Salt Lake City International Airport
Southern Infrastructure Improvement Project
Water Resources Technical Memorandum

Prepared for: Salt Lake City Department of Airports
Federal Aviation Administration
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1.0 INTRODUCTION

This Water Resources Technical Memorandum has been prepared in support of the *Salt Lake City International Airport (SLCIA) Southern Infrastructure Improvement Project Environmental Assessment (EA)*. The SLCIA is located in Salt Lake County, approximately 5 miles northwest of downtown Salt Lake City (SLC) and is generally bounded by Interstate-80 (I-80) to the south, the International Center and undeveloped land and wetlands to the west, additional undeveloped land and wetlands to north, and Interstate 215 (I-215) and light industrial or commercial property to the east.

The SLC is operated and managed by the Salt Lake City Department of Airports (SLCDA), a department of Salt Lake City Corporation. SLCDA proposes to improve infrastructure at the southern extent of the Airport campus.

2.0 RESOURCES

Water resources are surface waters and groundwater that are important in providing drinking water and supporting recreation, transportation and commerce, industry, agriculture, and aquatic ecosystems. The water resources in the project area are described in **Section 3.12** of this EA. Impacts to the following water resource categories resulting from the Proposed Action are presented below:

- Surface Water,
- Floodplains,
- Groundwater; and
- Wetlands.

This technical memorandum provides information on the existing water quality and conditions at SLCIA based on the following documents:

- National Centers for Environmental Information – Daily Summaries Station Details (NOAA 2024)
- Utah HUC Boundaries (Utah SGID 2024)
- National Water Information Systems (USGS 2024)
- Salt Lake City International Master Plan (RS&H 2022)

- Utah Pollutant Discharge Elimination System (UPDES) Permit No. UGW35005 (UDEQ 2014a)
- UPDES Permit No. UT0024988 (UDEQ 2014b)
- UPDES Permit No. UGW35005 Statement of Basis (UDEQ 2021)
- Airport Surplus Canal Relocation Aquatic Resources Report (Bowen Collins & Associates 2023)

3.0 PROJECT DESCRIPTION AND HISTORICAL INFORMATION

3.1 Project Description

The Project Area includes approximately 280 acres north of I-80 west, and south of the Airport, which was previously the Wingpointe Golf Course. The Jordan Surplus Canal and North Point Canal Conveyance System, both man-made canals, run through the project area and discharge into the wetlands surrounding the Great Salt Lake and Farmington Bay. Security fences were installed in the early 2000s which cross through the delineation area in multiple locations, but do not alter any surface water flows. Both the canals and previous golf course design create a varied landscape with many hills, depressions, and ponds.

Potential direct impacts to resources have been calculated using a conceptual level of design of the Proposed Action. As design progresses, measures may be taken to avoid and minimize impacts to environmental resources to the maximum extent practicable. At this time, it is not possible to anticipate the exact locations of each proposed activity; impacts outside of the existing Study Area will be reviewed and documented through future National Environmental Policy Act reevaluations.

The Southern Infrastructure Improvement Project (Proposed Action) includes construction of the South End-Around Taxiway (SEAT), relocation of the Surplus Canal and North Point Canal, construction of the South Employee Parking Area and Employee Screening Facility, and Bus Facility. The SLCDA proposes a SEAT to address aircraft safety and taxiing efficiency and employee parking deficiencies to support forecasted growth in operations and passengers. The SEAT would enhance runway safety, provide more timely and predictable gate arrivals, reduce fuel consumption and emissions, and increase runway capacity and hourly throughput to meet forecast demand. This reduces the risk of runway incursions and Air Traffic Control workload.

The connected actions required to implement the Proposed Action include relocation of the Surplus and North Point canals; construction of a stormwater detention pond, stormwater pump station, and sewer lift station; relocation of North Temple alignment and salt storage facility; and relocation of the Automated Surface Observing System (ASOS) and Remote Transmitter/Receiver (RTR). Construction would occur in phases. **Figure 1** includes each project element and the respective location.

4.0 SELECTED REGULATORY PROGRAMS AND REQUIREMENTS

4.1 National Pollutant Discharge Elimination System

The SLCDA, as the owner and operator of SLCIA, is subject to the requirements of the National Pollutant Discharge Elimination System (NPDES) stormwater permit. The NPDES program is known as UPDES in Utah.

4.2 Utah Pollutant Discharge Elimination System

The SLCDA, as the owner and operator of SLCIA, is subject to the requirements of the Utah Pollutant Discharge Elimination System (UPDES). UPDES Permit No. UT0024988 (Utah Department of Water Quality [DWQ]-2013-008367) (UDEQ 2014b), was issued by Utah Department of Environmental Quality (UDEQ) on March 14, 2014. This permit governs its discharge into water bodies. This permit ensures compliance with water quality standards and pollution prevention measures. The permit includes provisions related to stormwater management, wastewater treatment, and other environmental aspects.

UPDES Permit No. UGW350005 renewed on March 14, 2021 (Order No. SLT0011349) (UDEQ 2014b). "Storm water entrained ADF generated during aircraft deicing operations is collected, monitored, and distributed into one of three lagoons (ponds) based on glycol concentration. The reclaimed glycol is made available for resale to a secondary market. The remaining volume and process wastewater containing less than 1% glycol is land applied. Soil and groundwater samples are collected after each land application event and are analyzed by a certified laboratory. The detention ponds comprise three cells with a holding capacity of 10 million gallons. The ponds have a composite liner consisting of a clay sub liner overlain by a 30-mil geomembrane liner and covered by a 36-mil geomembrane liner. Based on ground water quality data submitted by the permittee, the shallow aquifer at the site is designated as Class IV Saline Ground Water. Compliance monitoring includes ground water monitoring for the detention ponds, and ground water and soil monitoring for the land application site. To date, all sampling analysis has reported below detection limits for glycol" (UPDES Permit No. UGW350005) (UDEQ 2014b).

4.3 Stormwater Pollution Prevention Plan

The SLCDA, as the owner and operator of the SLCIA, is subject to the Stormwater Pollution Prevention Plan (SWPPP) requirements outlined in UPDES Permit No. UT0024988 (UDEQ 2014b). The most current SWPPP utilized by the SLCDA is dated with a revision date of March 18, 2021. It should be noted that the Airport SWPPP does not cover tenants that lease property on the Airport campus and engage in industrial activities regulated under stormwater permitting obligations. Those tenants are required to develop their own SWPPP. Copies of tenant SWPPPs are on file at the Airport, in the office of the Environmental Programs Manager.

The Airport Environmental Programs Manager is responsible to review and update the SWPPP. The Airport has formed a SWPPP Team, as directed by the UPDES permit. The SWPPP Team is responsible for developing, implementing, maintaining, and revising the SWPPP. The Environmental Programs Manager is responsible for scheduling a minimum of one SWPPP Team meeting annually.

Potential pollutant sources identified in the SWPPP include loading and unloading operations; outdoor storage activities; aircraft deicing and anti-icing operations; runway, taxiway, and ramp deicing; aircraft, vehicle, and equipment maintenance; aircraft, vehicle, and equipment cleaning; and on-site waste disposal practices. The Airport monitors pH, biochemical oxygen demand, total dissolved solids, total suspended solids, and oil and grease.

The Airport SWPPP includes descriptions of potential areas and associated materials that could impact stormwater. The SWPPP outlines the Airports Measures and Controls that have been developed to help prevent impact to stormwater. These controls include good housekeeping; preventative maintenance; spill prevention and response procedures; source reduction; management of runoff; inspections; pollution prevention training; recordkeeping and internal reporting procedures; and non-stormwater discharges.

4.4 Drainage Master Plan

The SLCDA, as the owner and operator of the SLCIA, has a drainage master plan that is a part of the SLC Master Plan (RS&H 2022). The drainage requirements are outlined in Chapter 3 (Facility Requirements) under Section 3.7.4 Stormwater of the Drainage Master Plan. The stormwater infrastructure consists of existing storm drainpipes of varies size (materials include reinforced concrete, high density polyethylene, and PVC), 14 pump stations, and 5 outfalls (see **Figure 2** for existing storm drain system). The drainage master plan notes that the Surplus Canal, located along the southern and western ends of the SLCIA, collects most of the stormwater runoff, and the Surplus Canal needs improvement.

4.5 Additional Standards and Specifications

Additional standards and specifications including Best Management Practices (BMP) Design Manual, Standard Operating Procedures, Water Quality Improvement Plan, Total Maximum Daily Load Designation, and Water Quality Control Plans would be completed before construction begins.

5.0 ENVIRONMENTAL SETTING

This section describes the existing hydrology and water quality conditions at and in the vicinity of SLC. These conditions include a description of the local topography, regional hydrologic units, and water quality characteristics.

5.1 Topography

The Project Area is relatively flat with isolated elevation changes due to previous golf course topography, canal, and wetlands. Elevation typically ranges from 4,220 to 4,240 feet above sea level.

5.2 Hydrologic Units

The Proposed Project Area is located within the Jordan Hydrologic Unit listed in Utah's State Geographic Information Database (Utah Geospatial Resource Center) (Utah SGID 2024). Data from the SLCIA, Utah United States (GHCND: USW00024127) for the period between 1941 to 2024 shows the mean annual rainfall of 15.51 inches. The maximum annual rainfall was 24.26 inches in 1983. The minimum annual rainfall was 8.70 inches in 1979.

5.3 Water Quality

The expected pollutants for SLCIA runoff are sediment, nutrients (e.g., fertilizers), oxygen-demanding substances (e.g., decaying vegetation), bacteria, heavy metals, synthetic organics, pesticides, airplane washing (spent water with dirt, detergents, metals, and airplane fuel including fuel, hydraulic fluid, oil, and lavatory waste), and other toxic substances. The SLCIA has fire training facilities that may result in the discharge of foaming agents and fire retardants diluted with water into the storm drain system. Deicing and anti-icing agents used at SLCIA are anticipated to enter the storm drain system.

It is anticipated that rainfall runoff on runways, taxiways, and industrial and commercial sites will carry multiple pollutants. These pollutants will dissolve and be carried by gravity flow through the network of storm drain systems to the Surplus Canal.

Outfall locations are as outlined in **Table 1**.

Table 1. Outfall Locations

Outfall Number	Latitude	Longitude	Location Description	Drainage Area
001	40° 47’ 27.61"	111° 57’ 34.38"	It drains east to the City Drain Canal and is at the discharge point on the Airport's east side.	Includes areas from the north, south, and west of the discharge point, covering Runway 17/35, Runway 14/32, general aviation facilities, and the Utah Air National Guard area.
002	40° 46’ 20.44"	111° 58’ 43.18"	It drains south to the Surplus Canal, located south of the main terminal area.	Encompasses the south cargo terminal area.
003	40° 47’ 27.40"	112° 00’ 04.14"	It drains west on the west side of the airport. The west runway has secondary deicing pads at each end within this drainage area.	Includes the west runway and areas north of the main terminal.
004	40° 46’ 07.16"	111° 58’ 13.79"	It drains to the City Drain Canal. During high flows, it enters by gravity; otherwise, it is pumped southeast.	Facilities on both sides of the City Drain Basin, including taxiways, passenger parking, and car rental facilities.
005	40° 46’ 22.30"	111° 59’ 21.64"	It drains south to the Surplus Canal.	Extends from just west of the smaller eastern runway to the terminal area.

5.4 Discharges

Additional discharge requirements including Construction-Related Discharges, Industrial/Municipal-Related Discharge Monitoring, Industrial-Related Discharges, Municipal-Related Discharges, and SLCIA Stormwater Capture/Reuse System are to be provided before construction begins.

6.0 IMPACT ANALYSIS

6.1 Surface Water

Surface water within the Project Area is present in the wetland portions of the project, the existing canals, and the man-made ponds (see **Figure 4)**. The Surplus Canal diverts water from the Jordan River and flows through the Study Area before it continues north of the airport and discharges into Farmington Bay. The North Point Canal Conveyance System is a controlled diversion of the Surplus Canal, which flows through the southern portion of the Study Area. This diversion was made to create ponds for the now abandoned golf course. After leaving the Project Area it is carried above the Surplus Canal and then flows in a concrete lined canal, continuing to the east to discharge into wetlands abutting the Great Salt Lake. A storm drain distribution line that comes from the northeast Project Area connects into the Surplus Canal (see **Figure 2**). Extension of the storm drain distribution line would connect to the canal's new location. The Great Salt Lake is located about 10 miles to the west of the Project. Applicable statutes for surface water at the Project location include the following:

- Clean Water Act (33 U.S.C. p. 1251-1387)
- Fish and Wildlife Coordination Act (16 U.S.C. p. 661-667d)
- Rivers and Harbors Act (33 U.S.C. p. 401 and 403)

Construction activities for the Proposed Action would include ground disturbance, utility trenching, and the use of construction equipment to relocate the Surplus Canal. Mitigation measures in the form of Best Management Practices (BMPs) should be implemented to minimize the impacts on the portions of the canals that will not be included in the Project including installation of sediment fencing, installation of any needed inlet protection measures and check dams, and use of designated construction entrances. Additionally, all activities should be done in compliance with and in coordination with a USACE Section 404 Permit.

In compliance with UPDES Permit No. UT0024988, stormwater run-off should continue to be managed through the storm drain system and stormwater management should be designed to control runoff associated with the Proposed Action. The SLCIA SWPPP should be updated to reflect the Proposed Action. Any minor alterations in the drainage pattern would not substantially alter the overall drainage pattern of the Airport, and stormwater would continue to be managed within the Airport's storm drainage system.

As the Proposed Action should not result in the loss of but relocation of the Surplus Canal which would temporarily impact surface water, implementation of the Proposed Action should not result in a significant impact on surface water as all direct impacts and construction impacts should be temporary and mitigated.

6.2 Floodplains

Floodplain data was retrieved from the Federal Emergency Management Agency (FEMA) Flood Map Service Center for the Project Area. As illustrated on FEMA Flood Insurance Rate Map (FIRM) Panel 49035C0140E (effective September 21, 2001) and FIRM Panel 49035C0139E (effective September 21, 2001) areas along Surplus Canal are shown as a levee with the canal labeled as a Flood Zone A, which is defined as a special flood hazard area inundated by 100-year flood with no base flood elevations determined. All other portions of the Study Area are located within Flood Zone X, which is defined as areas determined to be outside the 500-year floodplain. The applicable floodplain within the Project limits is present at the existing canal (see **Figure 5** and **Figure 6)**. Applicable statutes for floodplains at the Project location include the following:

- EO 11990, *Protection of Wetlands*
- Clean Water Act (33 U.S.C. p. 1251-1387)

The Proposed Action would involve relocating the Surplus Canal during construction which would be a direct impact to the floodplain associated with the canal, which is designated as a Flood Zone A. Construction activities will require the canal to be closed for a period of time during relocation. Operation of the canal will resume in a new alignment with similar flow, elevation, no impact to wildlife habitats and water quality, and without increasing any flood hazards.

According to EO 11988, *Floodplain Management,* since the relocation of the floodplain is unavoidable, the Project must include measures to minimize adverse impacts and restore the floodplain. Mitigation steps should include following the community's FEMA-approved floodplain management regulations, coordinating with Salt Lake County Flood Control Agency and USACE, constructing in compliance with and in coordination with the USACE Section 404 Permit, implementing erosion control measures, and minimizing the time the canal is shut down to reduce the impacts on wildlife habitats and water quality during construction. Additionally, EO 13690 requires agencies to select one of the three approaches for establishing the flood elevation and corresponding flood hazard area used for project siting and design.

As the Proposed Action would not result in the loss of the floodplain and include the correction of several identified violations associated with the deficiencies in the canal, implementation of the Proposed Action would not result in significant impacts on the floodplain as all direct and construction impacts would be temporary and mitigated.

6.3 Groundwater

The SLCIA property intersects two hydrologic units. The western portion of the Airport property is within the Crystal Creek watershed (Hydrologic Unit Code [HUC] 12 ID: 160202040404) and the eastern portion of Airport property is within the Jordan River watershed (HUC 12 ID: 160202040405). Depths to groundwater range approximately 1 to 8 feet below ground surface (see **Figure 3)**. Data was collected at a test well at Latitude 40°46'16", Longitude 111°58'58" North American Datum (NAD) 27 (USGS 404616111585801 (B-1-1) 32ccd-1) from 1982 to 1989. Flow rate is expected to be low due to the relatively flat topography. Recharge of the groundwater is expected at the Project Site since most of the land surface within the Project Area is pervious material. The applicable groundwater statute is the Safe Drinking Water Act (42 United States Code [U.S.C.] p. 300(f)-300j-26)

During construction, certain components associated with the Proposed Action, particularly subsurface utilities improvements, will likely require temporary dewatering during construction. Such dewatering

would be relatively short-term in duration and the groundwater impacts, if any, would be localized in nature. Further, groundwater does not support beneficial uses (i.e., it is not used for drinking, irrigation, or industrial supply purposes) and no groundwater wells are located in the Project Area. A construction dewatering permit with the DWQ should be obtained prior to any construction activities. In accordance with the UDWQ Construction General Permit and Dewatering Permit along with the SWPPP, provisions should be included for the protection of groundwater and management of construction related dewatering activities. The contractor should implement BMPs to avoid spills, leaks, and other harmful materials from seeping into the ground and impacting groundwater.

The Proposed Action would not result in the creation of any new wells supplying water to facilities or cause any reduction in groundwater levels that could impact other groundwater users in surrounding locations. Therefore, implementation of the Proposed Action would not result in a significant impact on groundwater resources.

6.4 Wetlands

According to the Aquatic Resources Report, the Proposed Action would impact 17 aquatic resources for a total of 24.19 acres of wetlands, 21.77 acres of excavated and natural ponds, 10,634 linear feet of the canals, and 3.09 acres of upland features of note. Applicable wetland statues include the following:

- EO 11990, *Protection of Wetlands*
- Clean Water Act (33 U.S.C. p. 1251-1387)

The majority of the impacts to the wetlands would be the result of grading and excavation necessary to relocate the Surplus Canal and construct and pave the parking areas. Additionally, by relocating and altering the diversion gates for the Surplus Canal and Northpoint Canal, the man-made ponds would no longer have water supplied from the canals resulting in the elimination of the ponds.

The vegetation in wetlands and vegetated corridors located adjacent to the Proposed Action area may be temporarily disturbed due to the presence of construction equipment.

During construction, the contractor should implement an erosion control plan and utilize BMPs to reduce impacts to downstream waters and wetlands. Additionally, construction should be completed in compliance with and in coordination with the USACE Section 404 Permit.

Due to the direct impact and removal of wetlands for the Proposed Action, the SLCIA will need to purchase wetland mitigation bank credits to meet the wetland mitigation requirement.

The Proposed Action would result in the direct impact and removal of wetlands; however, the implementation of the Proposed Action would not result in a significant impact on wetlands as all impacts would be mitigated.

7.0 CONCLUSIONS

SLCDA proposes to improve infrastructure at the southern extent of the Airport campus. The Proposed Action includes construction of the SEAT, relocation of the Surplus Canal and North Point Canal, and construction of the South Employee Parking Area and Employee Screening Facility.

This technical memorandum provides information related to the existing water quality at the SLCIA. Information located in this technical memorandum was identified in the references listed at the end of this document.

Mitigation measures required for water resources to implement the Proposed Project Alternatives include maintaining and following the UPDES Permit No. UT0024988 and the SLCIA SWPPP to minimize any surface water impacts (UDEQ 2014b). Stormwater design would comply with FAA recommendations for stormwater management facilities, and design would comply with FAA AC 150/5200 33C related to hazardous wildlife attractants. Stormwater design would comply with FAA recommendations for stormwater management facilities, and design would comply with FAA AC 150/5200 33C related to hazardous wildlife attractants.

Stormwater BMPs: The Airport will continue to implement the SWPPP and include updates to the SWPPP as the new projects are constructed to include both non-structural and structural BMPs. Additionally, Construction General Permits would be required for stormwater discharges during construction activities.

During construction, the floodplain associated with the Surplus Canal would be temporarily disrupted while portions of the canal are relocated, and construction is done on and around the banks. Mitigation steps should include following the community's FEMA-approved floodplain management regulations, coordinating with Salt Lake County Flood Control Agency and USACE, constructing in compliance with and in coordination with the USACE Section 404 Permit, implementing erosion control measures, and minimizing the time the canal is shut down to reduce the impacts on wildlife habitats and water quality during construction. Additionally, EO 13690 requires agencies to select one of the three approaches for establishing the flood elevation and corresponding flood hazard area used for project siting and design.

Mitigation for groundwater impacts would include obtaining a construction dewatering permit with the Utah DWQ prior to any construction activities. Additionally, groundwater dewatering activities should be completed in accordance with the construction general permit and the SWPPP, provisions will be included for the management of construction related dewatering activities.

Mitigation measures in the form of Best Management Practices (BMPs) will be implemented to minimize the impacts on the portions of the canals that will not be included in the Project. Additionally, all activities will be done in compliance with and in coordination with USACE.

During construction, the contractor should implement an erosion control plan and utilize BMPs to reduce impacts to downstream waters and wetlands. Due to the direct impact and removal of wetlands for the Proposed Action, the SLCIA will need to purchase wetland mitigation bank credits to meet the wetland mitigation requirement.

8.0 LIMITATIONS

The conclusions described in this technical memorandum are based on research of available materials within the scope and budget of the contract. The information presented is relevant to the date of document review and should not be relied upon to represent conditions at later dates.

This assessment has been conducted in general accordance with current regulatory guidelines and the standard of care exercised by environmental consultants performing similar work in the project area. No warranty, expressed or implied, is made regarding the professional opinions present in this report.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. If additional information becomes available, HNTB requests the opportunity to review the information and modify our findings, if necessary.

9.0 REFERENCES

NOAA (National Oceanic and Atmospheric Administration). 2024. National Centers For Environmental Information – Daily Summaries Station Details. Available at: https://www.ncdc.noaa.gov/cdo-web/datasets/GHCND/stations/GHCND:USW00024127/detail. Accessed March.

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ABBREVIATIONS AND ACRONYMS

Airport	Salt Lake City International Airport
ASOS	Automated Surface Observing System
BMP	best management practices
EA	Environmental Assessment
EO	Executive Order
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
HUC	Hydrologic Unit Code
NPDES	National Pollutant Discharge Elimination System
Proposed Action	Southern Infrastructure Improvement Project
Project Area	The limits of construction encompassing the Project
PVC	Polyvinyl Chloride
RTR	Remote Transmitter Receiver
SEAT	South End Around Taxiway
SLC	Salt Lake City
SLCDA	Salt Lake City Department of Airports
SLCIA	Salt Lake City International Airport
SWPPP	Stormwater Pollution Prevention Plan
UDEQ	Utah Department of Environmental Quality
UDWQ	Utah Department of Water Quality
UPDES	Utah Pollutant Discharge Elimination System
USACE	United States Army Corps of Engineers
U.S.C.	United States Code

FIGURES

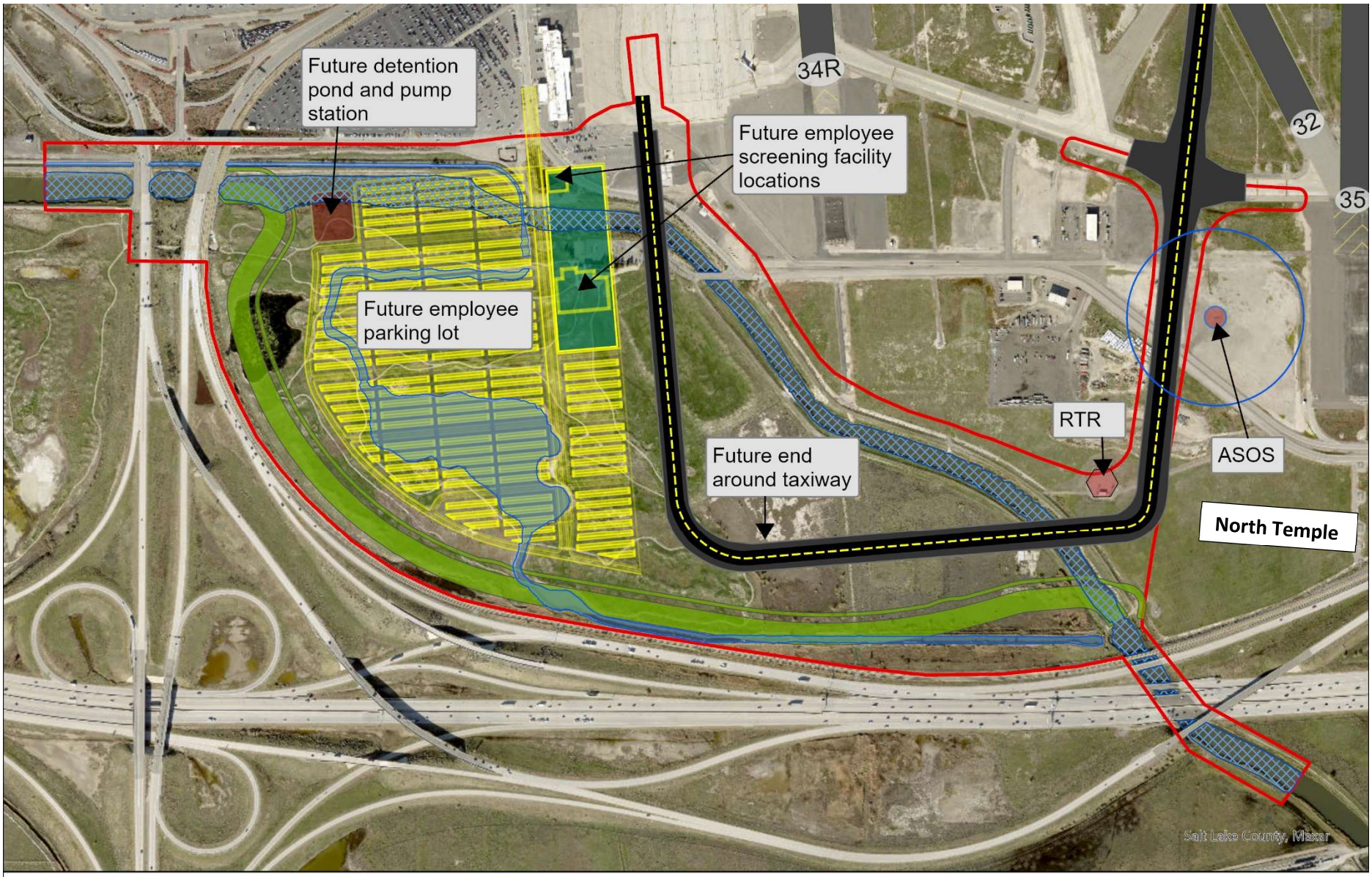
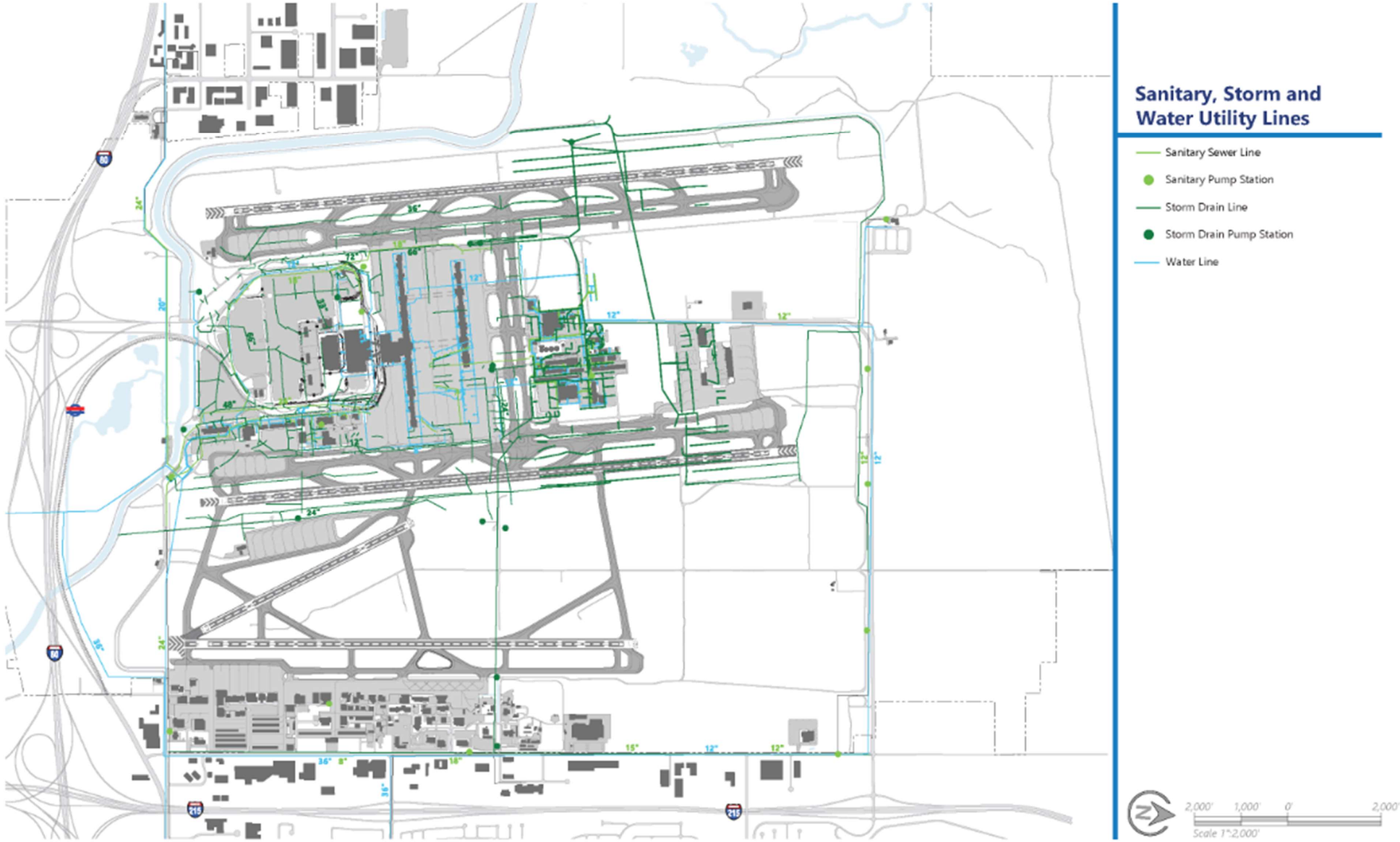


Figure 1
Project Area
SLCIA Southern Infrastructure Improvement Project

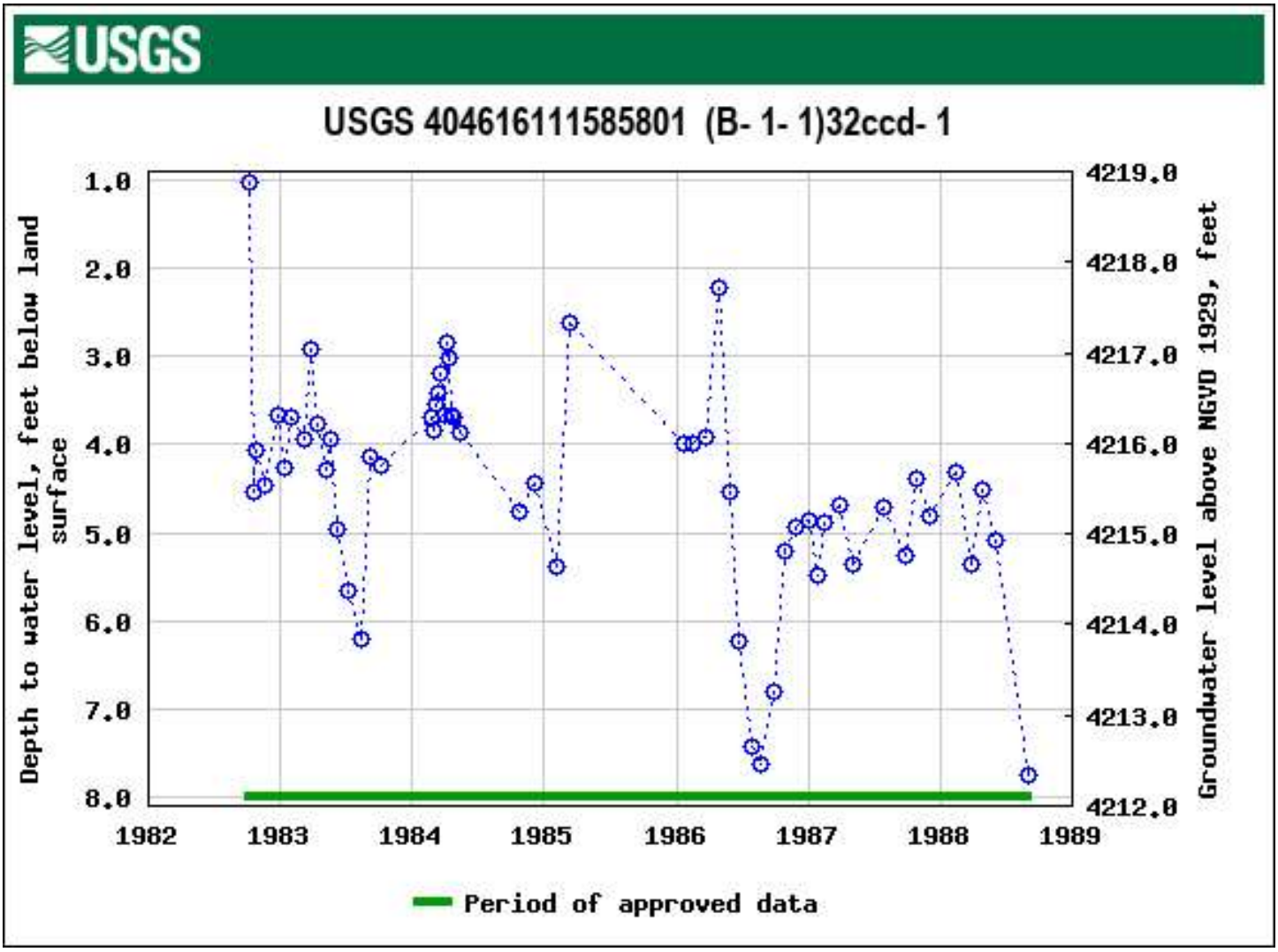
FIGURE 1-38 SLC WATER AND STORMWATER LINES



Source: Prepared by Bowen Collins & Associates and RS&H, 2018

Note: Figure derived from *SLC International Master Plan* (RS&H 2022, p. 1-103)

Figure 2. Sanitary, Storm, and Water Utility Lines



Note: Figure derived from National Water Information System: Web Interface (USGS 2024).

Figure 3. Groundwater Elevation

Figure 4. Surface Waters

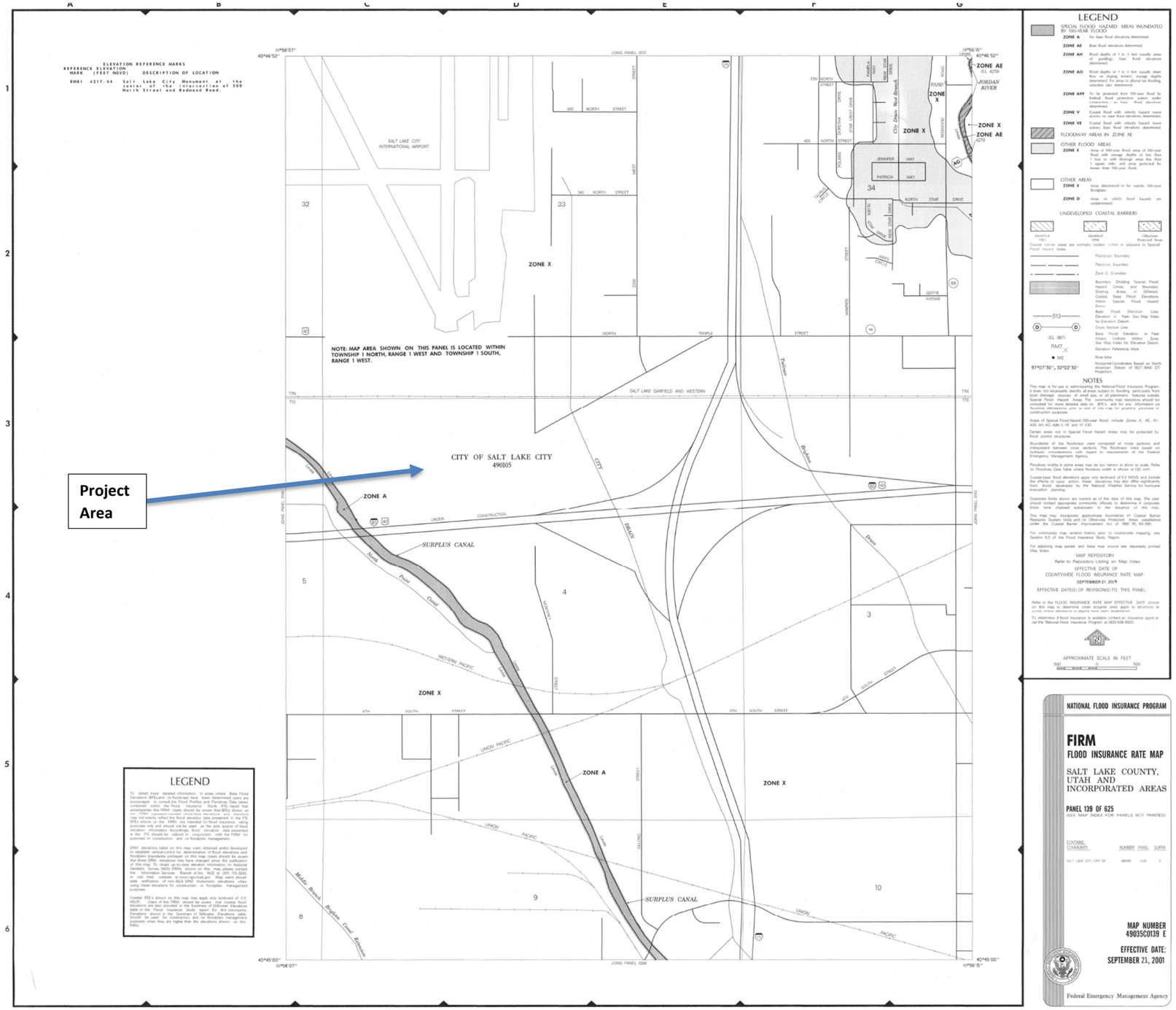


Figure 5. **FEMA Map for Eastern Portion of Project Area**

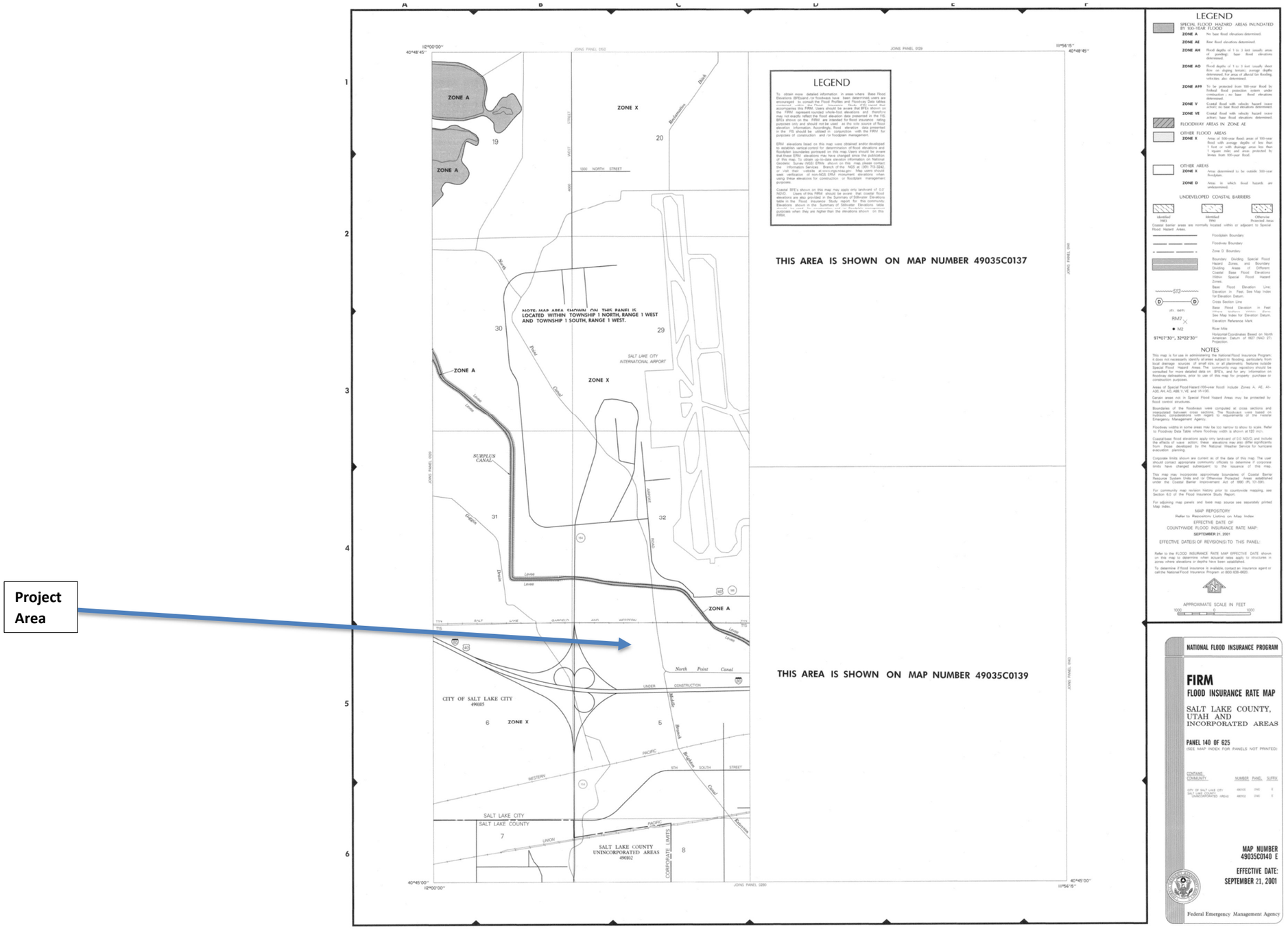


Figure 6. FEMA Map for Western Portion of Project Area