Floodplain and Water Resources

I-80 East Widening Project

Prepared for the Nevada Department of Transportation

Washoe County, Nevada
November 11, 2024

Contents

Figures

Appendices

Abbreviations

BMPs	best management practices
BWPC	Bureau of Water Pollution Control
cfs	cubic feet per second
CWA	Clean Water Act
EO	Executive Order
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographic Information Systems
I-	Interstate
NDCNR-DWR	Nevada Department of Conservation and Natural Resources, Division of Water Resources
NDEP	Nevada Division of Environmental Protection
NFIP	National Flood Insurance Program
NPDES	National Pollutant Discharge Elimination System
NRS	Nevada Revised Statutes
NWI	National Wetland Inventory
OHWM	ordinary high water mark
RCB	Reinforced Concrete Box
RCP	Reinforced Concrete Pipe
RPW	relatively permanent waters
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
Waters of the U.S.	Waters of the United States
WQIR	Water Quality Investigation Report
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency

This page is intentionally left blank.

1 Floodplain and Water Resources

This section identifies the water resources in the affected area associated with the Proposed Action (synonymous with the Build Alternative included herein), describes the regulatory setting, and identifies impacts to floodplains and water resources. This water resources analysis was limited to floodplains, surface waters, wetlands, and water quality. The Proposed Action did not have the potential to adversely affect groundwater or wild and scenic rivers; therefore, these subcategories were not analyzed.

1.1 Definition of Resource

Water resources include surface waters that are important in providing drinking water and in supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems. The water resources in the Proposed Action Area (also referred to as survey area herein) are described below.

1.2 Regulatory Context

Several regulations protect water resources. The following sections provide a summary of the two main applicable regulations by water resource. The others referenced herein are described in Appendix A.

1.2.1 Wetlands and Waters of the United States

Wetlands are regulated under the Clean Water Act (CWA). The United States Army Corps of Engineers (USACE) and United States Environmental Protection Agency (USEPA) have used the following definition since the 1970s for the regulation of wetlands: “Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

Executive Order (EO) 11990, Protection of Wetlands, requires federal agencies to avoid, to the extent possible, adverse impacts to wetlands unless no practicable alternative exists. The Proposed Action must include all possible practicable measures to minimize the impact.

The CWA, overseen by the USACE and the USEPA, provides the federal regulation for discharge of pollutants into Waters of the United States (Waters of the U.S.). The USACE and the USEPA issued guidance to use in the determination of Waters of the U.S., which includes wetlands. Surface waters meeting this regulatory definition are considered jurisdictional and are subject to protection under the CWA. The USACE is responsible for issuing jurisdictional determinations. Section 404 of the CWA requires a permit be obtained prior to any dredging, or placement of fill, in United States jurisdictional waters. The USACE is the Section 404 permitting agency. Non-jurisdictional wetlands are also protected under EO 11990. The Aquatic Resources Delineation Report is included in Appendix B.

Before the Section 404 permit becomes valid, Section 401 of the CWA requires that the Proposed Action be certified for water quality from the applicable state water pollution control agency. The USEPA has delegated water quality certification to the state. Therefore, in addition to receiving a 404 permit from the USACE, an Action impacting wetlands and/or Waters of the U.S. is also required to receive a 401 Water Quality Certification from the state entity, in this case, the Nevada Division of Environmental Protection (NDEP). The 401 Water Quality Certification requires that the Applicant demonstrates that it meets specific requirements of water quality standards set by the USEPA.

1.2.2 Floodplains

EO 11988, Floodplain Management, directs federal agencies to:

- Assert leadership in reducing flood losses and losses to environmental values served by floodplains.
- Avoid actions located in or adversely affecting floodplains unless there is no practicable alternative.
- Take action to mitigate losses if avoidance is not practicable.
- Establish a process for flood hazard evaluation based on the 100-year base flood standard of the National Flood Insurance Program (NFIP). It also directs federal agencies to issue implementing procedures, provide a consultation mechanism for developing the implementing procedures, and provide oversight mechanisms.

The United States Department of Transportation (USDOT) Order 5650.2 contains policies and procedures for carrying out EO 11988. According to the EO, federal agencies must comply, at a minimum, with NFIP regulations. The Federal Emergency Management Agency (FEMA) oversees floodplain management and has developed flood hazard maps. FEMA coordinates with the Nevada Department of Conservation and Natural Resources, Division of Water Resources (NDCNR-DWR), on the designation of floodplain boundaries in the state. NDCNR-DWR also participates in an administrative process to concur with FEMA map revisions. NDCNR-DWR has jurisdiction over construction in watersheds.

1.3 Surface Water

1.3.1 Water Quality

Surface water quality comes from on-site and off-site sources, including those associated with runoff from impervious surfaces including roads, maintenance activities, and other operations.

The CWA establishes the basic structure for regulating discharges of pollutants into Waters of the U.S. Pertinent sections of the CWA related to Waters of the U.S. are Section 303(d), Section 404, Section 401, and Section 402, which establishes the National Pollutant Discharge Elimination System (NPDES) program. These federal regulatory requirements are summarized in Appendix A.

General Use Water Quality Standards

“Impaired waters” are any bodies of water that do not meet water quality standards or fully support the waterbody’s intended beneficial use. Section 303(d) of the CWA requires that states assess and list impaired waters and establish priority ranking by considering the water’s uses and pollutant levels. These federal regulatory requirements are summarized in Appendix A.

In Nevada, the USEPA requires surface waters to be assessed every two years and recorded in a report (NDEP, 2022). The report classifies waterbodies or waterbody segments (also referred to as “assessment units”) into five general categories:

- Category 1 – Attaining all designated uses
- Category 2 – Attaining some designated uses, and insufficient or no data information to determine if remaining uses are attained
- Category 3 – Insufficient or no data and information to determine if any use is attained
- Category 4 – Impaired or threatened for one or more uses but not needing a Total Maximum Daily Load (TMDL) because
    - TMDL has been completed
    - Expected to meet standards
    - Not impaired by a pollutant
- Category 5 – Impaired or threatened by pollutant(s) for one or more designated uses and requiring a TMDL. These are the waters on the 303(d) list.

Waterbodies have been classified for designated uses that include aquatic life, wildlife, agricultural use, primary contact (e.g., swimming, water skiing), secondary contact (e.g., boating, fishing), industrial use, public and food-processing water supply, and aesthetic quality. Water quality conditions are described in terms of the degree to which the waters attain the designated uses. Water quality is rated as either “fully supporting” or “not supporting,” with a “fully supporting” rating meaning a waterbody meets the needs of all designated uses.

Under the CWA, the State of Nevada is responsible for developing TMDLs for all impaired waters. For purposes of calculating TMDLs, waterbodies are divided into segments. A TMDL for total nitrogen, total phosphorus, and total dissolved solids has been developed for the Truckee River.

1.4 National Pollutant Discharge Elimination System

The NPDES program, established under the CWA, requires permits for the discharge of treated municipal effluent, treated industrial effluent, and stormwater. In Nevada, the USEPA has delegated the authority to issue NPDES permits through the NDEP. The NDEP Bureau of Water Pollution Control (BWPC) issues discharge permits to protect all Waters of the State, including groundwater, pursuant to the State of Nevada Water Pollution Control Law, Nevada Revised Statutes (NRS) 445A.300 - 445A.730 summarized in Appendix A. Additionally, BWPC administers the NPDES Permit

Program, pursuant to CWA Section 402 for discharges to Waters of the U.S., with oversight from EPA (NDEP, 2022). An NPDES permit for construction activity is also required for activities disturbing one acre or more of land. Permittees are required to control runoff from construction sites and develop a Construction Stormwater Pollution Prevention Plan (SWPPP) that includes best management practices (BMPs) for erosion prevention and sediment control.

Development typically results in changes to land cover type and drainage systems. Increases in impervious areas increase the amount of runoff, which results in changing surface water flows (both volumes and rates). The County of Washoe adopted ordinances and regulations to address these types of impacts from development and stormwater systems. A summary of these policies are included in Appendix A.

2 Affected Environment

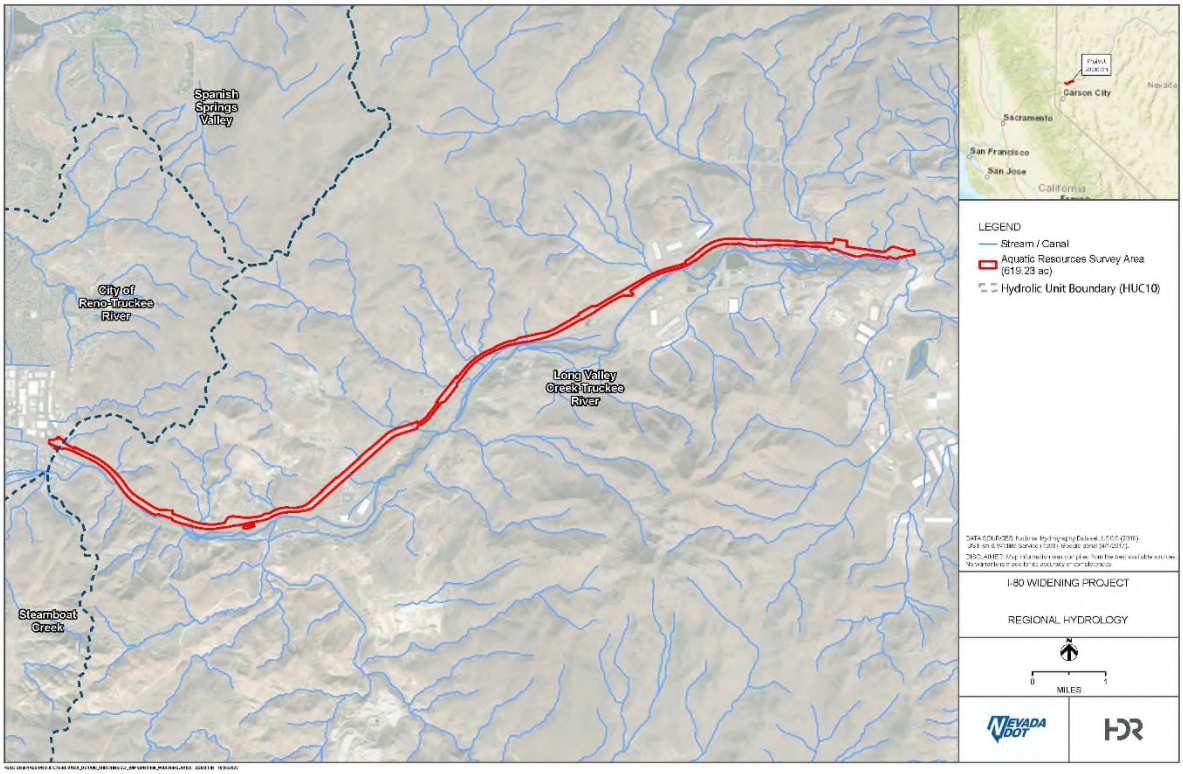
2.1.1 Watershed

Most of the Proposed Action falls within the Long Valley Creek-Truckee River watershed, hydrologic unit code 1605010206, while a small portion falls within the City of Reno-Truckee River watershed, hydrologic unit code 1605010205 (Figure 1). The Truckee River flows through west to east, adjacent to the Proposed Action Area.

The Truckee River flows for 120 miles from the outlet of Lake Tahoe in California into Nevada, through the city of Reno, terminating at Pyramid Lake. Many tributaries feed into the Truckee River including Steamboat Creek, Red Ravine Creek, and Long Valley Creek. Toward the east end, the Truckee River flows into Tracy Pond before continuing east into the Truckee Canal or north into Pyramid Lake. The existing surface drainage network within the survey area largely consists of intermittent streams and ephemeral drainages dominated by alluvium, and are shown in Exhibit 1 in Appendix C.

These areas exhibit an ordinary high water mark (OHWM) from annual storm events. The Truckee River was given a Category 5 rating by the NDEP for the entire stretch of the river paralleling the survey area. The Truckee River, which has approved TMDLs for total nitrogen, total phosphorus, and total dissolved solids, was listed as meeting only the total dissolved solids parameter in the most recent (2020-2022) Water Quality Integrated Report (NDEP, 2022).

Figure 1. Regional Hydrology



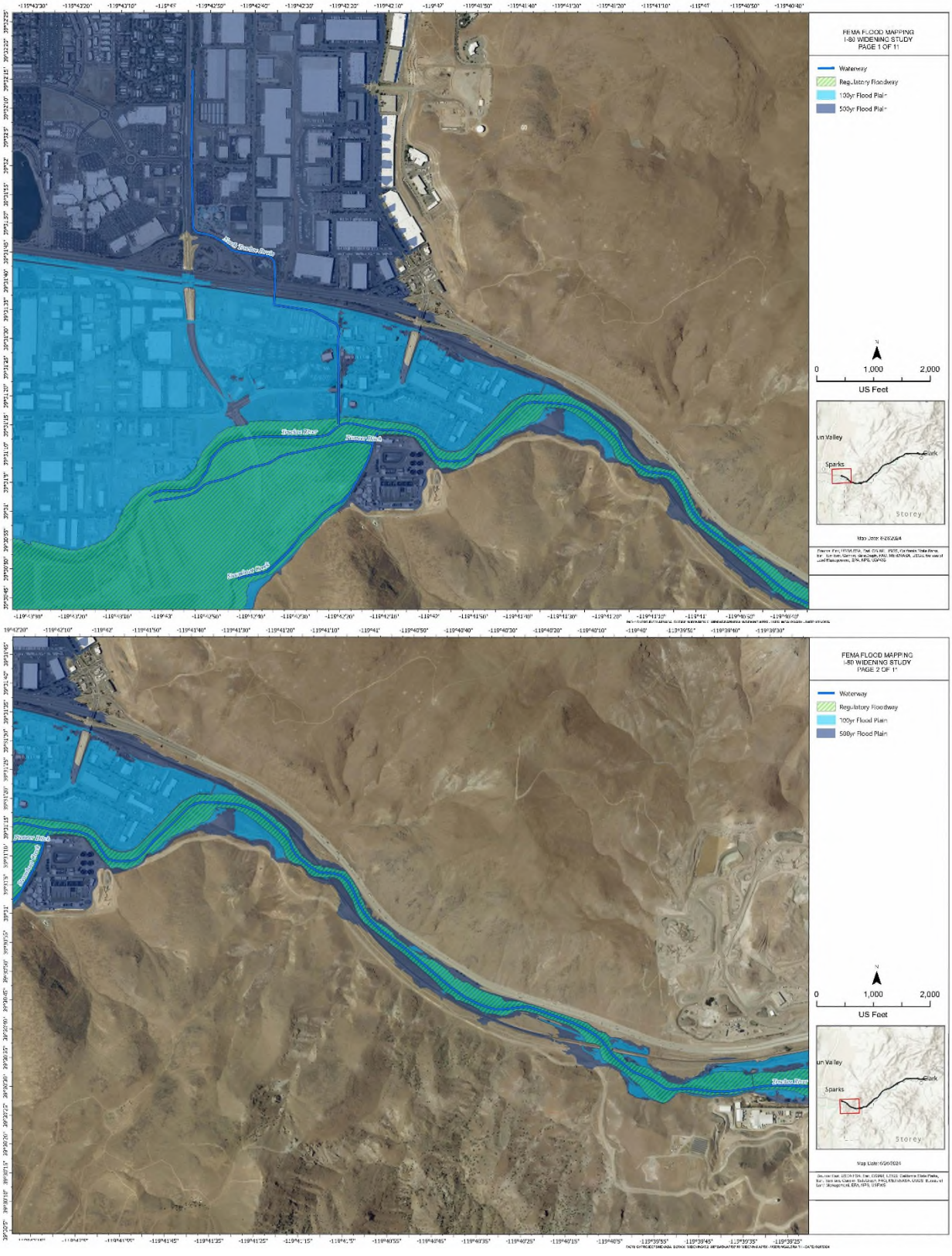
2.1.2 Wetlands

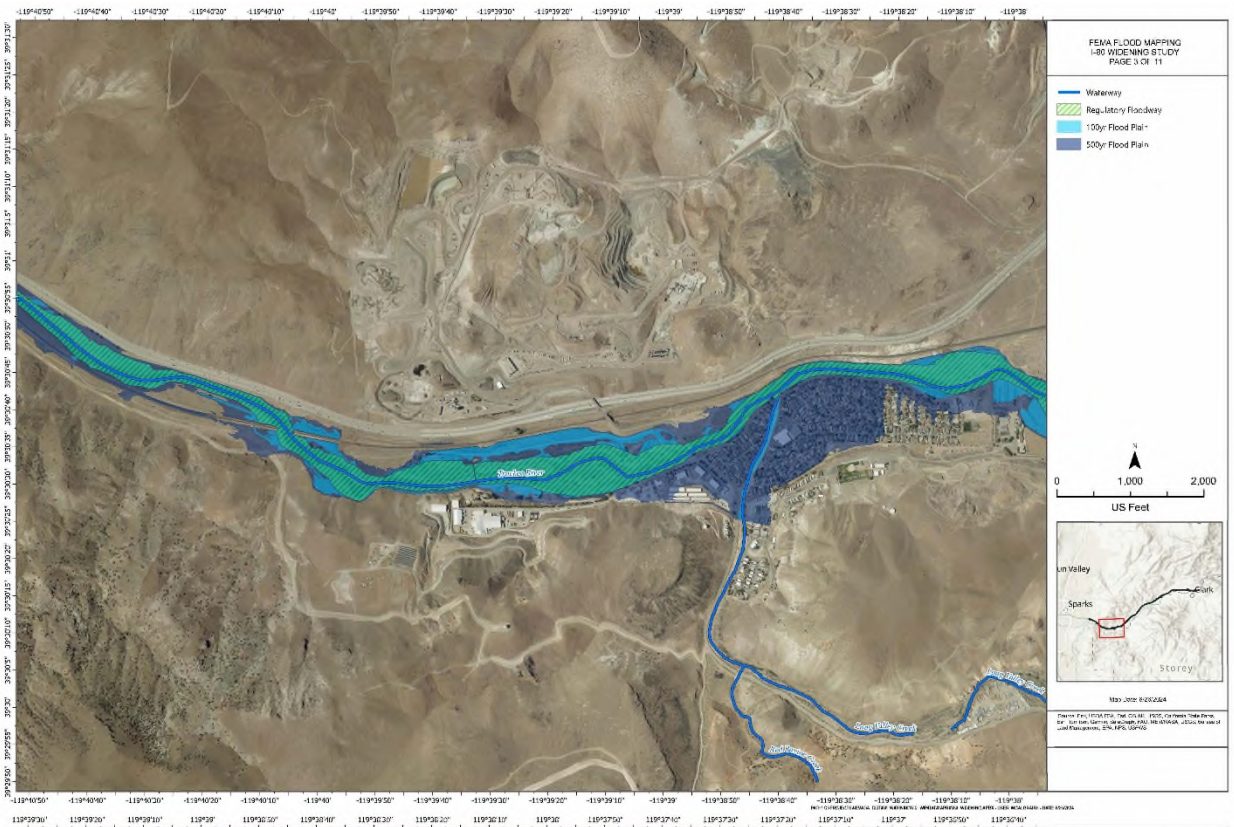
Approximately 669 acres within the aquatic resources survey area were examined for wetlands and water resources. Details regarding the delineation methods and results are presented in Appendix B. The survey area includes approximately 14 miles of Interstate (I-) 80 between the towns of Sparks and Clark in Washoe County, Nevada. The Truckee River flows along the south side of I-80 within a small portion of the survey area. During field surveys, all areas in the survey area were examined, and no wetlands were found.

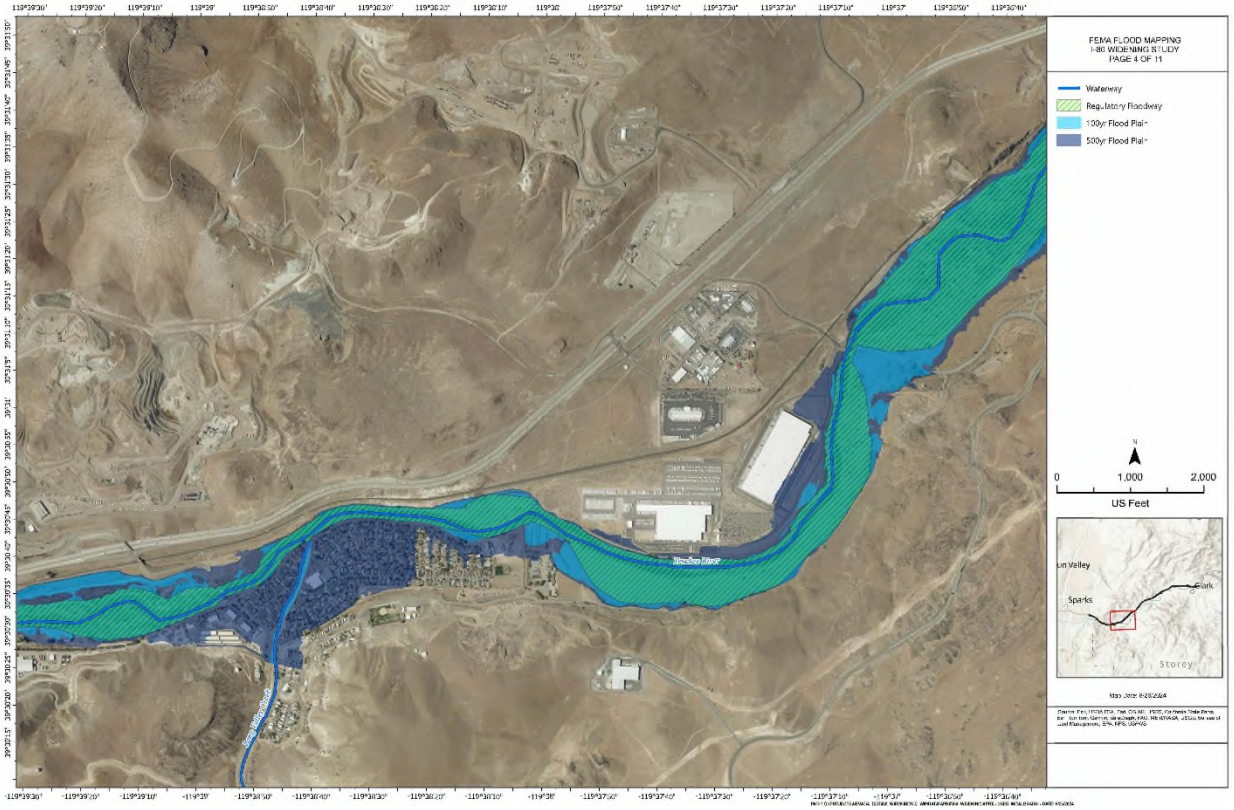
2.1.3 Floodplains

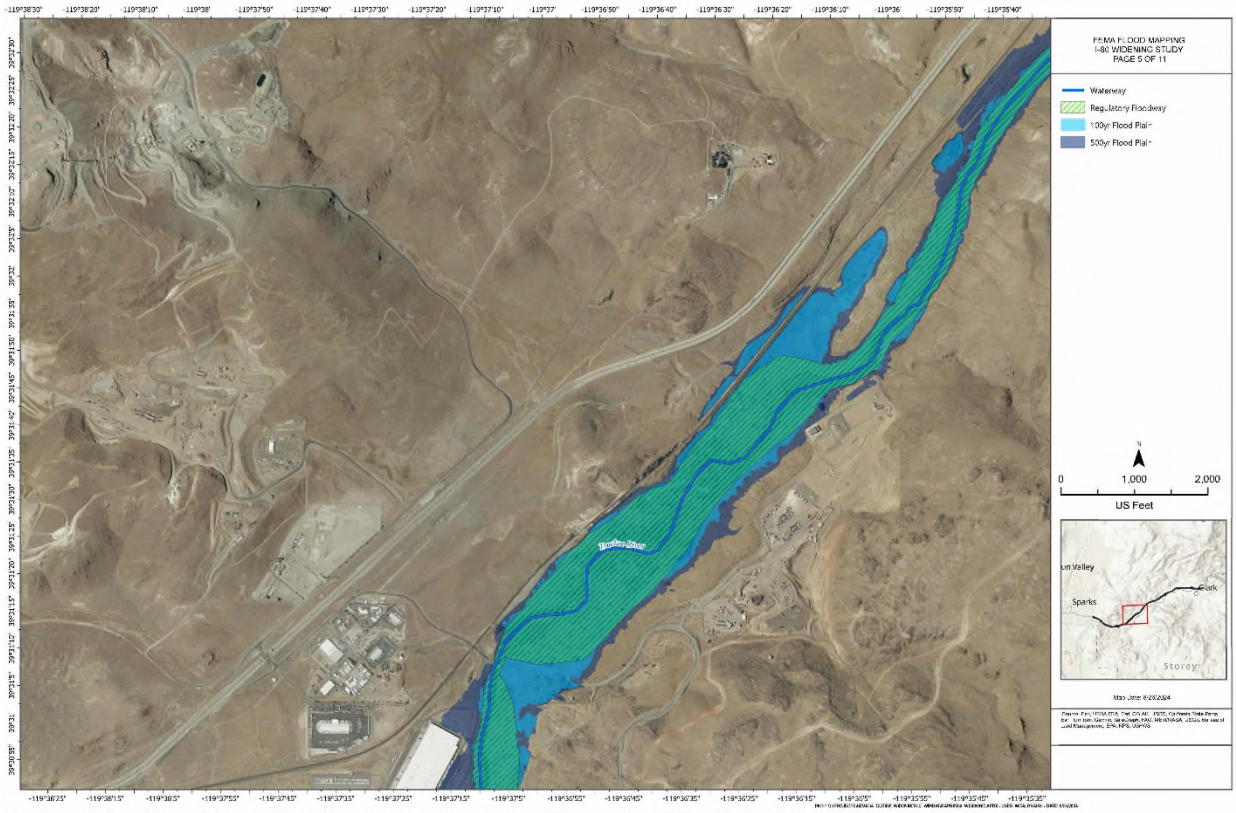
The current published FEMA flood hazard maps for the survey area have effective dates of March 2009. The regulated 100-year floodplain and floodway (one percent Annual Chance Flood Hazard) and 500-year floodplain limits (0.2 percent Annual Chance Flood Hazard) obtained from FEMA maps are shown in Figure 2 and Exhibit 2 in Appendix C along with the Proposed Action. The survey area intersects areas of 100- and 500-year floodplains.

Figure 2. 100-Year and 500-Year Floodplains in the Vicinity

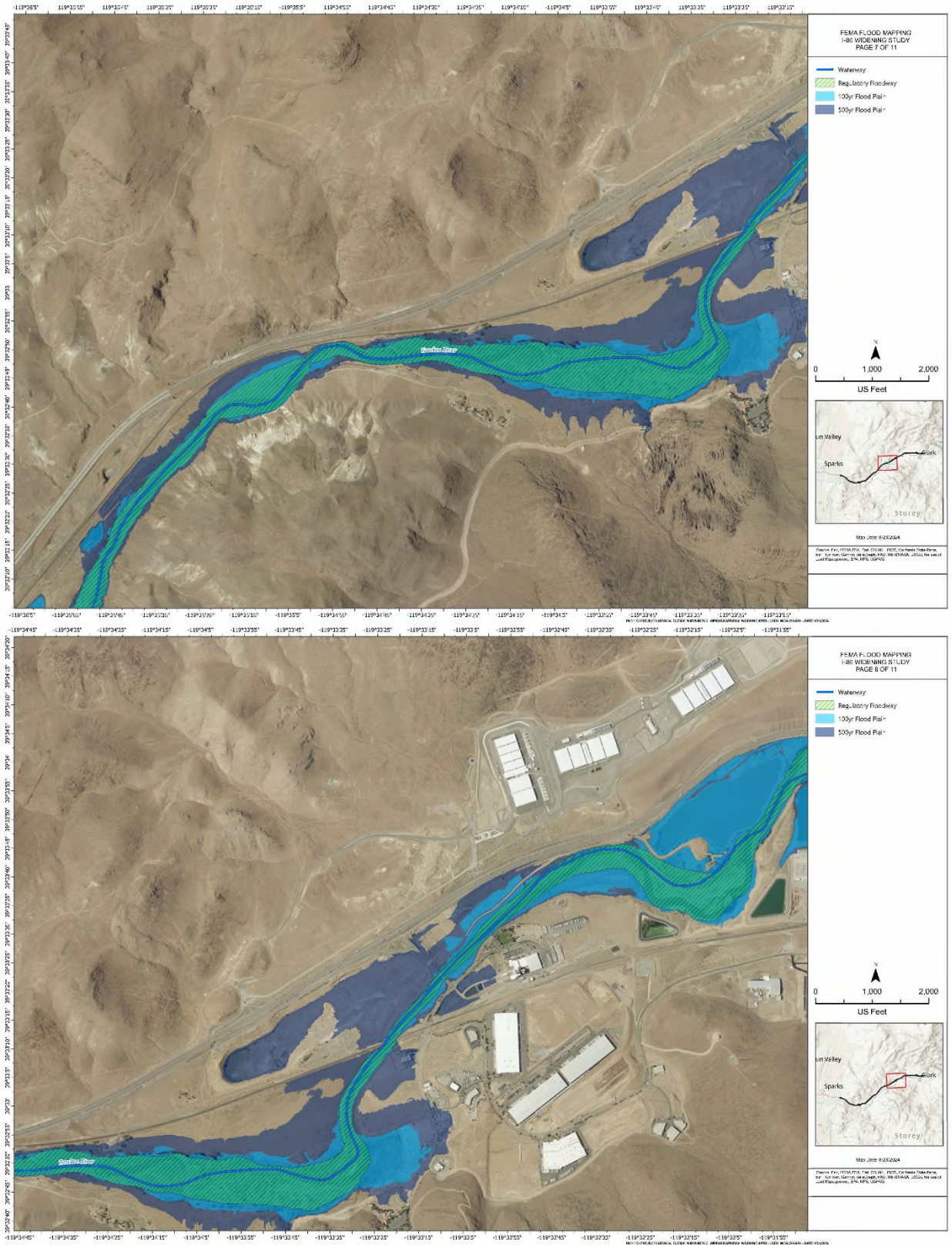


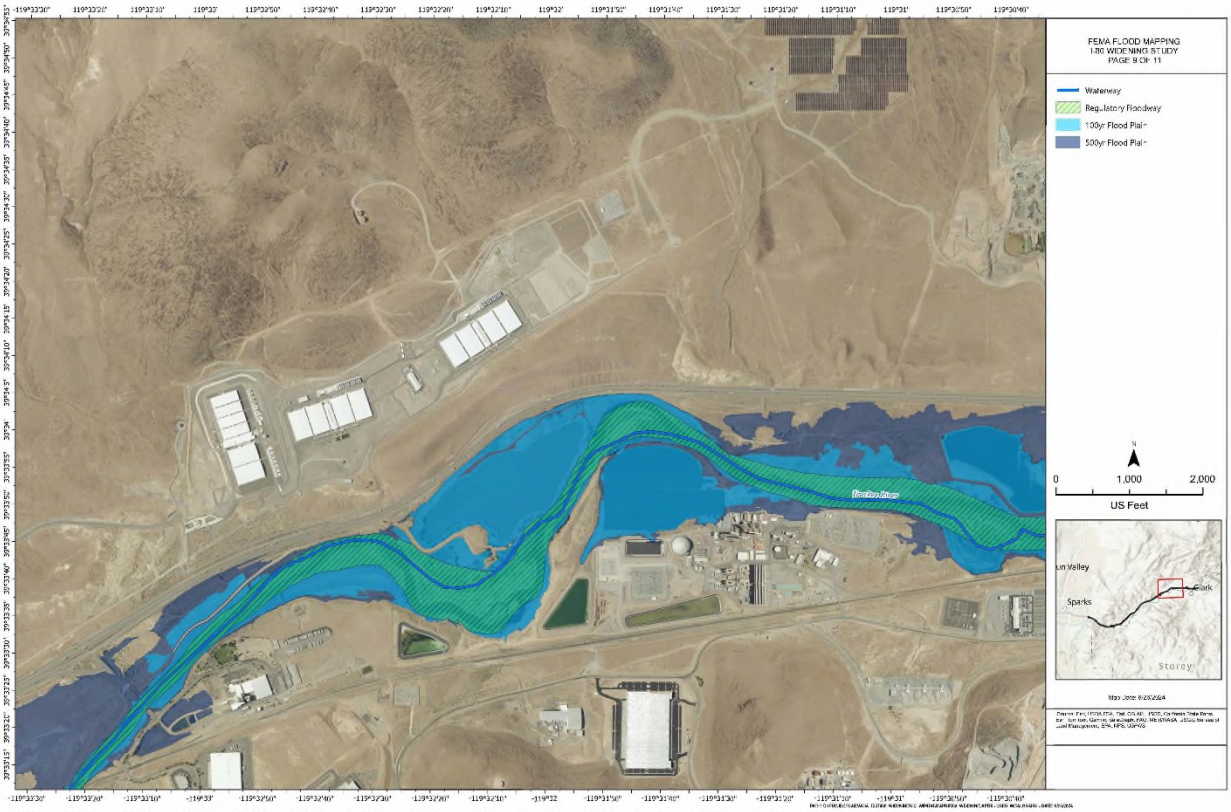

FEMA FLOOD MAPPING
I-80 WIDENING STUDY
PAGE 3 OF 11
Waterway
Regulatory Floodway
100yr Flood Plain
500yr Flood Plain
0
1,000
2,000
US Feet
Truckee River
Steamboat Creek
Lemmon Valley Wash
Dry Valley Creek
Lemmon Valley
Sparks
Reno
Storey

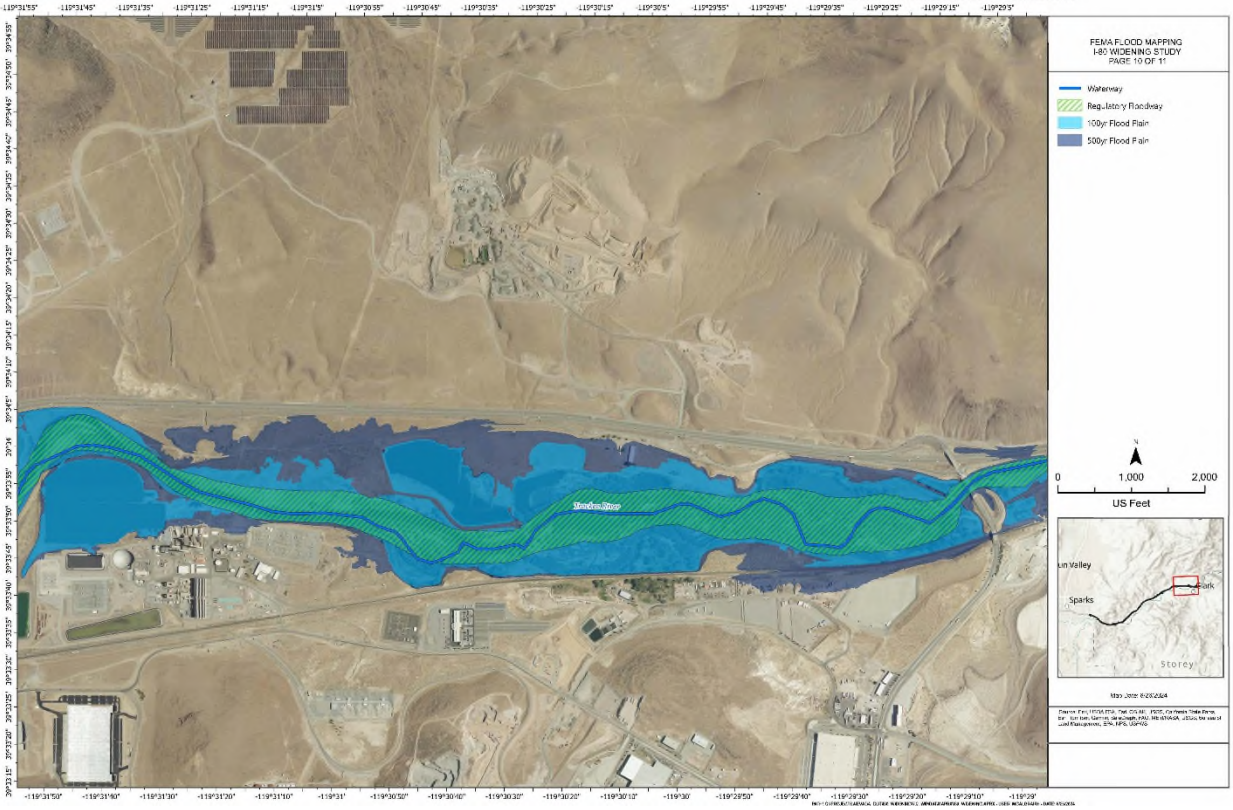

FEMA FLOOD MAPPING
I-80 WIDENING STUDY
PAGE 4 OF 11
Waterway
Regulatory Floodway
100yr Flood Plain
500yr Flood Plain
0
1,000
2,000
US Feet
Truckee River
Steamboat Creek
Lemmon Valley
Sparks
Reno
Storey

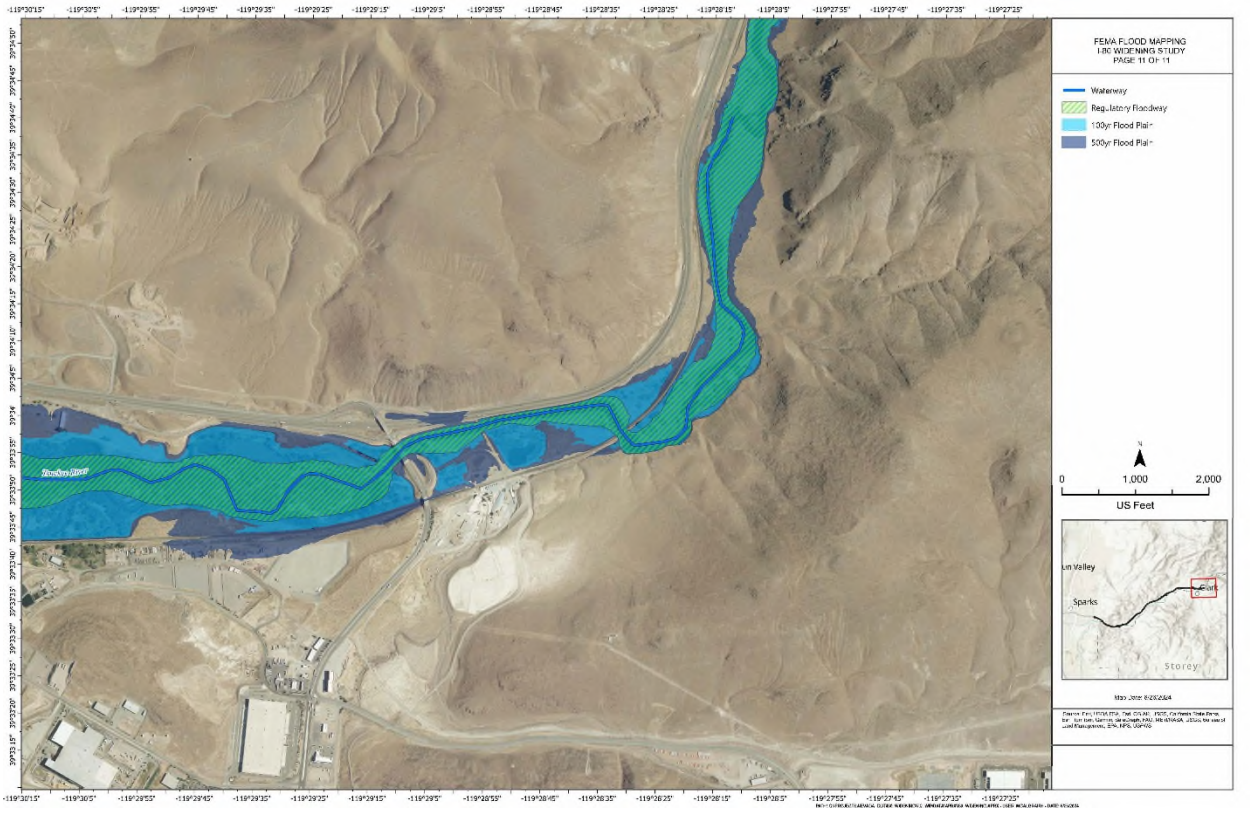

FEMA FLOOD MAPPING
I-80 WIDENING STUDY
PAGE 5 OF 11
Waterway
Regulatory Floodway
100yr Flood Plain
500yr Flood Plain
0
1,000
2,000
US Feet
Truckee River
Lemmon Valley
Sparks
Reno
Storey


FEMA FLOOD MAPPING
I-80 WIDENING STUDY
PAGE 6 OF 11
Waterway
Regulatory Floodway
100yr Flood Plain
500yr Flood Plain
0
1,000
2,000
US Feet
Truckee River
Lemmon Valley
Sparks
Reno
Storey


FEMA FLOOD MAPPING
I-80 WIDENING STUDY
PAGE 7 OF 11
Waterway
Regulatory Floodway
100yr Flood Plain
500yr Flood Plain
0
1,000
2,000
US Feet
Truckee River
Lyon Valley
Sparks
Clark
Storey
FEMA FLOOD MAPPING
I-80 WIDENING STUDY
PAGE 8 OF 11
Waterway
Regulatory Floodway
100yr Flood Plain
500yr Flood Plain
0
1,000
2,000
US Feet
Truckee River
Lyon Valley
Sparks
Clark
Storey


FEMA FLOOD MAPPING
I-80 WIDENING STUDY
PAGE 9 OF 11
Waterway
Regulatory Floodway
100yr Flood Plain
500yr Flood Plain
0
1,000
2,000
US Feet
Sparks
Storey


FEMA FLOOD MAPPING
I-80 WIDENING STUDY
PAGE 10 OF 11
Waterway
Regulatory Floodway
100yr Flood Plain
500yr Flood Plain
0
1,000
2,000
US Feet
Sparks
Storey



2.1.4 Surface Water

Surface water resources include the Truckee River, and eight ephemeral drainages. Exhibit 1 in Appendix C shows the existing surface water features in the survey area.

The Truckee River flows for 120 miles from the outlet of Lake Tahoe in California into Nevada, through the city of Reno, until it terminates at Pyramid Lake. In the survey area, many tributaries feed into the Truckee River including Steamboat Creek, Red Ravine Creek, and Long Valley Creek. Toward the east end of the survey area, the Truckee River flows into Tracy Pond before continuing east into the Truckee Canal or north into Pyramid Lake.

The existing surface drainage network within the survey area largely consists of ephemeral drainages dominated by alluvium. These areas show OHWMs from annual storm events.

2.1.5 Wild and Scenic Rivers

No wild and scenic rivers exist at or in the vicinity of the survey area. Therefore, no further consideration was warranted.

2.2 Methodology

Various methodologies were employed to assess the impacts of the Proposed Action on water resources. Direct impacts result from ground disturbance, change of land use (impervious area and vegetation changes), drainage patterns, and associated pollutant

discharges for the Proposed Action. The methodologies for specific resources are described below.

2.2.1 Wetlands

The aquatic resources delineation used the Routine Determination Method as described in Part IV, Section D, of the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987), hereafter called the Corps Manual. The Corps Manual was used in conjunction with the Arid West Supplement (USACE, 2008a). For areas where the Corps Manual and the Arid West Supplement differ, the Arid West Supplement was followed. Mapping the extent of non-wetland Waters of the U.S. was conducted using *A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western U.S.* (Lichvar and McColley, 2008).

Hydrological conditions were determined through the presence of primary hydrologic indicators, such as direct observation of inundation, soil saturation in the upper 12 inches, the existence of water marks, bank scouring, water-stained leaves, or drift deposits. Secondary hydrologic indicators such as oxidized rhizospheres, algal matting, and drainage patterns were also noted when present.

The Waters of the U.S. encountered in the survey area are limited to the Truckee River, which is a perennial creek that discharges to Pyramid Lake. For non-tidal waters, the OHWM represents the limit of potential USACE jurisdiction under Section 404 of the CWA. The OHWM was interpreted from recent color aerial images, digitized for the survey area during an initial desktop delineation, and then verified in the field, based on hydrologic indicators.

Additionally, the following USACE criteria were used to determine whether a particular drainage feature constitutes potentially non-tidal jurisdictional Waters of the U.S.

- Presence of a defined bed – a linear bed in a topographic depression, which would transport surface water from a watershed.
- Presence of defined banks – near vertical or steep-sided banks formed by erosion from flowing water.
- Evidence of OHWM – some indicator(s) that the drainage is subject to surface water flows on an average annual basis. Such indicators include a scoured bed, an absence of terrestrial vegetation (particularly perennials), recent alluvial or litter deposition, and shelving.

As of the date of this report, the definitions of jurisdictional waters in response to the U.S. Supreme Court's majority opinion issued on May 25, 2023, in the Sackett v. USEPA case, were approved in August of 2023. The prior definitions and regulatory guidance to identify Waters of the U.S. in Nevada were the pre-2015 definitions, which included significant nexus evaluations for adjacent wetlands, as described in the *Rapanos Guidance* (USACE, 2008b). The U.S. Supreme Court ruling in *Sackett* effectively nullifies the use of the *Rapanos* significant nexus evaluation in future jurisdictional determinations. To summarize the *Sackett* ruling, Waters of the U.S. include navigable waters, impoundments of navigable waters, relatively permanent tributaries of navigable waters, and contiguous or adjoining wetlands (Supreme Court of the U.S., 2022). Ephemeral tributaries and excavated ditches above the OHWM of relatively permanent

waters (RPW)/outside adjoining wetlands, and wetlands or aquatic habitats separated from RPWs by natural or authorized berms or levees, or sufficient distance of uplands to be “distinguished” from Waters of the U.S. (i.e., isolated wetlands) are not anticipated to be Waters of the U.S. considering the U.S. Court’s ruling.

The footprint of Proposed Action (including a 250-foot buffer to consider the potential extent of grading limits and ground disturbance) was compared to delineated wetlands to determine direct impact, if any, to these water resources.

2.2.2 Floodplains

Changes to drainage patterns, increases in impervious surface area, and changes in the drainage configuration can affect the potential for flooding. To determine the Proposed Action’s direct impacts, the footprint of the Proposed Action was compared to existing FEMA regulatory floodplain/floodway maps. Additionally, there is the potential for indirect impacts resulting from changes in drainage patterns and increases in impervious surfaces. The methodology to evaluate these surface water impacts is included in the following section.

2.2.3 Surface Water

The delineation used the routine determination method as described the USACE regulatory guidance letter regarding Ordinary High Water Mark Identification (USACE 2005). Linear drainage features were evaluated to identify type, such as ephemeral, intermittent, or perennial. The OHWM of these features was typically delineated by collecting reference lines or points along their banks, or by walking the center line of the feature and applying a standard channel width. In addition, detailed data for linear drainage features were collected and included indicators of the OHWM and extent of active channel; stream forms present, such as pools, riffles, and runs; average water depth in channel and pools; presence of woody debris; channel characteristics such as narrow/deep and wide/shallow; stream bottom characteristics; and vegetative cover. Features were evaluated for the presence of shelving, vegetation wracking, deposition, changes in soil character, scouring, water staining, and changes in plant community in order to define the OHWM (USACE 2005).

2.3 Existing Conditions

The baseline condition for water resources considered the resources presented in the following sections.

2.3.1 Wetlands

No wetlands were observed during the 2023 field delineation. With no wetlands identified, a jurisdictional wetland determination has not been requested. Details regarding the delineation methods and results are presented in Appendix B.

2.3.2 Floodplains

Floodplains and floodways regulated by FEMA are shown in Figure 2 and are associated with the Truckee River. These maps reflect current published FEMA boundaries, and are

shown in Flood Insurance Rate Map (FIRM) Panels 32031C3064G, 32031C3068G, 32031C3068G, 32031C3088G, 32031C3086G, 32031C3087G, 32031C3091G, 32031C3083G, 32031C3084G, and 32031C3103G.

2.3.3 Surface Water

One feature in the survey area drains perennial surface waters: the Truckee River. The Truckee River flows west to east through the survey area. The perennial channel feature has a clearly defined bed and bank and an identifiable OHWM. On October 10, 2023, the river was flowing at approximately 324 cubic feet per second (cfs) (USGS, 2023). Yearly records from January 2013 to October 2023 show the river annually fluctuates between a low of 70 cfs during the summer months and a high of almost 10,000 cfs in January. However, annual maximum flows are typically between 5,000 and 6,000 cfs from January through April. These changes in flow vary annually.

Within the survey area, the river has an average width of 120 feet between the OHWM. OHWM indicators that were used for this determination varied throughout the survey area. Along areas of the shore that consisted of steep bedrock, water staining and the scouring of moss were used as the primary indicators, while among the wider gravel bars indicators included a natural line cut into the bank, shelving, wracking, vegetation matted down, absent vegetation, changes in the plant community, sediment sorting, along with water staining and scouring. The vegetation along the banks was sparse, but consisted of rabbitbrush, saltbush, and cheat grass in most cases in the survey area. One small patch of cattail was noted growing in the channel within the OHWM.

Throughout the survey area, the riverbed consisted largely of cobbles, with some exposed bedrock along with boulders, gravel, sand, and some silt deposits. The water was turbid. Characterized as a Traditional Navigable Water, the Truckee River is the only waterway in the survey area that is a jurisdictional feature under Sections 404 and 401 of the CWA.

Eight isolated ephemeral channels, which convey stormwater were identified within the survey area. None of these features had any water flowing during the survey, but showed signs that water flows through these channels following a precipitation event. The National Wetland Inventory (NWI) (USFWS, 2024) also maps all of them as riverine, intermittent streambeds. These features had an average OHWM depth between 0.1 and 0.7 inches in most cases and had moderately sloped or incised banks. For this reason, each were characterized as ephemeral, not intermittent. OHWM indicators used to identify the features were similar, as were the substrate including defined bed and bank, scour, and gravelly sand alluvium. The vegetation surrounding these features was similar to the surrounding upland vegetation and included plant associates within the yellow rabbitbrush shrubland alliance and *Bromus tectorum* semi-natural herbaceous alliance. All eight features drained southeasterly towards the Truckee River, however, the Union Pacific Railroad or the highway itself blocks surface flows from connecting surface waters to the river. Therefore, these eight ephemeral channels are characterized as isolated and non-jurisdictional under Sections 404 and 401 of the CWA.

3 Environmental Consequences

3.1.1 No Build Alternative

This alternative represents the baseline condition without the Proposed Action. This alternative assumes the highway would continue to operate and maintain its drainage and surface water infrastructure system in its current condition. Traffic congestion would get worse and human safety would continue to be at risk. No permits would be required, and no mitigation would be necessary.

3.1.2 Build Alternative

The Build Alternative would include a split-profile at existing grade with the following key elements:

- Three 12-foot lanes in each direction
- A 12-foot outside shoulder
- A 10-foot inside shoulder
- The westbound off-ramp at Lockwood would be lengthened and include a new separate lane and storage for vehicles accessing the material site. On the south side, a new bridge over the railroad is proposed adjacent to the existing bridge to allow the existing bridge to be used during construction.
- At Waltham Way, the eastbound and westbound access points would be combined into a single new tight diamond interchange. The existing frontage road would be relocated north for proper intersection spacing.

Below are descriptions of the environmental consequences of the proposed Build Alternative with respect to floodplains and water resources.

3.1.3 Wetlands

Wetlands do not occur in the Proposed Action Area, and therefore would not be impacted under the Build Alternative. See Appendix C, Exhibit 1 which portrays the Build Alternative components with the delineation results. No wetlands were observed during the field studies, and thus none would be impacted during construction and operation of the Proposed Action. Therefore, there is no requirement or need for mitigation.

3.1.4 Floodplains

The Build Alternative was overlaid onto the current FEMA floodplains as well as updated floodplains currently under review. No impacts to the regulated floodplains or 100 year-year floodplain boundary are expected. Project design has been revised to avoid all 100 year floodplains that have been identified within the area of Proposed Action. Therefore, there is no requirement or need for mitigation. See Appendix C, Exhibit 2, which portrays the Build Alternative components within and adjacent to the FEMA floodway boundaries.

3.1.5 Surface Water

The Build Alternative would result in increased impervious area and changes to drainage patterns and stormwater infrastructure. The April 2024 *Preliminary Drainage Alternatives Design Memorandum* (HDR, 2024) (Appendix D) for the Proposed Action determined that adequate storage exists to meet the additional regulatory release rate and storage requirement for the Build Alternative.

The Build Alternative will require some cross drainage culverts to be extended to span the additional roadway length. Based on the HY-8 analysis of existing culvert capacity, increased culvert capacity is recommended at some cross culvert locations. Proposed culvert sizing is based upon the 50-year, 6-hour storm event with maximum water surface elevation at culvert inlets not allowed to exceed the proposed edge of pavement elevation. The preferred culvert material, shape and size configurations are:

- Reinforced Concrete Pipe (RCP), up to 60 inches in diameter. Minimum diameter of 24 inches, based on NDOT DM2006, Section 3.3.4.2 (NDOT, 2006)
- If greater capacity is required, recommend Reinforced Concrete Box (RCB) culvert, minimum 4-foot rise (6-foot rise preferred).

Proposed culvert sizes and configurations were developed using the HY-8 software package. In general, the existing conditions pavement elevation was assumed to represent the proposed conditions pavement elevation. Analysis of proposed culvert configurations started with estimated inverts based on existing culvert slopes. If required, culvert sizes were increased above the existing dimensions to provide sufficient flow capacity to convey the 50-year design event flow without overtopping the roadway. Proposed culvert inlet elevations were adjusted as needed to provide a minimum of two feet of cover over the culvert crown elevation. The HY-8 electronic files are provided in 0. Due to the steep slopes along the north side of the roadway in several locations, cross culverts may require depressed inlets to provide cover over the culverts and develop sufficient hydraulic head to drive flow through the proposed culverts. A few existing cross culverts extend well beyond the Proposed Action. These are not proposed to be disturbed. Parallel drainage upslope of the roadway may be required at these sites to convey offsite flow to the nearest cross culvert. The design of these systems will be developed at the next design phase of the Proposed Action. All culvert inlets and outlets will be protected from erosion using riprap aprons or other appropriate erosion control methods.

A Water Quality Investigation Report (WQIR) was developed by the NDOT Stormwater Division to evaluate the impacts of stormwater discharges from drainage facilities associated with I-80 upon water quality of the Truckee River within the Proposed Action Area. A copy of the WQIR is attached with this report in 0. The WQIR states that the Proposed Action has the potential to impact two designated reaches of the Truckee River; these are identified as the Truckee River at Lockwood Bridge, and the Truckee River at Derby Dam.

The WQIR identifies three USEPA-approved TMDLs for these two reaches of the Truckee River, these are nitrogen (Total), phosphorus (Total), and total dissolved solids. Sediment contributions to the Truckee River due to erosion are the primary pollutant of concern that should be considered when assessing potential impacts to the Truckee

River due to the Proposed Action. The Build Alternative will not cause any increase in discharge to the Truckee River of any substances for which TMDLs have been established (HDR, 2024 and NDOT, 2020).

The Preliminary Drainage Alternatives Design Memorandum (HDR, 2024) for the Proposed Action (Appendix D) assessed water quality impacts to the Truckee River by evaluating the outfall flow path length for cross culverts conveying upslope flow under I-80. The Truckee River is the final receiving water body for this flow. Any culvert having an outfall flow path from the culvert outlet to the Truckee River less than 300 feet in length was regarded as discharging directly to the Truckee River. It is assumed that these short outfall lengths may result in high velocity flow, causing erosion of the downslope channel, delivering sediment-laden runoff to the river. This approach was also used to assess potential water quality impacts of the proposed offsite drainage cross culverts.

Existing conditions outfall flow path Geographic Information Systems (GIS) data was provided by NDOT. Following the development of the proposed condition culvert alignments, the outfall flow paths were updated and/or revised as needed based on 2017 United States Geological Survey Light Detection and Ranging (USGS LiDAR) terrain data and aerial imagery. A total of five proposed culverts were identified as directly discharging to the Truckee River, based on outfall flow path lengths of less than 300 feet. Four of these culverts discharge to the same point on the Truckee River as the existing culvert they will replace. One culvert, associated with WS-8, will discharge at a different point, due to the culvert location being shifted to avoid a proposed retaining wall. The discharge point will be shifted to the west by approximately 270 feet. Several culverts that were designated in the Existing Conditions Drainage Report as discharging directly to the Truckee River are not included in the proposed condition assessment as they are east of the Proposed Action and will not be disturbed by the proposed roadway widening.

Stormwater quality treatment facilities will be installed at the outlets of all culverts identified as discharging directly to the Truckee River to prevent sediment being eroded and discharged into the river. Possible treatments considered will include culvert flared-end sections, riprap protection, stilling basins, and slope down drains, dependent upon available space and other site-specific factors.

3.1.5.1 Construction Impacts

Construction impacts would be temporary and would consist mainly of impacts to surface water quality from erosion and siltation from site ground-disturbing activities. Established BMPs required by the construction permits for mitigation of construction impacts would minimize their effect. These included NDOT Best Management Practices Manual (NDOT, 2017), which provides procedures for construction impact mitigation. NDOT will require designers and contractors for the Proposed Action to follow a similar process to minimize construction impacts. Additionally, the permits and approvals listed below identify the documentation that must be prepared and approved prior to construction.

3.1.5.2 Operation Impacts

Stormwater infrastructure would be expanded to drain into the natural drainage systems as they currently do. Stormwater quality treatment facilities will be installed at the outlets

of all culverts identified as discharging directly to the Truckee River to prevent sediment being eroded and discharged into the river. Possible treatments considered will include culvert flared-end sections, riprap protection, stilling basins, and slope down drains, dependent upon available space and other site-specific factors.

Permits and Approvals

The following permits and approvals will be required as part of the Build Alternative:

- Notice of Intent for construction to comply with the NPDES permit,
- SWPPPs for construction projects,
- Spill Prevention, Control and Countermeasure Plan ,
- Modification to SWPPP to include that the project comply with the NPDES permit, and
- Washoe County permits/approvals demonstrating compliance with their respective stormwater ordinances.

Mitigation and Minimization

No wetlands were observed during the field studies, and thus none would be impacted during construction and operation of the Proposed Action. Therefore, there is no requirement or need for mitigation.

Similarly, no elements of the Proposed Action contact any effective or proposed floodway, or the 100-year or 500-year floodplain boundary. There would be no impacts to regulated floodplains, and therefore there is no requirement or need for mitigation.

As discussed above, the Build Alternative will impact ephemeral drainages. This will result in a total of 0.076 acres of permanent impacts, and 3.47 acres of temporary impacts. The result of these impacts will not require mitigation under the CWA as these features are non-jurisdictional under Section 404. The increase in impervious surface area and its associated runoff can be handled by existing and proposed stormwater detention facilities. Impacts to water quality during construction would be minimized through SWPPPs, which include erosion control plans and BMPs. The use of silt fences and/or vegetative filter strips to buffer drainages would also be included in the erosion control plans. Additionally, areas of disturbance would be re-vegetated to minimize erosion and impacts to surface waters.

Based on the analysis performed as part of this Environmental Assessment, it has been determined that impacts to water resources under the Interim Proposed Action are not significant and do not require mitigation.

4 References

Environmental Laboratory

1987 *Corps of Engineers Wetland Delineation Manual*. Technical Report Y-87-1. Department of the Army, Waterways Experiment Station. Vicksburg, MS.

HDR

2024 Preliminary Drainage Alternatives Design Memorandum for the I-80 East Environmental Assessment.

Lichvar, R.W., and S.M. McColley

2008 A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the United States. August 2008. U.S. Army Corps of Engineers. Engineer Research and Development Center. https://erdc-library.erdc.dren.mil/jspui/bitstream/11681/5308/1/CRREL-TR-08-12.pdf.

Lichvar, R.W., N.C. Melvin, M.L. Butterwick, and W.N. Kirchner

2012 National Wetland Plant List Indicator Rating Definitions. July 2012. U.S. Army Corps of Engineers. Engineer Research and Development Center.

Munsell Color

2015 *Munsell® Soil Color Charts*. Revised Edition. Munsell® Color, Greta MacBeth, New York.

Nadeau, T-L

2011 *Streamflow Duration Assessment Method for Oregon*. U.S. Environmental Protection Agency, Region 10, Document NO. EPA 910-R-11-002.

Nevada Department of Transportation (NDOT)

2017 Stormwater Quality Manuals – Construction Site Best Management Practices (BMP) Manual. Accessed at https://www.dot.nv.gov/home/showpublisheddocument/9417/636475468364870000

2006 Drainage Manual. Accessed at https://www.dot.nv.gov/Home/ShowDocument?id=1663

Nevada Division of Environmental Protection Bureau of Water Quality Planning (NDEP)

2022 Nevada 2020-2022 Water Quality Integrated Report. Accessed at https://ndep.nv.gov/uploads/water-wqm-docs/IR2022FINAL_Report.pdf. Accessed June 2024.

NRCS (Natural Resources Conservation Service)

2018 Field Indicators of Hydric Soils in the United States, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA NRCS, in cooperation with the National NRCS. 2024c. Web Soil Survey: Umatilla Counties, Oregon (Version 19, June 4, 2020). https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx Accessed April 2023.

2015 National Hydric Soils List. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316620.html#reportref. Updated December 2015.

Supreme Court of the United States

2022 Sackett et ux. V. Environmental Protection Agency et al. Accessed at https://www.supremecourt.gov/opinions/22pdf/21-454_4g15.pdf

U.S. Geological Survey (USGS)

2023 National Hydrography Dataset. https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer. July 2023.

U.S. Army Corps of Engineers (USACE)

2020 National Wetland Plant List, Version 3.4. USACE Engineer Research and Development Center Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire. https://cwbi-app.sec.usace.army.mil/nwpl_static/v34/home/home.html. Accessed April 2023.

2008a Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West. ERDC/EL TR-08-28. September 2008. https://usace.contentdm.oclc.org/utils/getfile/collection/p266001coll1/id/7627

2008b Clean Water Act Jurisdiction Following the U.S. Supreme Counts Decision in Rapanos v. United States & Carabell v. United States. Accessed at https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll5/id/1411

2005 Regulatory Guidance Letter Subject: Ordinary High Water Mark. Accessed at https://www.nap.usace.army.mil/Portals/39/docs/regulatory/rgls/rgl05-05.pdf

U.S. Fish and Wildlife Service (USFWS)

2024 National Wetlands Inventory. Wetlands Online Mapper. https://www.fws.gov/wetlands/data/mapper.html.

Appendix A. Laws, Regulations, and Policies

Appendix B. Aquatic Resources Delineation Report

Appendix C. Water Resources and Floodplain Mapbooks

Exhibit 1. Water Resources Mapbook

Exhibit 2. FEMA Floodplain Boundary Mapbook

Appendix D. Preliminary Drainage Alternatives Design Memorandum