and the surrounding residential homes, businesses, rail lines, etc. On September 22nd, 2020, Quality Services, Inc. conducted an archaeological survey of the portion of water main outside of existing rights-of-way (see attached report titled 'An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project'). FEMA EHP reviewed the report, which contained the following relevant information: A records search of the project area with an added 1-mile buffer was conducted on August 18th, 2020. There were no previously identified sites within the APE, however, 28 sites were within a 1-mile buffer of the APE. Two of these sites were determined not eligible for the National Register, and the remaining 26 have been unevaluated for eligibility for the National Register of Historic Places. An inventory of approximately 12 acres was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. The Platte River accounts for approximately 1400 FT of the overall project length, with the remaining project area consisting of agricultural lands, wooded areas, riparian areas, and a portion of golf course. No cultural resources were observed during the pedestrian survey. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route. Testing was completed to a depth of 70 cm and was screened and backfilled, no cultural material was identified during the testing. FEMA concurs with the recommended determination of no effect to historic properties.

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Alternative 3:

Research of the NE SHPO database completed as part of the Historic and Cultural Resources Evaluation of the proposed WWTP APE was conducted by Quality Services, Inc. on May 28, 2020 (see enclosed report titled Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA Environmental & Historic Preservation (EHP) reviewed the report, which contained the following relevant information: There were no identified archaeological sites within the proposed APE and no previous archaeological surveys conducted within the proposed APE. Four archaeological sites have been recorded within a 1-mile search

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buffer of the APE and five archaeological surveys have been performed within a 0.5-mile search buffer of the APE.

The 4 miles of new 18-inch diameter water main to transport water to the new facility will begin at 40.97877500, -95.91750000 and end at 41.01107778, -95.88111111. The water main will be bored along the existing road and railroad ROW throughout the City. Due to the original construction of the existing road and railroads, the associated 4 miles of the new water main will not affect any unidentified intact archaeological resources.

From June 12 – 13, 2020, Quality Services, Inc. conducted an archaeological survey of the APE (see attached report titled A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA EHP reviewed the report, which contained the following relevant information: Two archeological sites were located and documented during the inventory within the cultivated fields of the APE, sites 25CC471 and 25CC472. Site 25CC471 consisted of surface isolates of a gray chert flake, a piece of glazed stoneware, and a fragment of aqua glass. Site 25CC472 consisted of a surface isolate of a chert flake. Both sites were recommended as not eligible for the NRHP. FEMA has reviewed the report and concurs with the recommendation that the two sites are not eligible for the National Register of Historic Places

According to the USDA Soils Map and the Quality Services Inc. report, the APE for the proposed WWTP and Access Road consists largely of Marshall silty clay loam, 6 to 11 & 2 to 6 percent slopes, eroded, and Judson silt loam, 2 to 6 percent slopes. While Marshall and Judson soils can be higher potential for archaeological resources, historic aerials show the APE has been previously disturbed by agricultural use. The APE for the proposed Alternative Effluence Conveyance line consists largely of Colo-Nodaway complex, frequently flooded, and is within the historic floodplain and lower probability for any unknown intact cultural resources. The intensive survey conducted by Quality Services, Inc. yielded four isolated finds on the surface and subsurface testing was negative for cultural resources, therefore, FEMA has determined that the undertaking will not have an impact to any unidentified intact archaeological sites.

Tribal Involvement

FEMA is required to consult with Federally Recognized Tribes for FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. To our knowledge the APE for this project is not on tribally owned lands but FEMA recognizes that the tribe may have special knowledge of the area with regards to properties of religious or cultural significance and is requesting your comments with regards to the Undertaking.

Determination of Effect/Request for Comment

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has made a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response with this finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa antonia.zawisa@fema.dhs.gov or Audrey Wolfe at audrey.wolfe@fema.dhs.gov.

Tribal Consultation
Exhibit F- 3a

Sincerely,

ALMA P HUBBARD Digitally signed by ALMA P HUBBARD Date: 2021.01.07 14:55:24 -05'00'

Alma P. Hubbard
Acting Historic Preservation Advisor
DR-4420NE
(202) 709-1956 (FEMA cell)

APH/aw, az

cc: mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov

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Quality Services Inc. An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project
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A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project, June 23, 2020

Tribal Consultation
Exhibit F- 3a

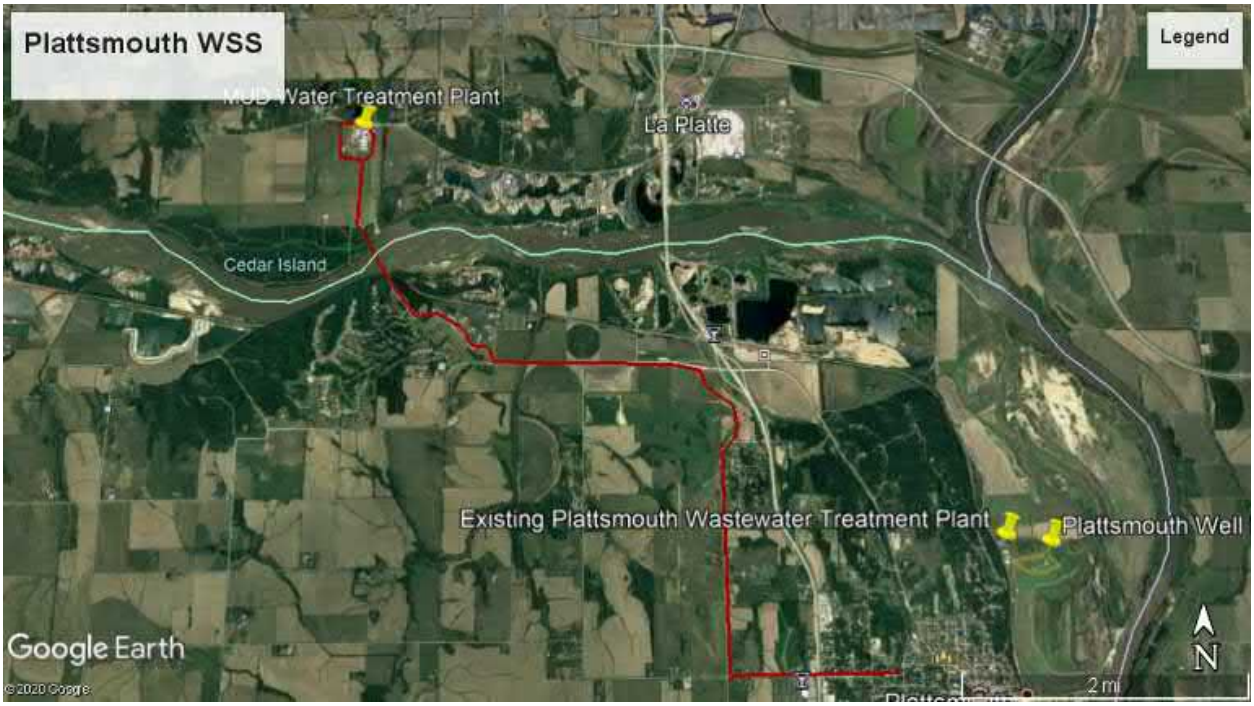

Figure 1: Alternative 2 Google Earth Aerial Image Dated 6/4/2018 showing the APE (in red).

Figure 2: Alternative 3 Google Earth Image Dated 6/4/2018 showing the APE (in red)

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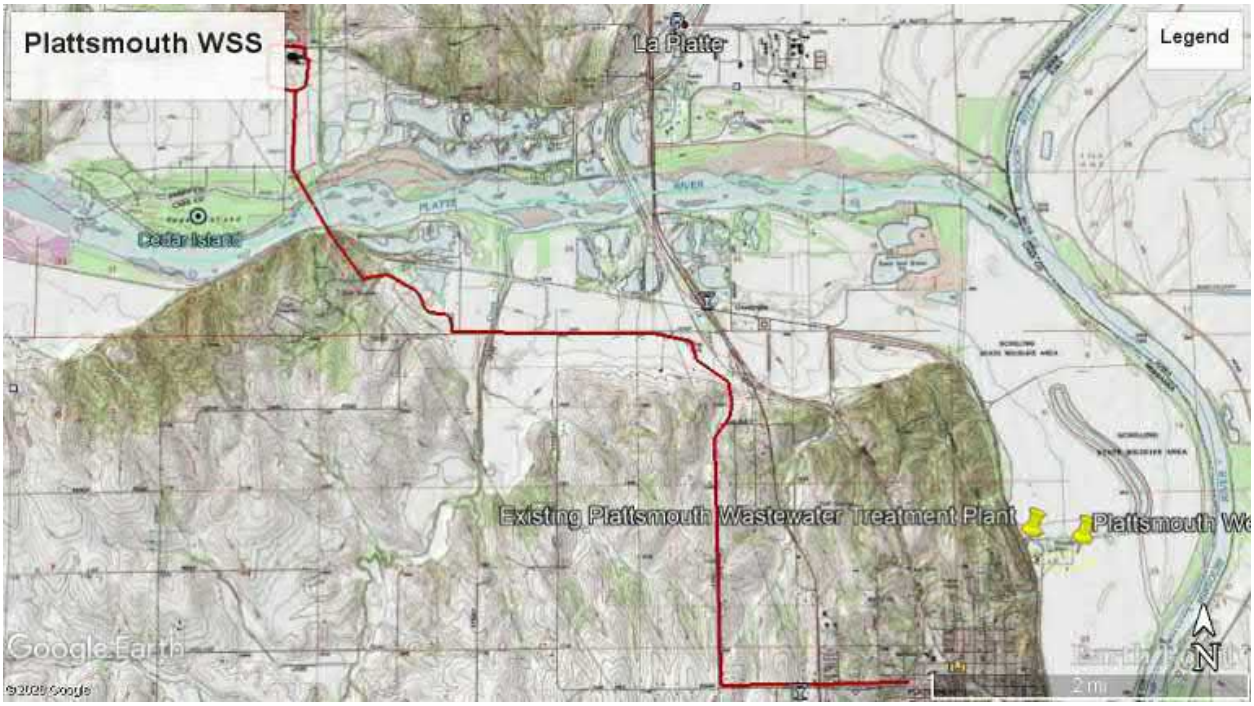

Figure 3: Alternative 2 USGS Topographic Map showing the APE (in red)

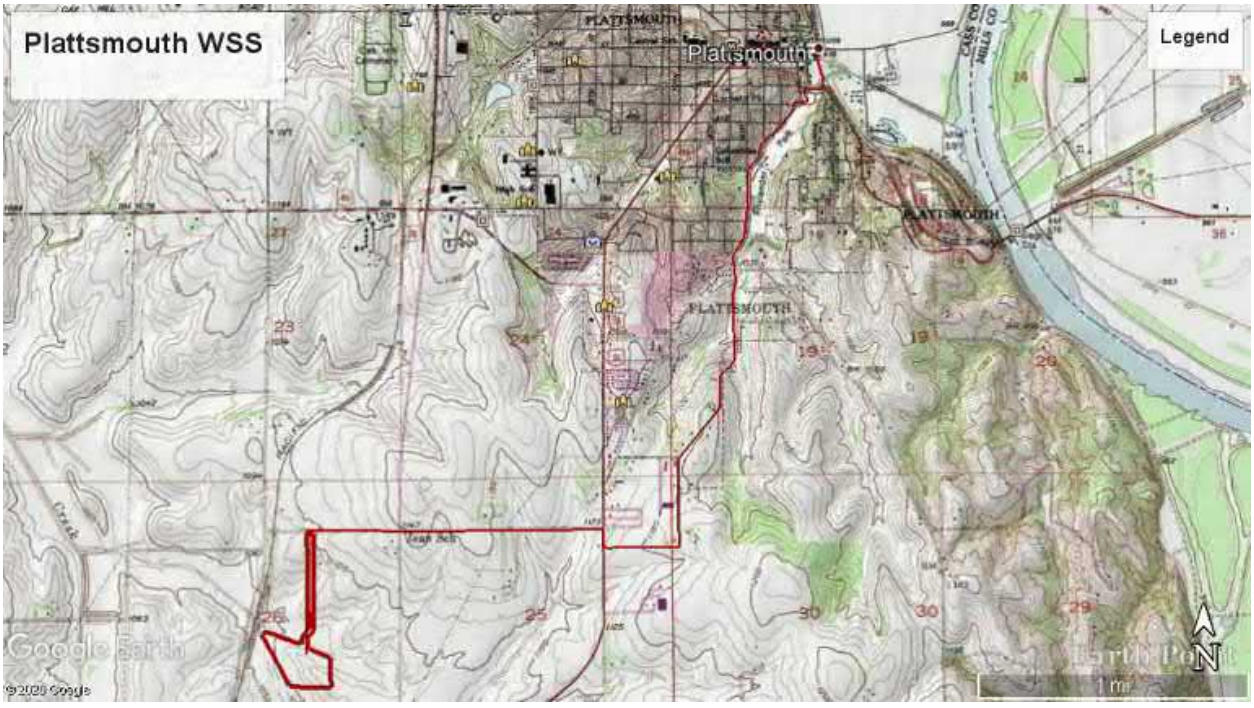

Figure 4: Alternative 3 USGS Topographic showing the APE (in red)

Tribal Consultation
Exhibit F- 3a

Figure 5: Alternative 2 photo of the area where new water main will be bored underneath the Platte River. Photo facing North.

Figure 6: Alternative 3 South view of proposed new WSS/WWTP site.

Tribal Consultation
Exhibit F- 3a

Federal Emergency Management Agency
Joint Recovery Office
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 7th, 2021

Tiauna Carnes, THPO
305 N. Main St.
Reserve, KS 66434

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant - 41.025736, -95.882761
Finding: No Historic Properties Affected

Dear Tiauna Carnes:

The Federal Emergency Management Agency (FEMA) provides funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for the Missouri River Flooding from, FEMA-4420-DR-NE, dated March 2019 and continuing, as amended. FEMA, through its Public Assistance Program, proposes to fund the relocation of the Plattsmouth Water Supply System (WSS) (Undertaking) as requested by the City of Plattsmouth (Sub-Recipient). FEMA is initiating Section 106 review for the above referenced property and providing your office with the opportunity to comment on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(e).

Undertaking
Work to be Completed
Due to Nebraska Severe Winter Storm, Straight-line Winds, and Flooding, the existing City of Plattsmouth Water Supply System (WSS) was inundated with floodwaters and debris. This caused severe damage to main treatment and process equipment as well as other structures located on site. In addition, the high floodwaters and ice caused major damage to five of the City's water supply wells and warehouses. Two proposed actions are presented and are being evaluated by FEMA within an Environmental Assessment for National Environmental Policy Act (NEPA) purpose. Alternative 2 is the preferred alternative, however, Alternative 3 is also being evaluated for NEPA purposes and FEMAs Section 106 National Historic Preservation Act compliance review.

Alternative 2 (preferred alternative):
This alternative involves the construction of a new water main to carry potable water from an existing water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth.
The work associated with this project involves the construction of approximately 7.5 miles of 20-

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inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road, in Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter water main begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the water main would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2000 feet by jack and bore technologies. The water main construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches Buccaneer Boulevard to the south. The water main will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The water main will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the water main would involve a 70-foot wide work right of way (ROW) throughout the route, in addition to staging areas. Most of the waterline ROW will be located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for most of the work, however, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction. A few trees may need to be removed along the ROW for construction.

The Sub-recipient has requested reimbursement for the Plattsmouth Water Supply System's relocation to the MUD facility, with the associated water main construction in Cass and Sarpy Counties.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River (41.025031, -95.816630) will remain in place and wellhead protection measures will be

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constructed to limit the risks of flood damages.

The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and Nebraska Department of Health and Human Services (NDHHS), as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter water main along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance of approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

The City's five existing wells will continue to be utilized as the source of raw water for

Alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States' Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to within five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

The Sub-recipient has requested reimbursement for the relocation of the Plattsmouth Water Supply System in Cass and Sarpy Counties with associated water main construction activities.

Area of Potential Effects (APE)

Alternative 2:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the 8,964 FT of 20 IN diameter water main that will be placed by trenching and boring outside of existing utilities/road/railroad/ rights-of-way, the 30,601 FT of main within existing rights-of-way, and the 30 acres of existing MUD facilities which will facilitate the distribution of water to Plattsmouth.

Alternative 3:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the approximately 25 acres at the proposed new water conveyance sites and the associated 4 miles of new water main being placed along road and railroad rights-of-way.

Identification and Evaluation

Architecture

Alternative 2:

A review of the NPS National Register Interactive Map indicates that the APE for the portion of water main outside of existing ROWs is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The proposed undertaking will not have an effect to historic structures.

Alternative 3:

A review of the NPS National Register Interactive Map indicates that the APE for the new facility is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The beginning of the new water main to be placed by boring is roughly .10 miles away from the Plattsmouth Main Historic District (Property ID 85002585, See Figure 7). The construction activities will be far enough away that vibration damage will not be a concern to the nearby historic district, and therefore, no historic structures will likely be affected by the proposed undertaking.

Archaeology

Alternative 2:

The existing MUD facility can service the City of Plattsmouth, the only additions to the facility would be the addition of a new booster pump, there will be no new ground disturbing activities in regard to the MUD facility. 30,601 FT of watermain will be placed within existing road rights-of-way that have been previously disturbed by the original construction of the roads and the surrounding residential homes, businesses, rail lines, etc. On September 22nd, 2020, Quality Services, Inc. conducted an archaeological survey of the portion of water main outside of existing rights-of-way (see attached report titled 'An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project'). FEMA EHP reviewed the report, which contained the following relevant information: A records search of the project area with an added 1-mile buffer was conducted on August 18th, 2020. There were no previously identified sites within the APE, however, 28 sites were within a 1-mile buffer of the APE. Two of these sites were determined not eligible for the National Register, and the remaining 26 have been unevaluated for eligibility for the National Register of Historic Places. An inventory of approximately 12 acres was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. The Platte River accounts for approximately 1400 FT of the overall project length, with the remaining project area consisting of agricultural lands, wooded areas, riparian areas, and a portion of golf course. No cultural resources were observed during the pedestrian survey. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route. Testing was completed to a depth of 70 cm and was screened and backfilled, no cultural material was identified during the testing. FEMA concurs with the recommended determination of no effect to historic properties.

According to the USDA Soils Map and the Quality Services Inc. Report, the APE for the proposed portion of water main that is outside of existing ROWs includes Smithland-Kenridge silty clay loams, occasionally flooded, Monona silt loam, 17 to 30 percent slopes, Cass-Wann fine sandy loams, occasionally flooded, Judson silty clay loam, 2 to 6 percent slopes, Ida silt loam, 17 to 30 percent slopes, Monona silt loam, 11 to 17 percent slopes, eroded, Cass-Novina complex, occasionally flooded, Ingewood-Novina complex, occasionally flooded, and Sarpy-Haynie complex, occasionally flooded. While these soil types typically have a medium to high potential for archaeological resources, most are in areas that are prone to frequent flooding, and some are heavily sloped. Historic topographic maps and aerials on https://www.historicaerials.com/viewer show that the Platte River is subject to channel movement. Due to the historic flooding, sloping of some of the soils in the area of new water main to be placed outside of existing rights-of-way, and the historic movement of the river, the proposed Undertaking would not affect intact archaeological resources.

Alternative 3:

Research of the NE SHPO database completed as part of the Historic and Cultural Resources Evaluation of the proposed WWTP APE was conducted by Quality Services, Inc. on May 28, 2020 (see enclosed report titled Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA Environmental & Historic Preservation (EHP) reviewed the report, which contained the following relevant information: There were no identified archaeological sites within the proposed APE and no previous archaeological surveys conducted within the proposed APE. Four archaeological sites have been recorded within a 1-mile search

buffer of the APE and five archaeological surveys have been performed within a 0.5-mile search buffer of the APE.

The 4 miles of new 18-inch diameter water main to transport water to the new facility will begin at 40.97877500, -95.91750000 and end at 41.01107778, -95.88111111. The water main will be bored along the existing road and railroad ROW throughout the City. Due to the original construction of the existing road and railroads, the associated 4 miles of the new water main will not affect any unidentified intact archaeological resources.

From June 12 – 13, 2020, Quality Services, Inc. conducted an archaeological survey of the APE (see attached report titled A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA EHP reviewed the report, which contained the following relevant information: Two archeological sites were located and documented during the inventory within the cultivated fields of the APE, sites 25CC471 and 25CC472. Site 25CC471 consisted of surface isolates of a gray chert flake, a piece of glazed stoneware, and a fragment of aqua glass. Site 25CC472 consisted of a surface isolate of a chert flake. Both sites were recommended as not eligible for the NRHP. FEMA has reviewed the report and concurs with the recommendation that the two sites are not eligible for the National Register of Historic Places

According to the USDA Soils Map and the Quality Services Inc. report, the APE for the proposed WWTP and Access Road consists largely of Marshall silty clay loam, 6 to 11 & 2 to 6 percent slopes, eroded, and Judson silt loam, 2 to 6 percent slopes. While Marshall and Judson soils can be higher potential for archaeological resources, historic aerials show the APE has been previously disturbed by agricultural use. The APE for the proposed Alternative Effluence Conveyance line consists largely of Colo-Nodaway complex, frequently flooded, and is within the historic floodplain and lower probability for any unknown intact cultural resources. The intensive survey conducted by Quality Services, Inc. yielded four isolated finds on the surface and subsurface testing was negative for cultural resources, therefore, FEMA has determined that the undertaking will not have an impact to any unidentified intact archaeological sites.

Tribal Involvement

FEMA is required to consult with Federally Recognized Tribes for FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. To our knowledge the APE for this project is not on tribally owned lands but FEMA recognizes that the tribe may have special knowledge of the area with regards to properties of religious or cultural significance and is requesting your comments with regards to the Undertaking.

Determination of Effect/Request for Comment

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has made a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response with this finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa antonia.zawisa@fema.dhs.gov or Audrey Wolfe at audrey.wolfe@fema.dhs.gov.

Tribal Consultation
Exhibit F- 3a

Sincerely,

ALMA P HUBBARD Digitally signed by ALMA P HUBBARD Date: 2021.01.07 17:37:03 -05'00'

Alma P. Hubbard
Acting Historic Preservation Advisor
DR-4420NE
(202) 709-1956 (FEMA cell)

APH/aw, az

cc: mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov

Enclosures:
Figures 1-2: Alternative 2 & 3 Google Earth Aerial images of the APEs
Figures 3-4: Alternative 2 & 3 USGS Topographic Maps of the APE
Figures 5-6: Alternative 2 & 3 Quality Services Inc. Pictures showing proposed project sites
Quality Services Inc. An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project
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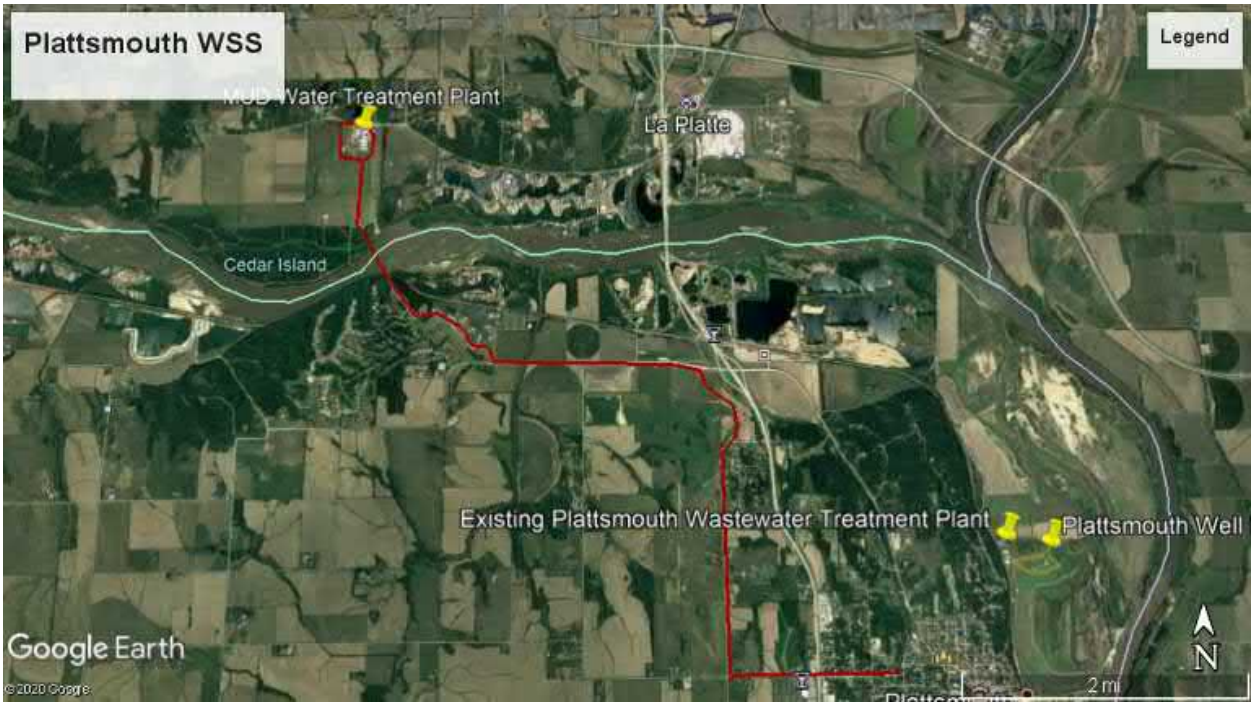

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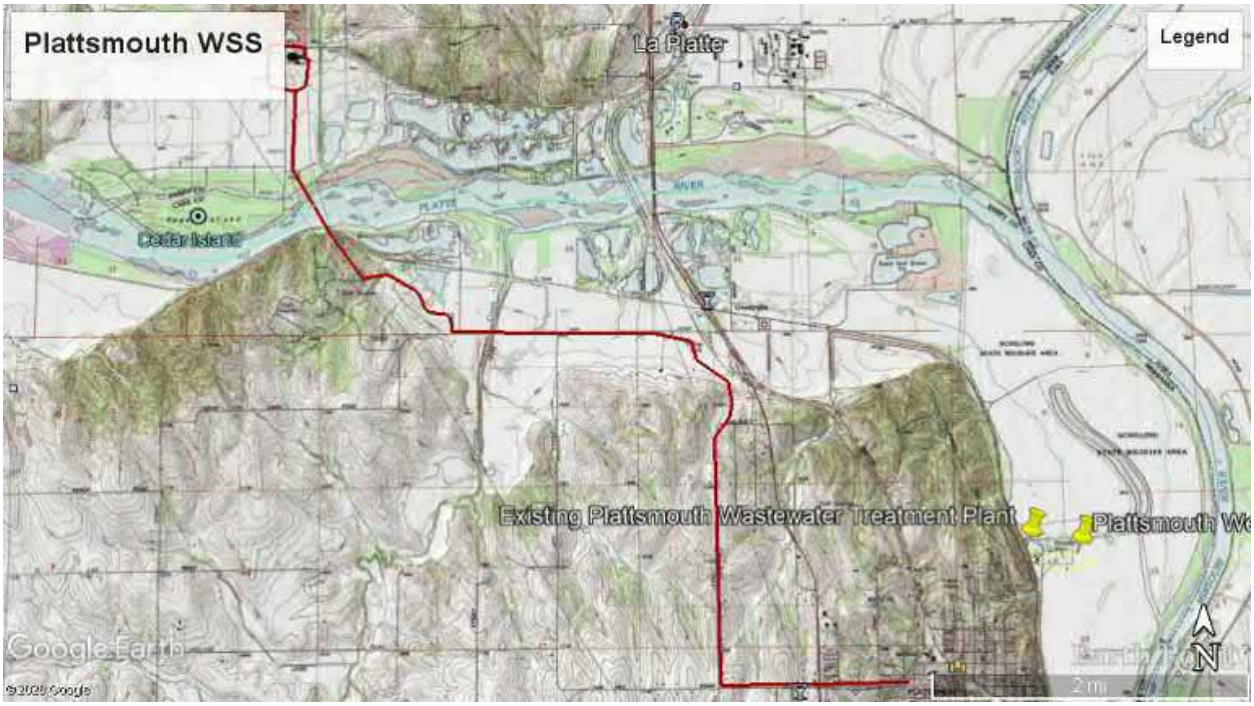

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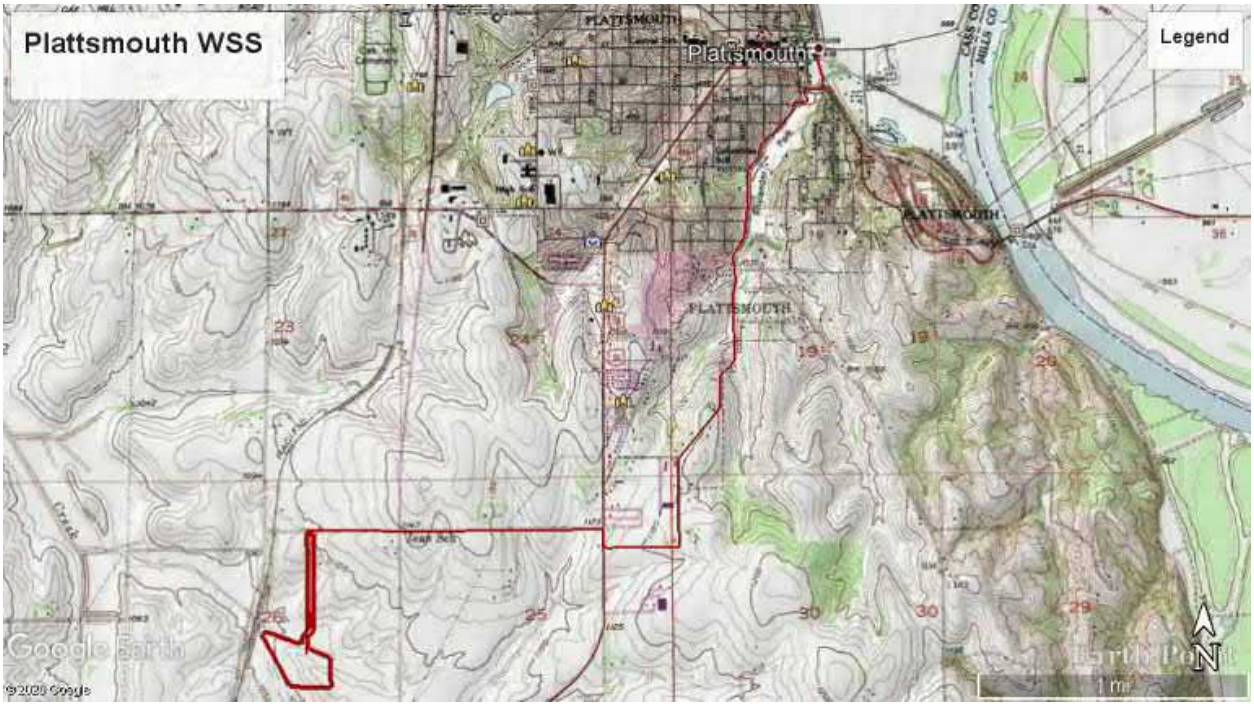

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Tribal Consultation
Exhibit F- 3a

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Figure 6: Alternative 3 South view of proposed new WSS/WWTP site.

Tribal Consultation
Exhibit F- 3a

Federal Emergency Management Agency
Joint Recovery Office
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 7th, 2021

Johnathan L. Buffalo, Historic Preservation Director
349 Meskwaki Road
Tama, IA 52339

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant - 41.025736, -95.882761
Finding: No Historic Properties Affected

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Tribal Consultation
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Tribal Consultation
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Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the 8,964 FT of 20 IN diameter water main that will be placed by trenching and boring outside of existing utilities/road/railroad/ rights-of-way, the 30,601 FT of main within existing rights-of-way, and the 30 acres of existing MUD facilities which will facilitate the distribution of water to Plattsmouth.

Alternative 3:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the approximately 25 acres at the proposed new water conveyance sites and the associated 4 miles of new water main being placed along road and railroad rights-of-way.

Identification and Evaluation

Architecture

Alternative 2:

A review of the NPS National Register Interactive Map indicates that the APE for the portion of water main outside of existing ROWs is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The proposed undertaking will not have an effect to historic structures.

Alternative 3:

A review of the NPS National Register Interactive Map indicates that the APE for the new facility is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The beginning of the new water main to be placed by boring is roughly .10 miles away from the Plattsmouth Main Historic District (Property ID 85002585, See Figure 7). The construction activities will be far enough away that vibration damage will not be a concern to the nearby historic district, and therefore, no historic structures will likely be affected by the proposed undertaking.

Archaeology

Alternative 2:

The existing MUD facility can service the City of Plattsmouth, the only additions to the facility would be the addition of a new booster pump, there will be no new ground disturbing activities in regard to the MUD facility. 30,601 FT of watermain will be placed within existing road rights-of-way that have been previously disturbed by the original construction of the roads and the surrounding residential homes, businesses, rail lines, etc. On September 22nd, 2020, Quality Services, Inc. conducted an archaeological survey of the portion of water main outside of existing rights-of-way (see attached report titled 'An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project'). FEMA EHP reviewed the report, which contained the following relevant information: A records search of the project area with an added 1-mile buffer was conducted on August 18th, 2020. There were no previously identified sites within the APE, however, 28 sites were within a 1-mile buffer of the APE. Two of these sites were determined not eligible for the National Register, and the remaining 26 have been unevaluated for eligibility for the National Register of Historic Places. An inventory of approximately 12 acres was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. The Platte River accounts for approximately 1400 FT of the overall project length, with the remaining project area consisting of agricultural lands, wooded areas, riparian areas, and a portion of golf course. No cultural resources were observed during the pedestrian survey. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route. Testing was completed to a depth of 70 cm and was screened and backfilled, no cultural material was identified during the testing. FEMA concurs with the recommended determination of no effect to historic properties.

According to the USDA Soils Map and the Quality Services Inc. Report, the APE for the proposed portion of water main that is outside of existing ROWs includes Smithland-Kenridge silty clay loams, occasionally flooded, Monona silt loam, 17 to 30 percent slopes, Cass-Wann fine sandy loams, occasionally flooded, Judson silty clay loam, 2 to 6 percent slopes, Ida silt loam, 17 to 30 percent slopes, Monona silt loam, 11 to 17 percent slopes, eroded, Cass-Novina complex, occasionally flooded, Ingewood-Novina complex, occasionally flooded, and Sarpy-Haynie complex, occasionally flooded. While these soil types typically have a medium to high potential for archaeological resources, most are in areas that are prone to frequent flooding, and some are heavily sloped. Historic topographic maps and aerials on https://www.historicaerials.com/viewer show that the Platte River is subject to channel movement. Due to the historic flooding, sloping of some of the soils in the area of new water main to be placed outside of existing rights-of-way, and the historic movement of the river, the proposed Undertaking would not affect intact archaeological resources.

Alternative 3:

Research of the NE SHPO database completed as part of the Historic and Cultural Resources Evaluation of the proposed WWTP APE was conducted by Quality Services, Inc. on May 28, 2020 (see enclosed report titled Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA Environmental & Historic Preservation (EHP) reviewed the report, which contained the following relevant information: There were no identified archaeological sites within the proposed APE and no previous archaeological surveys conducted within the proposed APE. Four archaeological sites have been recorded within a 1-mile search

buffer of the APE and five archaeological surveys have been performed within a 0.5-mile search buffer of the APE.

The 4 miles of new 18-inch diameter water main to transport water to the new facility will begin at 40.97877500, -95.91750000 and end at 41.01107778, -95.88111111. The water main will be bored along the existing road and railroad ROW throughout the City. Due to the original construction of the existing road and railroads, the associated 4 miles of the new water main will not affect any unidentified intact archaeological resources.

From June 12 – 13, 2020, Quality Services, Inc. conducted an archaeological survey of the APE (see attached report titled A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA EHP reviewed the report, which contained the following relevant information: Two archeological sites were located and documented during the inventory within the cultivated fields of the APE, sites 25CC471 and 25CC472. Site 25CC471 consisted of surface isolates of a gray chert flake, a piece of glazed stoneware, and a fragment of aqua glass. Site 25CC472 consisted of a surface isolate of a chert flake. Both sites were recommended as not eligible for the NRHP. FEMA has reviewed the report and concurs with the recommendation that the two sites are not eligible for the National Register of Historic Places

According to the USDA Soils Map and the Quality Services Inc. report, the APE for the proposed WWTP and Access Road consists largely of Marshall silty clay loam, 6 to 11 & 2 to 6 percent slopes, eroded, and Judson silt loam, 2 to 6 percent slopes. While Marshall and Judson soils can be higher potential for archaeological resources, historic aerials show the APE has been previously disturbed by agricultural use. The APE for the proposed Alternative Effluence Conveyance line consists largely of Colo-Nodaway complex, frequently flooded, and is within the historic floodplain and lower probability for any unknown intact cultural resources. The intensive survey conducted by Quality Services, Inc. yielded four isolated finds on the surface and subsurface testing was negative for cultural resources, therefore, FEMA has determined that the undertaking will not have an impact to any unidentified intact archaeological sites.

Tribal Involvement

FEMA is required to consult with Federally Recognized Tribes for FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. To our knowledge the APE for this project is not on tribally owned lands but FEMA recognizes that the tribe may have special knowledge of the area with regards to properties of religious or cultural significance and is requesting your comments with regards to the Undertaking.

Determination of Effect/Request for Comment

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has made a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response with this finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa antonia.zawisa@fema.dhs.gov or Audrey Wolfe at audrey.wolfe@fema.dhs.gov.

Tribal Consultation
Exhibit F- 3a

Sincerely,

ALMA P HUBBARD Digitally signed by ALMA P HUBBARD Date: 2021.01.07 15:26:57 -05'00'

Alma P. Hubbard
Acting Historic Preservation Advisor
DR-4420NE
(202) 709-1956 (FEMA cell)

APH/aw, az

cc: mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov

Enclosures:
Figures 1-2: Alternative 2 & 3 Google Earth Aerial images of the APEs
Figures 3-4: Alternative 2 & 3 USGS Topographic Maps of the APE
Figures 5-6: Alternative 2 & 3 Quality Services Inc. Pictures showing proposed project sites
Quality Services Inc. An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project
Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project, June 8, 2020
A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project, June 23, 2020

Tribal Consultation
Exhibit F- 3a

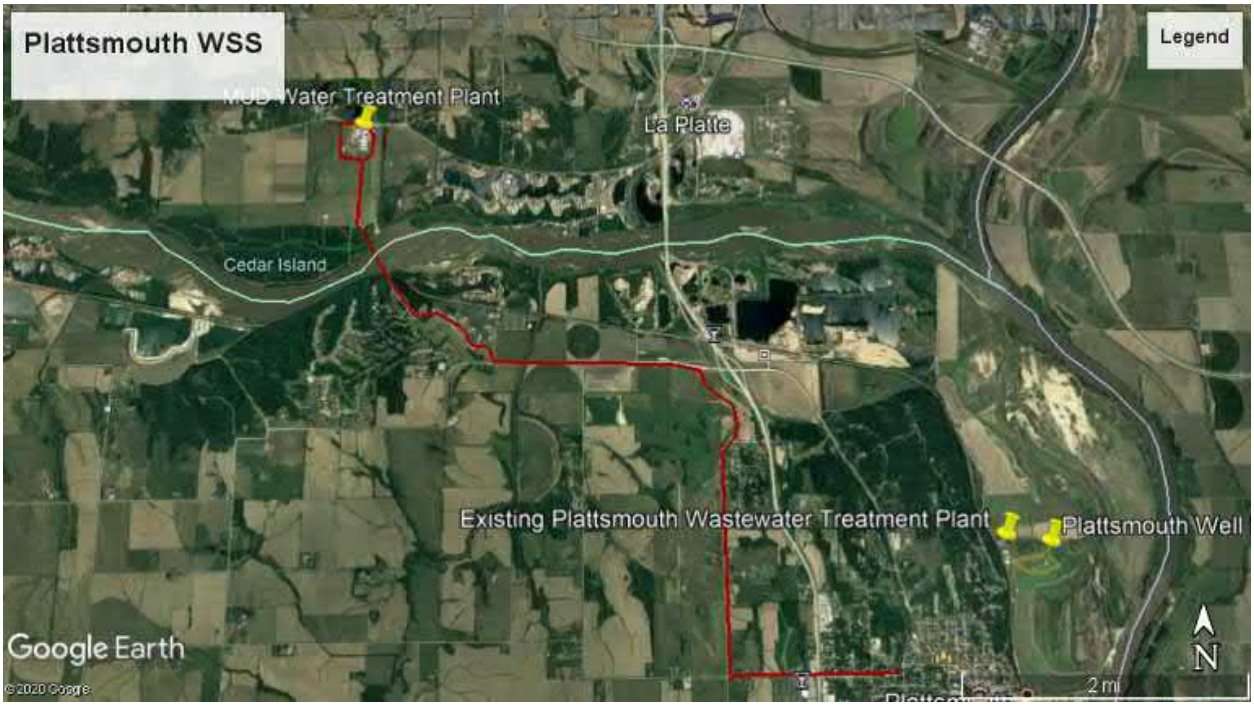

Figure 1: Alternative 2 Google Earth Aerial Image Dated 6/4/2018 showing the APE (in red).

Figure 2: Alternative 3 Google Earth Image Dated 6/4/2018 showing the APE (in red)

Tribal Consultation
Exhibit F- 3a

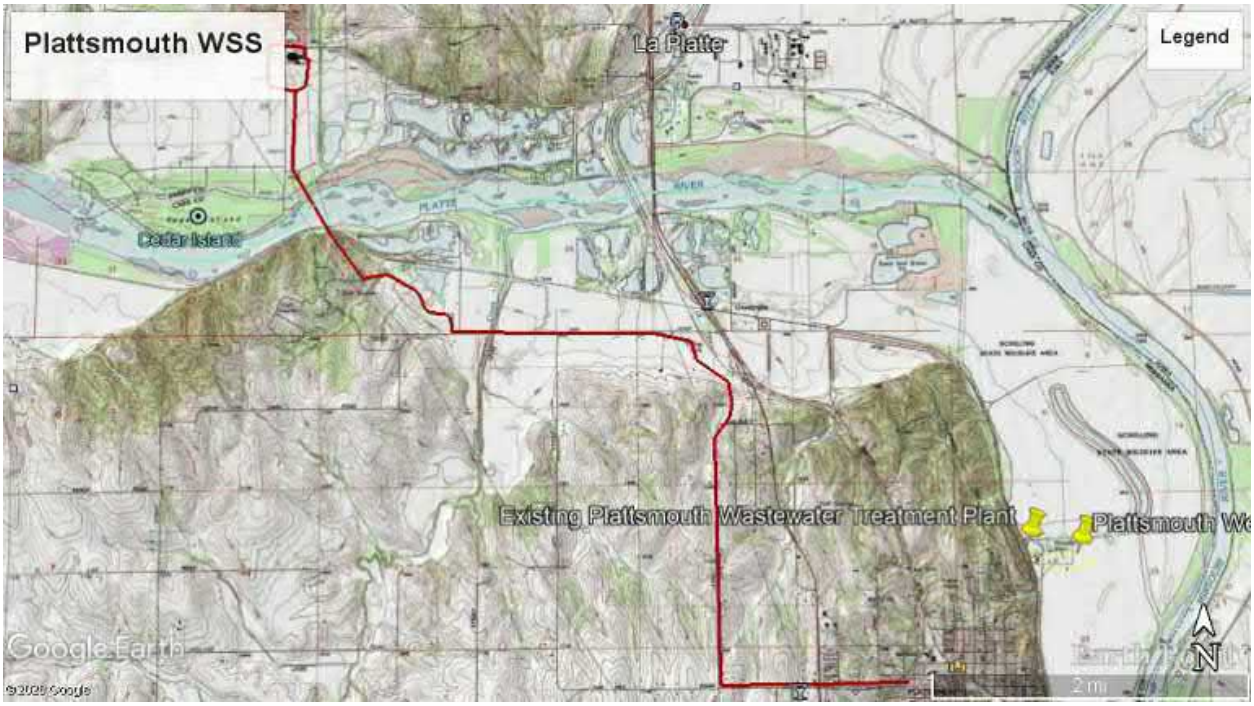

Figure 3: Alternative 2 USGS Topographic Map showing the APE (in red)

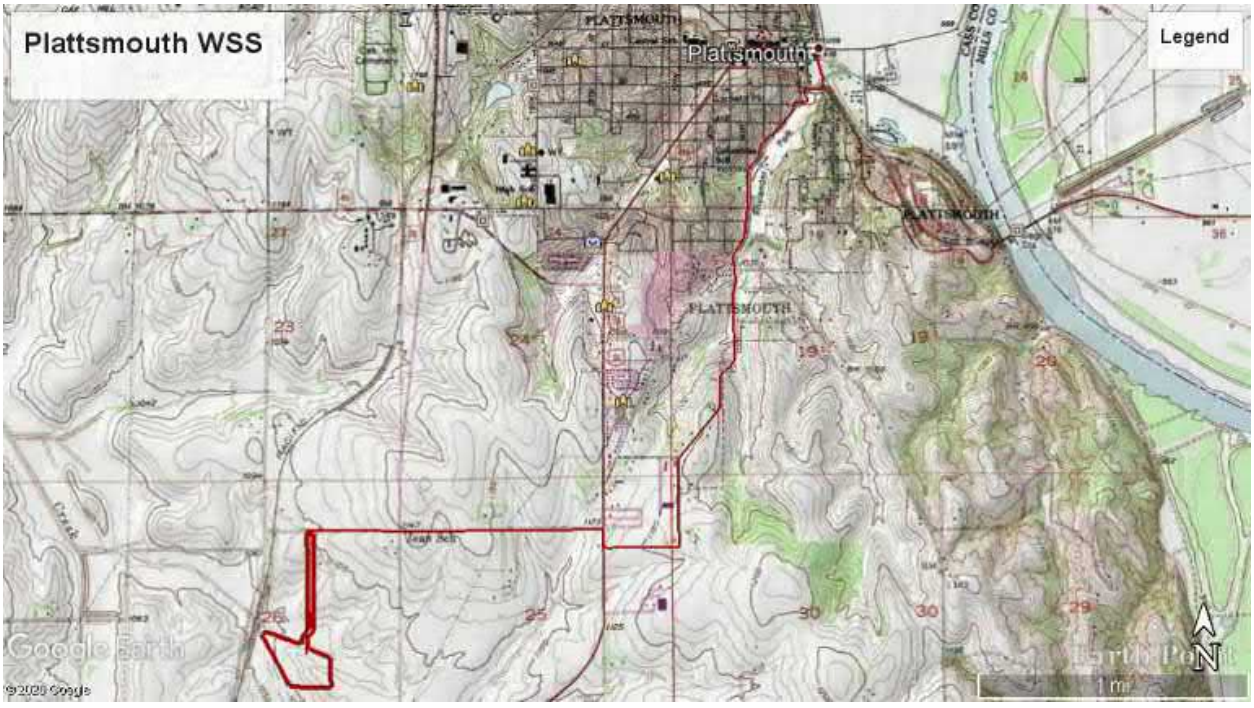

Figure 4: Alternative 3 USGS Topographic showing the APE (in red)

Tribal Consultation
Exhibit F- 3a

Figure 5: Alternative 2 photo of the area where new water main will be bored underneath the Platte River. Photo facing North.

Figure 6: Alternative 3 South view of proposed new WSS/WWTP site.

Tribal Consultation
Exhibit F- 3a

Federal Emergency Management Agency
Joint Recovery Office
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 7th, 2021

Sandra Massey, THPO
920883 South Highway 99
Building A
Stroud, OK 74079

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant - 41.025736, -95.882761
Finding: No Historic Properties Affected

Dear Sandra Massey:

The Federal Emergency Management Agency (FEMA) provides funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for the Missouri River Flooding from, FEMA-4420-DR-NE, dated March 2019 and continuing, as amended. FEMA, through its Public Assistance Program, proposes to fund the relocation of the Plattsmouth Water Supply System (WSS) (Undertaking) as requested by the City of Plattsmouth (Sub-Recipient). FEMA is initiating Section 106 review for the above referenced property and providing your office with the opportunity to comment on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(e).

Undertaking
Work to be Completed
Due to Nebraska Severe Winter Storm, Straight-line Winds, and Flooding, the existing City of Plattsmouth Water Supply System (WSS) was inundated with floodwaters and debris. This caused severe damage to main treatment and process equipment as well as other structures located on site. In addition, the high floodwaters and ice caused major damage to five of the City's water supply wells and warehouses. Two proposed actions are presented and are being evaluated by FEMA within an Environmental Assessment for National Environmental Policy Act (NEPA) purpose. Alternative 2 is the preferred alternative, however, Alternative 3 is also being evaluated for NEPA purposes and FEMAs Section 106 National Historic Preservation Act compliance review.

Alternative 2 (preferred alternative):
This alternative involves the construction of a new water main to carry potable water from an existing water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth.

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The work associated with this project involves the construction of approximately 7.5 miles of 20-inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road, in Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter water main begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the water main would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2000 feet by jack and bore technologies. The water main construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches Buccaneer Boulevard to the south. The water main will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The water main will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the water main would involve a 70-foot wide work right of way (ROW) throughout the route, in addition to staging areas. Most of the waterline ROW will be located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for most of the work, however, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction. A few trees may need to be removed along the ROW for construction.

The Sub-recipient has requested reimbursement for the Plattsmouth Water Supply System's relocation to the MUD facility, with the associated water main construction in Cass and Sarpy Counties.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River

Tribal Consultation
Exhibit F- 3a

(41.025031, -95.816630) will remain in place and wellhead protection measures will be constructed to limit the risks of flood damages.

The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and Nebraska Department of Health and Human Services (NDHHS), as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter water main along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance of approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

The City's five existing wells will continue to be utilized as the source of raw water for Alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States' Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to within five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

The Sub-recipient has requested reimbursement for the relocation of the Plattsmouth Water Supply System in Cass and Sarpy Counties with associated water main construction activities.

Area of Potential Effects (APE)

Alternative 2:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the 8,964 FT of 20 IN diameter water main that will be placed by trenching and boring outside of existing utilities/road/railroad/ rights-of-way, the 30,601 FT of main within existing rights-of-way, and the 30 acres of existing MUD facilities which will facilitate the distribution of water to Plattsmouth.

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Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the approximately 25 acres at the proposed new water conveyance sites and the associated 4 miles of new water main being placed along road and railroad rights-of-way.

Identification and Evaluation

Architecture

Alternative 2:

A review of the NPS National Register Interactive Map indicates that the APE for the portion of water main outside of existing ROWs is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The proposed undertaking will not have an effect to historic structures.

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A review of the NPS National Register Interactive Map indicates that the APE for the new facility is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The beginning of the new water main to be placed by boring is roughly .10 miles away from the Plattsmouth Main Historic District (Property ID 85002585, See Figure 7). The construction activities will be far enough away that vibration damage will not be a concern to the nearby historic district, and therefore, no historic structures will likely be affected by the proposed undertaking.

Tribal Consultation
Exhibit F- 3a

Archaeology

Alternative 2:

The existing MUD facility can service the City of Plattsmouth, the only additions to the facility would be the addition of a new booster pump, there will be no new ground disturbing activities in regard to the MUD facility. 30,601 FT of watermain will be placed within existing road rights-of-way that have been previously disturbed by the original construction of the roads and the surrounding residential homes, businesses, rail lines, etc. On September 22nd, 2020, Quality Services, Inc. conducted an archaeological survey of the portion of water main outside of existing rights-of-way (see attached report titled 'An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project'). FEMA EHP reviewed the report, which contained the following relevant information: A records search of the project area with an added 1-mile buffer was conducted on August 18th, 2020. There were no previously identified sites within the APE, however, 28 sites were within a 1-mile buffer of the APE. Two of these sites were determined not eligible for the National Register, and the remaining 26 have been unevaluated for eligibility for the National Register of Historic Places. An inventory of approximately 12 acres was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. The Platte River accounts for approximately 1400 FT of the overall project length, with the remaining project area consisting of agricultural lands, wooded areas, riparian areas, and a portion of golf course. No cultural resources were observed during the pedestrian survey. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route. Testing was completed to a depth of 70 cm and was screened and backfilled, no cultural material was identified during the testing. FEMA concurs with the recommended determination of no effect to historic properties.

According to the USDA Soils Map and the Quality Services Inc. Report, the APE for the proposed portion of water main that is outside of existing ROWs includes Smithland-Kenridge silty clay loams, occasionally flooded, Monona silt loam, 17 to 30 percent slopes, Cass-Wann fine sandy loams, occasionally flooded, Judson silty clay loam, 2 to 6 percent slopes, Ida silt loam, 17 to 30 percent slopes, Monona silt loam, 11 to 17 percent slopes, eroded, Cass-Novina complex, occasionally flooded, Ingewood-Novina complex, occasionally flooded, and Sarpy-Haynie complex, occasionally flooded. While these soil types typically have a medium to high potential for archaeological resources, most are in areas that are prone to frequent flooding, and some are heavily sloped. Historic topographic maps and aerials on https://www.historicaerials.com/viewer show that the Platte River is subject to channel movement. Due to the historic flooding, sloping of some of the soils in the area of new water main to be placed outside of existing rights-of-way, and the historic movement of the river, the proposed Undertaking would not affect intact archaeological resources.

Alternative 3:

Research of the NE SHPO database completed as part of the Historic and Cultural Resources Evaluation of the proposed WWTP APE was conducted by Quality Services, Inc. on May 28, 2020 (see enclosed report titled Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA Environmental & Historic Preservation (EHP) reviewed the report, which contained the following relevant information: There were no identified archaeological sites within the proposed APE and no previous archaeological surveys conducted

within the proposed APE. Four archaeological sites have been recorded within a 1-mile search buffer of the APE and five archaeological surveys have been performed within a 0.5-mile search buffer of the APE.

The 4 miles of new 18-inch diameter water main to transport water to the new facility will begin at 40.97877500, -95.91750000 and end at 41.01107778, -95.88111111. The water main will be bored along the existing road and railroad ROW throughout the City. Due to the original construction of the existing road and railroads, the associated 4 miles of the new water main will not affect any unidentified intact archaeological resources.

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According to the USDA Soils Map and the Quality Services Inc. report, the APE for the proposed WWTP and Access Road consists largely of Marshall silty clay loam, 6 to 11 & 2 to 6 percent slopes, eroded, and Judson silt loam, 2 to 6 percent slopes. While Marshall and Judson soils can be higher potential for archaeological resources, historic aerials show the APE has been previously disturbed by agricultural use. The APE for the proposed Alternative Effluence Conveyance line consists largely of Colo-Nodaway complex, frequently flooded, and is within the historic floodplain and lower probability for any unknown intact cultural resources. The intensive survey conducted by Quality Services, Inc. yielded four isolated finds on the surface and subsurface testing was negative for cultural resources, therefore, FEMA has determined that the undertaking will not have an impact to any unidentified intact archaeological sites.

Tribal Involvement

FEMA is required to consult with Federally Recognized Tribes for FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. To our knowledge the APE for this project is not on tribally owned lands but FEMA recognizes that the tribe may have special knowledge of the area with regards to properties of religious or cultural significance and is requesting your comments with regards to the Undertaking.

Determination of Effect/Request for Comment

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has made a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response with this

Tribal Consultation
Exhibit F- 3a

finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa antonia.zawisa@fema.dhs.gov or Audrey Wolfe at audrey.wolfe@fema.dhs.gov.

Sincerely,

ALMA P HUBBARD Digitally signed by ALMA P HUBBARD Date: 2021.01.07 14:56:40 -05'00'

Alma P. Hubbard
Acting Historic Preservation Advisor
DR-4420NE
(202) 709-1956 (FEMA cell)

APH/aw, az

cc: mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov

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Tribal Consultation
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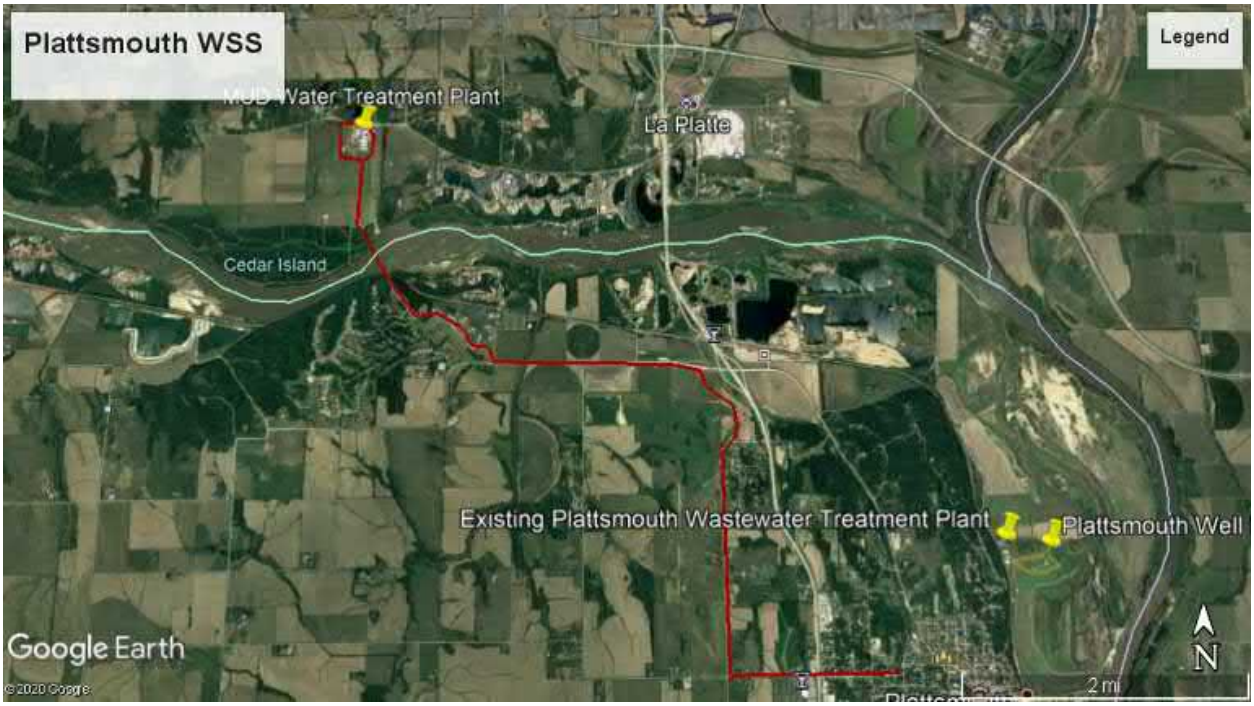
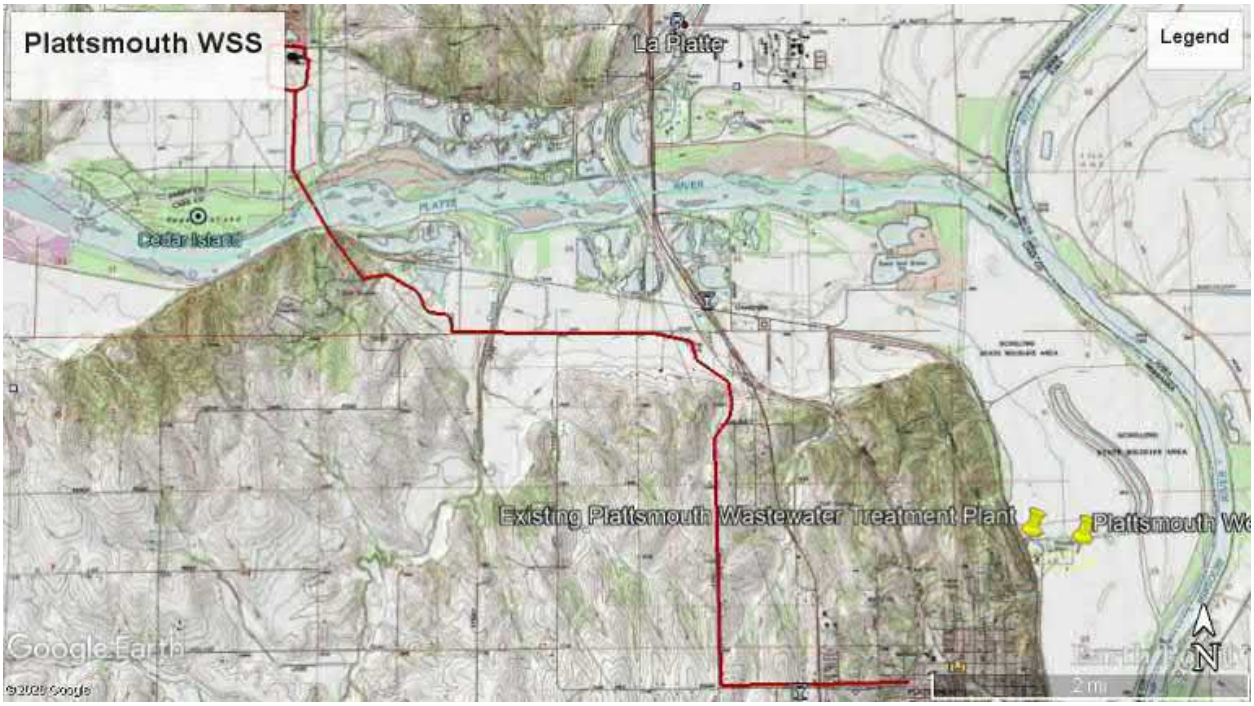


Figure 1: Alternative 2 Google Earth Aerial Image Dated 6/4/2018 showing the APE (in red).

Figure 2: Alternative 3 Google Earth Image Dated 6/4/2018 showing the APE (in red)

Tribal Consultation
Exhibit F- 3a



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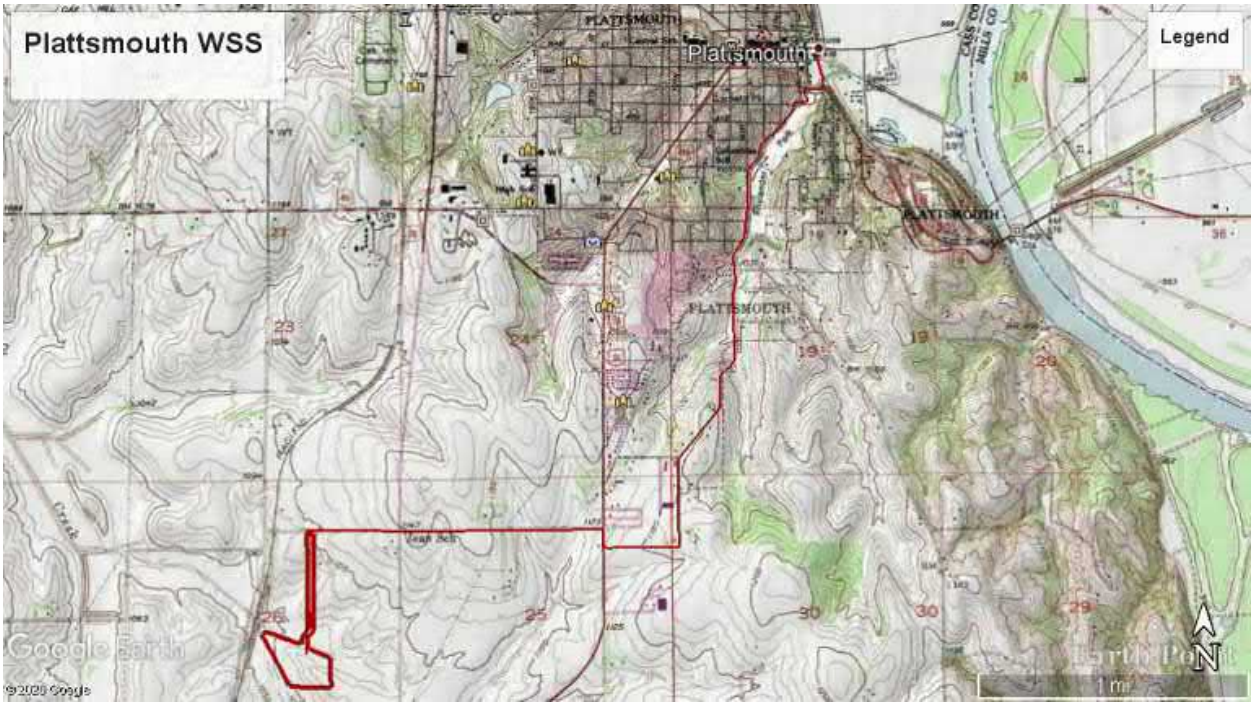

Figure 4: Alternative 3 USGS Topographic showing the APE (in red)

Tribal Consultation
Exhibit F- 3a

Figure 5: Alternative 2 photo of the area where new water main will be bored underneath the Platte River. Photo facing North.

Figure 6: Alternative 3 South view of proposed new WSS/WWTP site.

Tribal Consultation
Exhibit F- 3a

Federal Emergency Management Agency
Joint Recovery Office
FEMA 4420-DR-NE
11224 Holmes Road
Kansas City MO 64131

January 12th, 2021

Stacy Laravie, THPO
PO Box 288
Niobrara, NE 68760

Section 106 Consultation: Nebraska Severe Winter Storm, Straight-line Winds, And Flooding, FEMA-4420-DR-NE
Project Name: Plattsmouth Water Supply System
Sub-Recipient: City of Plattsmouth (Cass County)
Undertaking: Alternative 2 (preferred) and Alternative 3 involving the Plattsmouth Water Supply System (WSS)
Address: Existing Plattsmouth Water Treatment Plant - 41.025736, -95.882761
Finding: No Historic Properties Affected

Dear Stacy Laravie:

The Federal Emergency Management Agency (FEMA) provides funds authorized under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended, in response to the major Disaster Declaration for the Missouri River Flooding from, FEMA-4420-DR-NE, dated March 2019 and continuing, as amended. FEMA, through its Public Assistance Program, proposes to fund the relocation of the Plattsmouth Water Supply System (WSS) (Undertaking) as requested by the City of Plattsmouth (Sub-Recipient). FEMA is initiating Section 106 review for the above referenced property and providing your office with the opportunity to comment on the proposed Undertaking. Documentation in this letter is consistent with the requirements in 36 CFR §800.11(e).

Undertaking
Work to be Completed
Due to Nebraska Severe Winter Storm, Straight-line Winds, and Flooding, the existing City of Plattsmouth Water Supply System (WSS) was inundated with floodwaters and debris. This caused severe damage to main treatment and process equipment as well as other structures located on site. In addition, the high floodwaters and ice caused major damage to five of the City's water supply wells and warehouses. Two proposed actions are presented and are being evaluated by FEMA within an Environmental Assessment for National Environmental Policy Act (NEPA) purpose. Alternative 2 is the preferred alternative, however, Alternative 3 is also being evaluated for NEPA purposes and FEMAs Section 106 National Historic Preservation Act compliance review.

Alternative 2 (preferred alternative):
This alternative involves the construction of a new water main to carry potable water from an existing water treatment plant owned and operated by the Metropolitan Utilities District (MUD) to the existing potable water distribution system in the City of Plattsmouth. MUD has stated that there is adequate capacity to service the existing and future residents of Plattsmouth.
The work associated with this project involves the construction of approximately 7.5 miles of 20-

Tribal Consultation
Exhibit F- 3a

inch diameter potable water transmission main from the MUD's Platte South Water Treatment Plant located along the north side of the Platte River, west of the intersection of South 36th Street and LaPlatte Road, in Sarpy County, NE (41.071329, -95.972490) to the City of Plattsmouth. The watermain would carry treated/potable water from the MUD plant to a connection point at the City's distribution system located near Avenue B and 16th Street in Plattsmouth, Cass County Nebraska (41.013387, -95.898392). A small booster pump would be installed to provide necessary pressure for the water distribution.

The construction of the new 20-inch diameter water main begins at the MUD water treatment plant located along La Platte Road and would be constructed in a southerly direction south of the MUD plant for a distance of approximately 4,600 feet by trench excavation. At that point the water main would be constructed under Zwieble Creek, the Platte River and a railroad line for a distance of approximately 2000 feet by jack and bore technologies. The water main construction would then be located within an existing utility ROW for approximately 2,100 feet on the south side of the Platte River, until it reaches Buccaneer Boulevard to the south. The water main will follow Buccaneer Boulevard southeasterly to Bay Road and easterly along Bay Rd to its intersection with 6th Street. The water main will be constructed along 6th street in a southerly direction for a distance of approximately 2.3 miles until its intersection with Oak Hill Road and Avenue B where it turns east until it reaches the connection point to the City distribution system near N 16th Street in the City of Plattsmouth, approximately 1.2 miles east of 6th street.

The construction of the water main would involve a 70-foot wide work right of way (ROW) throughout the route, in addition to staging areas. Most of the waterline ROW will be located within existing publicly owned road and utility ROW. A minor area of ROW would be acquired by easement. Trench excavation methodology is proposed for most of the work, however, jack and bore technology will be utilized where possible to avoid impacts to waterways, railroad lines, and other areas of concern as necessary. It is estimated that trench excavation will be limited to not more than 60 inches below ground surface and the ROW returned to preconstruction contours and conditions after construction. A few trees may need to be removed along the ROW for construction.

The Sub-recipient has requested reimbursement for the Plattsmouth Water Supply System's relocation to the MUD facility, with the associated water main construction in Cass and Sarpy Counties.

Alternative 3: This alternative involves the construction of a new 3.04 million gallon per day lime softening Water Treatment Plant (WTP) at a City-owned parcel of land within the Fourmile Industrial Park located along East Wiles Road in Plattsmouth, Nebraska (40.980568, -95.918781). The City-owned wells located within the floodplain of the Missouri River (41.025031, -95.816630) will remain in place and wellhead protection measures will be

Tribal Consultation
Exhibit F- 3a

constructed to limit the risks of flood damages.

The new WTP will include a main treatment building to house the treatment process consisting of aeration, solids contact clarifier, re-carbonation, filtration and chemical storage and feed systems. In addition, the main treatment building will include a finished 80,000-gallon water clear well, high service pumps, space for mechanical, electrical control equipment, and an office and laboratory. The relocated facility will also include an 814,350-gallon capacity finished water ground-storage tank, filler back wash tank, and lime sludge storage pond and associated control structures. All treatment processes will be designed to the latest requirements of the 10 state standards recommended Standard for Water Works and Nebraska Department of Health and Human Services (NDHHS), as well as all other state and local requirements for construction, chemical storage, sludge disposal, and other health, safety and environmental requirements.

The relocation of the WTP will require pumping raw water to the new plant site from the City's existing five wells. The existing well pumps and motors will be replaced with pumps of a similar capacity, but with higher head rating to overcome the head losses between the existing wells and the new water treatment plant approximately 4 miles away. To bring raw water to the new water treatment facility, approximately four miles of 18-inch diameter water conveyance lines will be constructed along existing road ROW throughout the City. The existing 16-inch diameter water main along Schilling Road will be used as part of the conveyance system. Once treated, potable water from the new water treatment plant will be connected to the City's potable water distribution system at Highway 75 and Wiles Road, approximately 1.0 miles northeast of the new plant site.

The new water conveyance system would be constructed along existing road ROW beginning at the intersection of Schilling Road and E. Main street in Plattsmouth, to a vacant City-owned lot located at the southwest corner of Main Street and South 1st Street, crossing the City-owned lot and the rail road tracks to the south; then crossing Livingston Street to the north end of Rylander Park. The new conveyance system will then be constructed along Lincoln Avenue in a southerly direction to the intersection of Smith Avenue and follow Smith Avenue for a distance of approximately 1.4 miles to its intersection with So. Chicago Avenue where the line will follow So. Chicago Avenue in a northly direction to E. Wiles, and then follow E. Wiles Road in a westerly direction for a distance of approximately 1.1 miles to the entrance of Fourmile Industrial Park, where the new water treatment plant would be constructed. The same ROWs are also proposed for the construction of new wastewater conveyance lines that are part of the City's proposed wastewater treatment plant relocation project at Fourmile Industrial Park. It should be noted that appropriate separation will be maintained between all mains within this ROW to insure public health and safety.

The City's five existing wells will continue to be utilized as the source of raw water for

Tribal Consultation
Exhibit F- 3a

Alternative 3. To protect the wells from future flood damage, the existing well house structures will be removed while the well casing will be extended two feet above the 500-year flood elevation. This modification would bring the wells into compliance with 10 States' Standards Requirements. All electrical controls and well motors will be located on platforms above potential flood levels. Meter and valve manholes will be installed at each well to house the valves and flow meters. Major site grading and fill around the new well platforms will be required to bring the grade to within five feet of the new platform height for access. During high water events, all five wells will be accessed via a boat or high-water vehicle for maintenance.

The Sub-recipient has requested reimbursement for the relocation of the Plattsmouth Water Supply System in Cass and Sarpy Counties with associated water main construction activities.

Area of Potential Effects (APE)

Alternative 2:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the 8,964 FT of 20 IN diameter water main that will be placed by trenching and boring outside of existing utilities/road/railroad/ rights-of-way, the 30,601 FT of main within existing rights-of-way, and the 30 acres of existing MUD facilities which will facilitate the distribution of water to Plattsmouth.

Alternative 3:

Pursuant to 36 CFR 800.4(a)(1), the Area of Potential Effects (APE) is defined as the geographic area(s) within which the undertaking may directly or indirectly affect historic resources. Based on the proposed scope of work, FEMA has determined that the APE for this undertaking is the approximately 25 acres at the proposed new water conveyance sites and the associated 4 miles of new water main being placed along road and railroad rights-of-way.

Identification and Evaluation

Architecture

Alternative 2:

A review of the NPS National Register Interactive Map indicates that the APE for the portion of water main outside of existing ROWs is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The proposed undertaking will not have an effect to historic structures.

Alternative 3:

A review of the NPS National Register Interactive Map indicates that the APE for the new facility is not located near any structures listed on the National Register of Historic Places and is not located within a previously identified eligible historic district. The beginning of the new water main to be placed by boring is roughly .10 miles away from the Plattsmouth Main Historic District (Property ID 85002585, See Figure 7). The construction activities will be far enough away that vibration damage will not be a concern to the nearby historic district, and therefore, no historic structures will likely be affected by the proposed undertaking.

Archaeology

Alternative 2:

The existing MUD facility can service the City of Plattsmouth, the only additions to the facility would be the addition of a new booster pump, there will be no new ground disturbing activities in regard to the MUD facility. 30,601 FT of watermain will be placed within existing road rights-of-way that have been previously disturbed by the original construction of the roads and the surrounding residential homes, businesses, rail lines, etc. On September 22nd, 2020, Quality Services, Inc. conducted an archaeological survey of the portion of water main outside of existing rights-of-way (see attached report titled 'An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project'). FEMA EHP reviewed the report, which contained the following relevant information: A records search of the project area with an added 1-mile buffer was conducted on August 18th, 2020. There were no previously identified sites within the APE, however, 28 sites were within a 1-mile buffer of the APE. Two of these sites were determined not eligible for the National Register, and the remaining 26 have been unevaluated for eligibility for the National Register of Historic Places. An inventory of approximately 12 acres was conducted in two north to south running transects spaced 10 meters apart on either side of the proposed route. The Platte River accounts for approximately 1400 FT of the overall project length, with the remaining project area consisting of agricultural lands, wooded areas, riparian areas, and a portion of golf course. No cultural resources were observed during the pedestrian survey. One subsurface test was conducted in the southern end of the grass field that composes the northern half of the surveyed route. Testing was completed to a depth of 70 cm and was screened and backfilled, no cultural material was identified during the testing. FEMA concurs with the recommended determination of no effect to historic properties.

According to the USDA Soils Map and the Quality Services Inc. Report, the APE for the proposed portion of water main that is outside of existing ROWs includes Smithland-Kenridge silty clay loams, occasionally flooded, Monona silt loam, 17 to 30 percent slopes, Cass-Wann fine sandy loams, occasionally flooded, Judson silty clay loam, 2 to 6 percent slopes, Ida silt loam, 17 to 30 percent slopes, Monona silt loam, 11 to 17 percent slopes, eroded, Cass-Novina complex, occasionally flooded, Ingewood-Novina complex, occasionally flooded, and Sarpy-Haynie complex, occasionally flooded. While these soil types typically have a medium to high potential for archaeological resources, most are in areas that are prone to frequent flooding, and some are heavily sloped. Historic topographic maps and aerials on https://www.historicaerials.com/viewer show that the Platte River is subject to channel movement. Due to the historic flooding, sloping of some of the soils in the area of new water main to be placed outside of existing rights-of-way, and the historic movement of the river, the proposed Undertaking would not affect intact archaeological resources.

Alternative 3:

Research of the NE SHPO database completed as part of the Historic and Cultural Resources Evaluation of the proposed WWTP APE was conducted by Quality Services, Inc. on May 28, 2020 (see enclosed report titled Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA Environmental & Historic Preservation (EHP) reviewed the report, which contained the following relevant information: There were no identified archaeological sites within the proposed APE and no previous archaeological surveys conducted within the proposed APE. Four archaeological sites have been recorded within a 1-mile search

buffer of the APE and five archaeological surveys have been performed within a 0.5-mile search buffer of the APE.

The 4 miles of new 18-inch diameter water main to transport water to the new facility will begin at 40.97877500, -95.91750000 and end at 41.01107778, -95.88111111. The water main will be bored along the existing road and railroad ROW throughout the City. Due to the original construction of the existing road and railroads, the associated 4 miles of the new water main will not affect any unidentified intact archaeological resources.

From June 12 – 13, 2020, Quality Services, Inc. conducted an archaeological survey of the APE (see attached report titled A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project). FEMA EHP reviewed the report, which contained the following relevant information: Two archeological sites were located and documented during the inventory within the cultivated fields of the APE, sites 25CC471 and 25CC472. Site 25CC471 consisted of surface isolates of a gray chert flake, a piece of glazed stoneware, and a fragment of aqua glass. Site 25CC472 consisted of a surface isolate of a chert flake. Both sites were recommended as not eligible for the NRHP. FEMA has reviewed the report and concurs with the recommendation that the two sites are not eligible for the National Register of Historic Places

According to the USDA Soils Map and the Quality Services Inc. report, the APE for the proposed WWTP and Access Road consists largely of Marshall silty clay loam, 6 to 11 & 2 to 6 percent slopes, eroded, and Judson silt loam, 2 to 6 percent slopes. While Marshall and Judson soils can be higher potential for archaeological resources, historic aerials show the APE has been previously disturbed by agricultural use. The APE for the proposed Alternative Effluence Conveyance line consists largely of Colo-Nodaway complex, frequently flooded, and is within the historic floodplain and lower probability for any unknown intact cultural resources. The intensive survey conducted by Quality Services, Inc. yielded four isolated finds on the surface and subsurface testing was negative for cultural resources, therefore, FEMA has determined that the undertaking will not have an impact to any unidentified intact archaeological sites.

Tribal Involvement

FEMA is required to consult with Federally Recognized Tribes for FEMA Undertakings on Tribal lands or affecting properties of religious and cultural significance, and where no tribe-specific consultation agreements or protocols are in place, FEMA shall consult with affected Tribe(s) in accordance with 36 CFR Part 800. To our knowledge the APE for this project is not on tribally owned lands but FEMA recognizes that the tribe may have special knowledge of the area with regards to properties of religious or cultural significance and is requesting your comments with regards to the Undertaking.

Determination of Effect/Request for Comment

Based on the aforementioned identification and evaluation, FEMA has determined that there are no historic properties as defined in 36 CFR 800.16(l) within the APE. Therefore, FEMA has made a finding of **No Historic Properties Affected** for this Undertaking and is submitting this Undertaking to your office for your review and comment. FEMA requests your response with this finding within thirty (30) calendar days. Should you need additional information please contact Toni Zawisa antonia.zawisa@fema.dhs.gov or Audrey Wolfe at audrey.wolfe@fema.dhs.gov.

Tribal Consultation
Exhibit F- 3a

Sincerely,

MARK A LANCE

Digitally signed by MARK A LANCE
Date: 2021.01.12 13:23:19 -06'00'

Mark Lance
Environmental/Historic Preservation Advisor
DR-4420NE
(816) 783-3351 (FEMA cell)

MAL/aw, az

cc: mark.lance@fema.dhs.gov; audrey.wolfe@fema.dhs.gov

Enclosures:
Figures 1-2: Alternative 2 & 3 Google Earth Aerial images of the APEs
Figures 3-4: Alternative 2 & 3 USGS Topographic Maps of the APE
Figures 5-6: Alternative 2 & 3 Quality Services Inc. Pictures showing proposed project sites
Quality Services Inc. An Intensive Cultural Resources Inventory of the Plattsmouth Water Supply Project
Cultural Resource Records Search of the Plattsmouth Wastewater Treatment Plant Relocation Project, June 8, 2020
A Level III Cultural Resources Inventory of the Plattsmouth Wastewater Treatment Plant Relocation Project, June 23, 2020

Tribal Consultation
Exhibit F- 3a

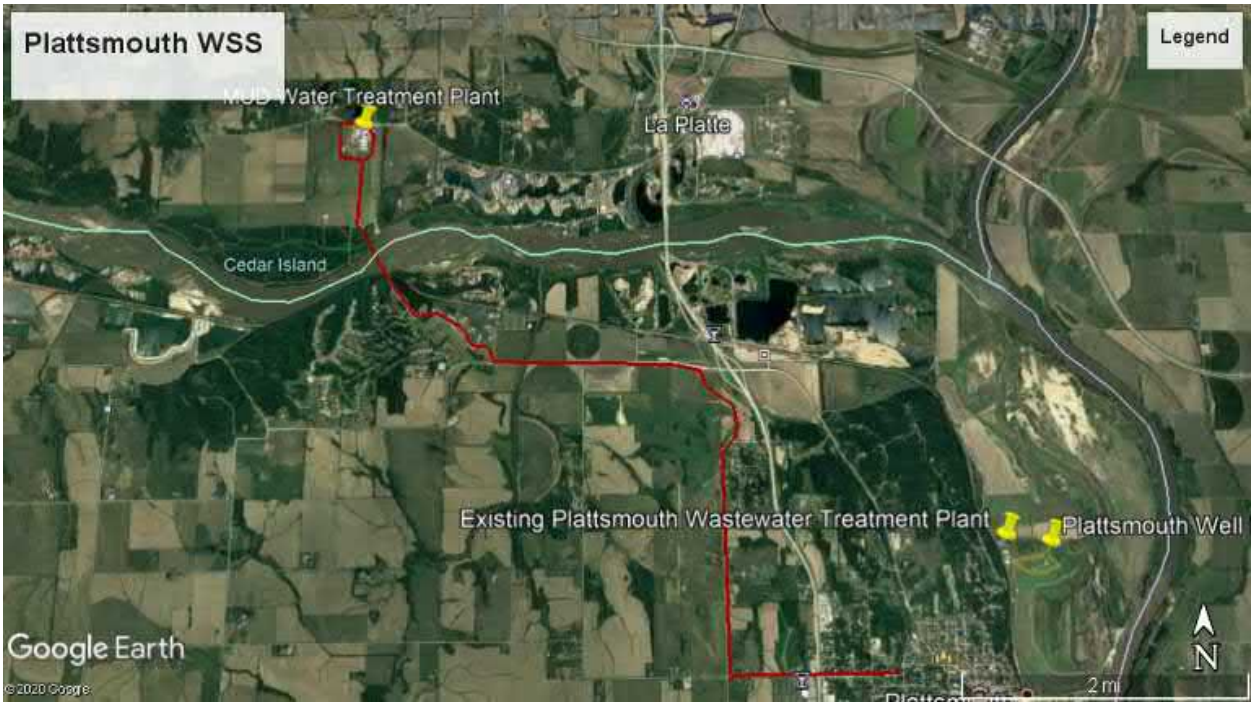

Figure 1: Alternative 2 Google Earth Aerial Image Dated 6/4/2018 showing the APE (in red).

Figure 2: Alternative 3 Google Earth Image Dated 6/4/2018 showing the APE (in red)

Tribal Consultation
Exhibit F- 3a

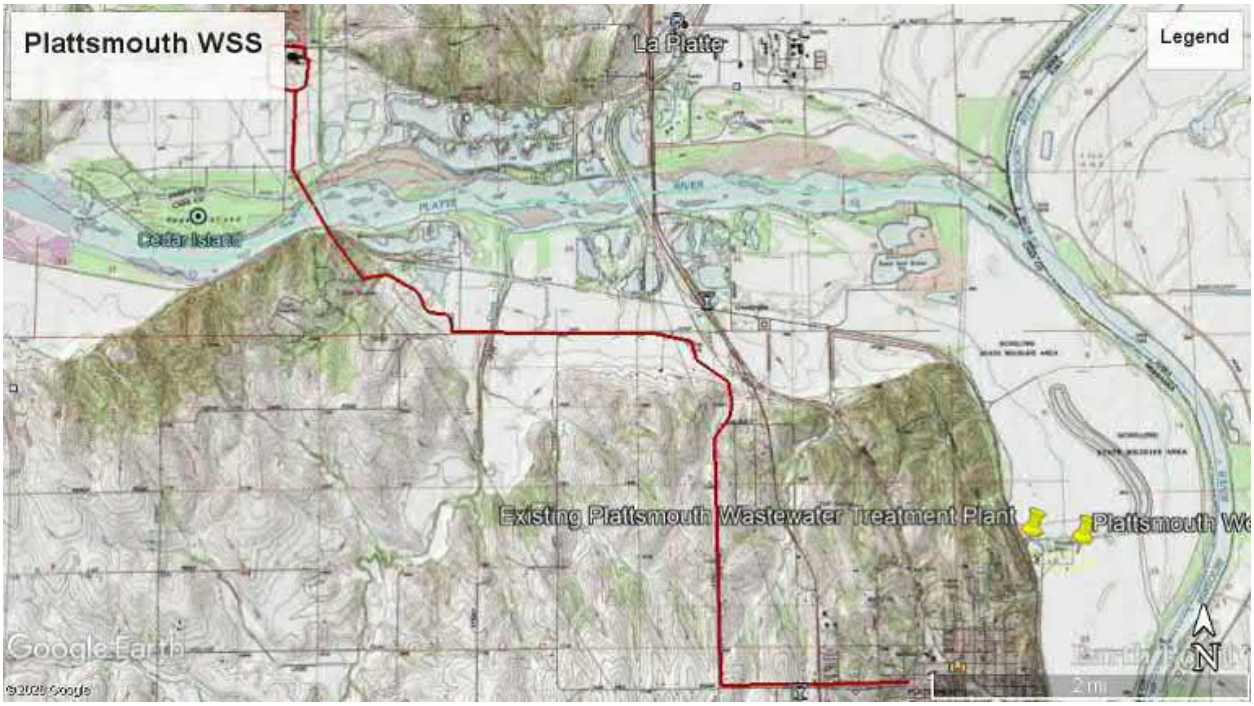

Figure 3: Alternative 2 USGS Topographic Map showing the APE (in red)

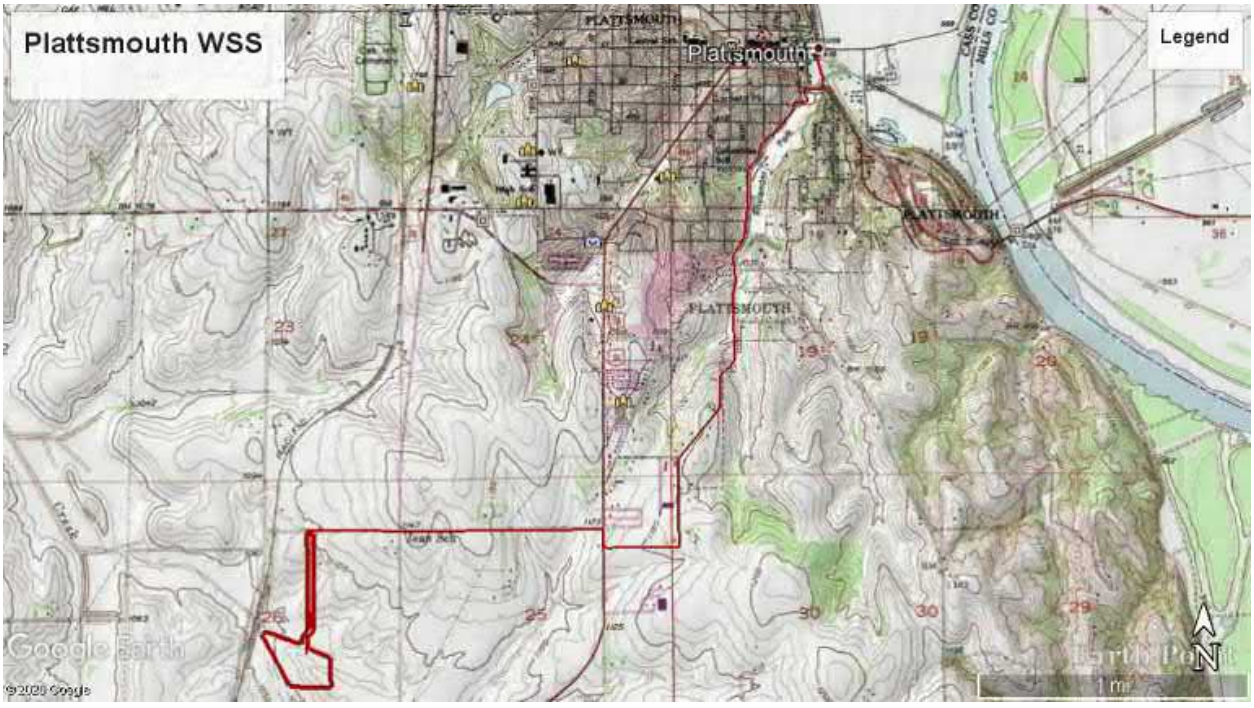

Figure 4: Alternative 3 USGS Topographic showing the APE (in red)

Tribal Consultation
Exhibit F- 3a

Figure 5: Alternative 2 photo of the area where new water main will be bored underneath the Platte River. Photo facing North.

Figure 6: Alternative 3 South view of proposed new WSS/WWTP site.

Tribal Consultation
Exhibit F- 3a

Exhibit F - 4

Agency Coordination and Public Involvement

For

Alternative 3
Relocate WTP to Fourmile Industrial Park
Taken From
Plattsmouth Wastewater Treatment Plant Draft EA

Munk, Kari A

From: Dominy, Neil - NRCS, Lincoln, NE <neil.dominy@usda.gov>
Sent: Monday, June 15, 2020 7:53 AM
To: Copenhaver, Kim A
Cc: Steven Perry; Munk, Kari A
Subject: RE: Plattsmouth WWTP Relocation Farmland Conversion coordination

Subject: FPPA response for: Plattsmouth WWTP Relocation

Date: 06/15/20

Attention: Kim Copenhaver**,** Senior Environmental Scientist, Terracon Consultants

Plattsmouth Waste Water treatment plant FPPA response

I am responsible for the Farmland Protection Policy Act (FPPA) concerns and have reviewed the information you sent regarding the project for which you requested review of impacts. This review only covers FPPA concerns and does not include any other environmental concerns such as wetlands or endangered species. For general conservation concerns or questions relating to wetlands under the jurisdiction of the Food Security Act, contact your local county Natural Resources Conservation Service office.

It has been determined that a Farmland Conversion Impact Rating form (AD-1006) will not be needed on this project since the project site is within the city limits of Plattsmouth, NE. Thus, NRCS has determined that your project was found to be cleared of FPPA significant concerns.

Neil Dominy

United State Department of Agriculture – Natural Resources Conservation Service
Assistant State Conservationist – Partnerships and Initiatives
100 Centenntial Mall N Lincoln, NE 68503
402-437-4113 Office
Neil.dominy@usda.gov

From: Copenhaver, Kim A <Kim.Copenhaver@terracon.com>
Sent: Thursday, June 11, 2020 10:57 AM
To: Dominy, Neil - NRCS, Lincoln, NE <neil.dominy@usda.gov>
Cc: Steven Perry <SteveP@olmstedperry.com>; Munk, Kari A <Kari.Munk@terracon.com>
Subject: Plattsmouth WWTP Relocation Farmland Conversion coordination

Dear Mr. Dominy,

Farmland Protection
Exhibit F - 4a

Terracon is preparing an Environmental Assessment document for FEMA funding for the relocation of the Plattsmouth Waste Water treatment plant. We are requesting your review of the attached Farmland Conversion Rating Form. The project involves permanent disturbances to a 25-acre site located in Plattsmouth, Cass County, Nebraska. A portion of the site, approximately 18 acres, appears involve the conversion of Farmland of Statewide Importance to Nebraska and Prime Farmland as determined by our review of the NRCS web soil survey and NRCS data on Prime and Important Farmlands.

The larger tract of land is owned by the City of Plattsmouth and proposed for industrial development in the future and is currently leased for farming. The WWTP site is located on 25-acres of this agricultural land and involves about 18 acres of farmland listed of importance as shown below. Other portions of the project involve the construction of a conveyance system which will be primarily located in road shoulders and road right of ways. An alternative outfall structure and wastewater conveyance line is also being reviewed for the project. All of the conveyance system pipes will be buried 6-15 feet below existing ground levels with topsoil returned. Site maps are provided for your review. The site is located at the coordinates 40.978639 Lat, -95.917037.

WWTP 8025 6-11% slopes Marshall Silty Clay loam, farmland of statewide importance.
WWTP 8020 2-6 % slopes Marshal Silty clay loam, prime farmland
WWTP 7231 Judson silt loam 0-2% Prime farmland
Road 7770, 7773 Colo silty clay loam, Not prime farm land unless drained

Please let me know if you need any additional information or have any questions. Thank you for your time and attention.

Best Regards,

Kim Copenhaver
Senior Environmental Scientist
Natural and Cultural Resources Services

Terracon Consultants, Inc.
15080 A Circle I Omaha, Nebraska 68144-5558
O (402) 384-7009
M (518) 275-7733
F (402) 330-7606
Kim.copenhaver@terracon.com

Terracon provides environmental, facilities, geotechnical, and materials consulting engineering services delivered with responsiveness, resourcefulness, and reliability.

Farmland Protection
Exhibit F - 4a

NEBRASKA
GAME PARKS

2200 N. 33rd St. • P.O. Box 30370 • Lincoln, NE 68503-0370 • Phone: 402-471-0641

July 24, 2020

Jessica Engelbart
Terracon
15080 A Circle
Omaha, NE 68144

Re: NE-CERT-002555, Plattsmouth Wastewater Treatment Plant (WWTP) relocation, Cass County, Nebraska

Dear Ms. Engelbart:

Please make reference to your CERT Environmental Review Report (ERR) dated June 3, 2020 and subsequent email dated July 21, 2020. This letter is in response to your request for further consultation based on the results of the ERR. As we understand it, the project involves a proposed relocation of the Plattsmouth WWTP. We have completed our review of the proposed project under Neb. Rev. Stat. § 37-807 (3) of the Nongame and Endangered Species Conservation Act and we offer the following comments. This letter should be used in combination with the CERT ERR to constitute a complete environmental review for this project.

The project is located within the range of several state-listed endangered or threatened species as identified in the last Table on Page 10 in the ERR. There does not appear to be suitable habitat for western prairie fringed orchid. However, there does appear to be habitat for the northern long-eared bat (nleb) within the project area. In your email dated July 21, 2020, you have agreed to no tree removal between the dates of June 1 – July 31 to observe the nleb maternity roosting season. Therefore, we concur that the proposed project "may affect, not likely to adversely affect" the northern long-eared bat and that the project will have "no adverse effect" on all other state-listed endangered or threatened species. We made this determination based on a review of the material you sent, aerial photographs, and our Nebraska Natural Heritage Database.

If the proposed project is changed or new information regarding endangered or threatened species becomes available, then this determination is no longer valid and further consultation with the Nebraska Game and Parks Commission will be necessary.

All federally listed endangered or threatened species are also state-listed. For an assessment of potential impacts to habitats and species protected under federal wildlife laws, including federally listed, candidate or proposed endangered or threatened species, please contact Eliza Hines (eliza_hines@fws.gov), Nebraska Field Office, U.S. Fish and Wildlife Service, 9325 South Alda Road, Wood River, Nebraska 68883.

Thank you for the opportunity to comment. If you have any questions or need additional information, please feel free to contact me at (402) 471-5423 or shannon.sjolie@nebraska.gov.

Sincerely,

Shannon Sjolie
Environmental Analyst Supervisor
Planning and Programming Division

Copenhaver, Kim A

From: Swigart, John <John.Swigart@nebraska.gov>
Sent: Tuesday, July 28, 2020 1:54 PM
To: Copenhaver, Kim A
Subject: Plattsmouth Wastewater Treatment Plant Relocation
Attachments: 2007-033-01.pdf

NeSHPO – 2007-033-01 project Section 106 Review and Compliance

M. Copenhaver,

Attached is a digital copy of the Section 106 review letter from the Nebraska State Historic Preservation Office.

Please let me know if you have: 1) any questions or comments regarding the determination, 2) require a hard copy for your files, or 3) need me to forward this letter to someone else in your organization.

Sincerely,
John Swigart

John Swigart
Archeology Review and Compliance, Archeology Survey Coordinator

History NEBRASKA

1500 R Street
Lincoln, Nebraska 68508-1651

t . 402-471-2609 | f . 402-471-3100
john.swigart@nebraska.gov | history.nebraska.gov

Preserving the Past. Building the Future

Historic and Cultural Resources
Exhibit F - 4c

Recipient/ Sub Recipient: City of Plattsmouth

Undertaking: Plattsmouth Wastewater Treatment Plant Relocation

Location: East Wiles Road
Plattsmouth, Cass County, Nebraska
Latitude 40.918832, Longitude -95.918900
SE¼ NE¼ S26 T3N R13E

REVIEWED AND APPROVED

DEPUTY ST. HISTORIC PRESERVATION OFFICER

7/28/2020
DATE

Dear Ms. Dolberg,

The City of Plattsmouth, located in Cass County, Nebraska, has applied through the Federal Emergency Management Agency (FEMA), an agency of the U.S. Department of Homeland Security (DHS), Public Assistance (PA) Section 428 Alternate Project Grant Program for funding assistance under the Presidentially Declared Disaster 4420D to relocate the wastewater treatment plant (WWTP) that serves the City of Plattsmouth. Terracon is completing the NEPA Environmental Assessment Review of the project as part of FEMA's review of this project to comply with Section 106 of the National Historic Preservation Act and its implementing regulations 36 CFR Part 800.

The existing WWTP was significantly damaged by major flooding of the Platte and Missouri Rivers in the Spring of 2019 (Flood Event 4420DR). The WWTP is located in the floodplain and has been subject to reoccurring flood damage and is at risk of future flooding. Each time the plant is flooded the environment is at risk of untreated sewage entering the Missouri River and public water supplies. The proposed relocation of the WWTP will eliminate this risk, while meeting the current wastewater treatment needs of the community with only a minor amount of expanded capacity due to the modernized wastewater processing technology. The attached file entitled "Plattsmouth WWTP Relocation Basic Exhibits" provides an overview of the work area and Area of Potential Effect (APE).

Terracon, on behalf of the City of Plattsmouth and FEMA, is submitting the attached Cultural Resource Study completed for the proposed WWTP site and the alternative wastewater outfall structure row. The remaining portions of the APE for the project involve the Sewerage/Wastewater Conveyance System, (SWCS) see Basic Exhibit 3. The SWCS work will take place within existing transportation ROWs and utility corridors with previously disturbed soils. No work is proposed within the Plattsmouth Historic District (PDH) . A "Headworks Pump Station" will be situated on a previously filled parcel of land located several blocks to the east of the PHD, within an industrial area. The Headworks building would be a small, one-story building located below the street view of the PDH, at the toe of a 15+ foot slope and behind several small autobody salvage shops.

In light of the May 11, 2015 Programmatic Agreement between FEMA, The Nebraska State Historical Society, and The Nebraska Emergency Management Agency; and more specifically "Allowances D,-1a and 1b" of that Agreement which referenced the installation of new utilities and associated features within existing right-of way or utility corridors and previously disturbed soils, it appears that Historic and Cultural Resources would not likely be affect by the SWCS portion of the project. The archeologically study completed for the WWTP portion of the site indicates that no impacts to historic or cultural resources are likely to occur from the project.

Historic and Cultural Resources
Exhibit F - 4c

We are notifying you of FEMA's proposed action to fund this important pubic project, and we respectively request your comments on these findings, as well as your concurrence with the preliminary determination of No Effect on Historic or Cultural Resources.

Your assistance in this matter is greatly appreciated. We have included FEMA and the city of Plattsmouth Engineer, Steve Perry PE on this email so that they have a copy of all of the above. Please contact me directly with any questions or concerns.

Thank you.

Kim Copenhaver
Senior Environmental Scientist
Natural and Cultural Resources Services

Terracon Consultants, Inc.
15080 A Circle I Omaha, Nebraska 68144-5558
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M (518) 275-7733
F (402) 330-7606
Kim.copenhaver@terracon.com

Terracon provides environmental, facilities, geotechnical, and materials consulting engineering services delivered with responsiveness, resourcefulness, and reliability.

Private and confidential as detailed here (www.terracon.com/disclaimer). If you cannot access the hyperlink, please e-mail sender.

Historic and Cultural Resources
Exhibit F - 4c